



Ministry
of Defence

Joint Doctrine Publication 04

Understanding and Decision-making

Second Edition

A bronze statue of a man sitting on a rock, resting his chin on his hand in a contemplative pose. The statue is set on a checkered floor that recedes into the distance. The background is a soft, hazy sky. Overlaid on the scene is a word cloud of various terms related to decision-making and strategy.

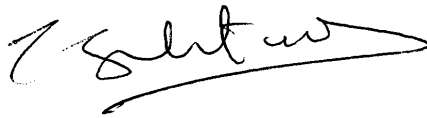
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consequences

Development, Concepts and Doctrine Centre

Joint Doctrine Publication 04
Understanding and Decision-making

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Abstract

Purpose

1. The purpose of Joint Doctrine Publication (JDP) 04, *Understanding and Decision-making* is to provide context and guidance on understanding and decision-making for operations. It discusses how and why developing and maintaining understanding contributes to success and its contribution to effective decision-making.

Context

2. Recent operations have highlighted the vital part understanding plays in the eventual success or failure of operations. One of the major themes of the *Report of the Iraq Inquiry* highlighted the lack of understanding of the operating environment in Iraq which meant that ‘the Government was unprepared for the role in which it found itself from April 2003. Much of what went wrong stemmed from that lack of preparation’.¹ JDP 04 seeks to place into context the importance of understanding and decision-making when conducting operations and highlights the challenges that commanders and staff will encounter in these topics.

Scope

3. JDP 04 outlines understanding generally and understanding the operating environment more specifically. It also outlines the conceptual frameworks for thinking, problem solving and choosing and building the right team.

4. JDP 04 is, for the most part, theoretical. However, it introduces the reader to several tools and frameworks which can be applied in practice. These tools are developed further in North Atlantic Treaty Organization (NATO) and national functional doctrine.

Audience

5. The audience for JDP 04 is military commanders and their respective staffs who are (or will become) involved in operations as well as policy and strategy makers in the Ministry of Defence. The secondary audience is members of other government departments, related non-governmental organisations and the private sector, with whom the military are likely to work.

.....
¹ *The Report of the Iraq Inquiry Executive Summary*, HMSO, 2016. Commonly referred to as the ‘Chilcot Report’.

Structure

6. JDP 04 consists of two chapters.
 - a. **Chapter 1 – Understanding** introduces the basics of understanding, how to approach understanding in the operating environment, factors bearing on developing understanding and what enables understanding. It is supported with an annex to guide readers on developing understanding.
 - b. **Chapter 2 – Decision-making** begins by introducing a theoretical concept for thinking. It then develops ideas about the factors relating to problem solving and how and why we think the way we do. The chapter then discusses building effective teams and concludes with advice for commanders. It is supported by two annexes on organisational learning and adaptation, and biases and heuristics.

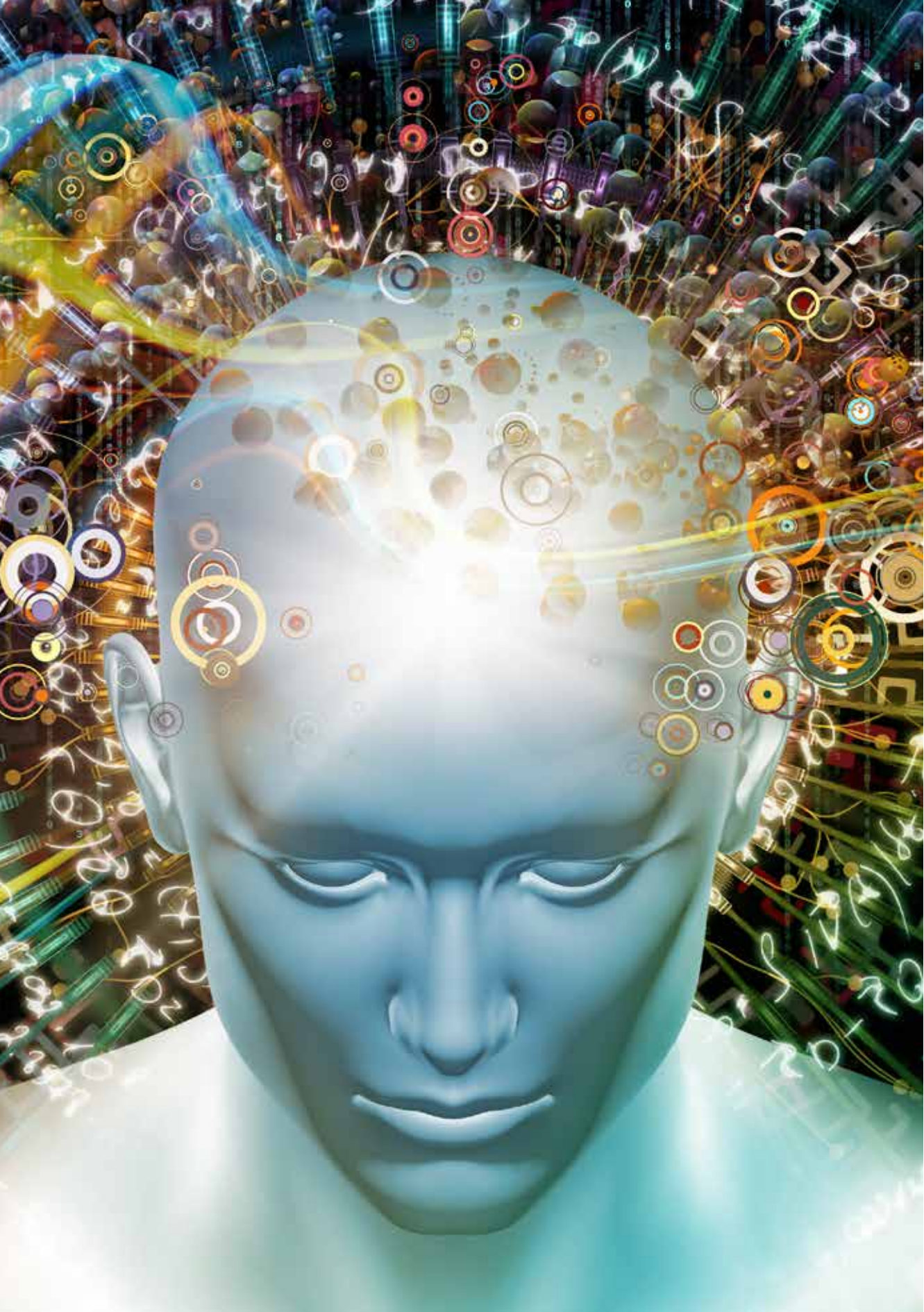
Linkages

7. JDP 04 is a thematic national keystone doctrine publication that sits below JDP 0-01, *UK Defence Doctrine* and alongside JDP 01, *UK Joint Operations Doctrine*. JDP 04 also links to NATO and national doctrine publications and these are referenced in the text.

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Understanding

Chapter 1 introduces the basics of understanding, how to approach understanding in the operating environment, factors bearing on developing understanding and what enables understanding. It is supported with an annex to guide readers on developing understanding.

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// Our species **needs**, and **deserves**, a citizenry with minds **wide awake** and a basic **understanding** of how the world works. //

Carl Sagan

Chapter 1 – Understanding

1.1. Understanding is defined as: the perception and interpretation of a particular situation in order to provide the context, insight and foresight required for effective decision-making.¹ Understanding helps us to make decisions; it also helps us to manage any associated risks and any second and subsequent order effects.

Section 1 – The need to understand

The relationship between understanding, power and influence

1.2. In Defence, understanding underpins everything that we do. Understanding:

- informs our choices when developing state policy and strategy;
- supports the application of national power to achieve influence; and
- is a pre-requisite for effective decision-making.

Understanding helps us to identify the causes of conflict, the nature of emerging crises, and the context required for determining deterrence, coercion or response postures.

Power

1.3. The national instruments of power are diplomatic, economic and military, all underpinned by information. Hard power is defined as: **the threat or use of military or economic coercion or physical action to achieve influence.**² Hard power is, however, only effective if it is credible. Soft power is defined as: **the ability to persuade or encourage others to adopt an alternative approach.**³ Soft power may be used to influence others to adopt a preferred course of action through cultural and ideological means. By combining hard and soft power – sometimes referred to as ‘smart power’ – nations maintain their legitimate interests or demonstrate their values.⁴

1 *Concise Oxford English Dictionary*, 12th Edition, 2011.

2 Joint Doctrine Publication (JDP) 04, *Understanding*, 2010.

3 *Ibid.*

4 [JDP 0-01, UK Defence Doctrine, 5th Edition](#).

Understanding enables a global perspective, which supports the UK's role as a global actor.

Influence

1.4. Influence is defined as: the capacity to have an effect on the character, or behaviour of someone or something or the effect itself.⁵ Defence contributes significantly in supporting the Government's policy aim of influencing the behaviour of any group, nation or state that threatens the UK's interests. However, to be successful in achieving this, we need to:

- make sure we are credible in our words and actions;
- use understanding to help us identify both who we need to influence, and how we might achieve that; and
- develop common understanding with those we work alongside.

The national perspective

1.5. Understanding enables a global perspective, which supports the UK's role as a global actor. Our interests are defined in the *National Security Strategy and Strategic Defence and Security Review 2015*, which identifies our national security objectives as:

- protecting our people;
- projecting global influence; and
- promoting our prosperity.⁶

Understanding helps us to avert or mitigate crises through identifying and enabling an early response to any threats to our legitimate interests.

1.6. The national perspective informs how Defence is configured and prepared, including how we develop our understanding and ability to operate with others to support national interests. However, global influences, including social, political, economic and cultural trends will also have an influence, so Defence cannot rely solely on its own perspective for understanding. Therefore, understanding should always be formed with the widest appropriate inputs to ensure we have the most comprehensive picture possible.

Defence support to national understanding

1.7. National strategy provides guidance to Defence so we can make decisions for preparing, positioning and employing military capability. This demands that

⁵ *Concise Oxford English Dictionary*, 12th Edition, 2011.

⁶ [*National Security Strategy and Strategic Defence and Security Review 2015: A Secure and Prosperous United Kingdom*](#).

we understand foreign policy and home defence requirements, and we have the required force structures we need to meet them. National strategy also guides the intelligence efforts required to identify emerging threats. Commanders must base their decisions within the context of the national strategy, including considering threats to international security, foreign policy and the UK's obligations. Understanding is necessary at all levels of command, because tactical activity can create strategic effect.

1.8. Defence is well-placed to contribute to national understanding. Defence support to national understanding falls into five broad categories.

a. **Horizon scanning.** Horizon scanning is defined as: systematic search across the global environment for potential threats, hazards and opportunities.⁷ Horizon scanning helps identify weaknesses in current assessments or policies, but it may not be sufficiently detailed to enable tasking requirements. At the national level, horizon scanning is led by the Cabinet Office.

b. **Situational awareness.** Situational awareness is defined as: generically, the understanding of the operational environment in the context of a commander's (or staff officer's) mission (or task).⁸ It is how Defence perceives a particular area of interest, problem or situation bounded by time and space in the context of a mission or task. Situational awareness provides the ability to identify **what** has happened and is happening, but not necessarily **why** it has happened. At the operational and tactical levels, commanders require situational awareness to analyse problems. Commanders and staff require situational awareness in sufficient detail and currency to support effective and timely analysis and, hence, make effective and timely decisions.

c. **Support to policy, strategy and planning formulation.** Understanding is essential for the formulation of effective policy and strategy and for the effective deployment of national resources. By setting the parameters for framing problems, understanding helps us to identify where there are gaps in our knowledge and determines where additional resources are required.

d. **Contingency planning.** Contingency planning is conducted within the Ministry of Defence (MOD) and military headquarters to prepare for potential military operations in areas of UK interest. Contingency planning provides commanders with a range of potential options which might have to be executed. Good contingency planning promotes proactive, rather than reactive, responses.

⁷ JDP 04, *Understanding*, 2010. For more information on global trends see Development, Concepts and Doctrine Centre (DCDC), *Global Strategic Trends – Out to 2045, 5th Edition*, 2014.

⁸ JDP 04, *Understanding*, 2010.

// **Understanding is essential for the formulation of effective policy and strategy.** //



Defence Engagement includes working with other nations' militaries

e. **Defence Engagement.** The UK maintains Defence assets designed to deliver hard power to defend the national interest. However, Defence assets have wider utility in maintaining our security and prosperity beyond the threat or use of hard power. Defence Engagement is defined as: *the means by which we use our Defence assets and activities, short of combat operations, to achieve influence.*⁹ Defence Engagement allows the military (alongside other instruments of national power) to play a part in shaping the environment, promoting the rules-based international order and preventing instability in support of the UK's security and prosperity. This is done while building Defence's understanding of the world. Defence Engagement enhances our understanding of other nations, their cultures and their strengths and weaknesses by:

- o developing links with other nations' militaries;
- o strengthening alliances; and
- o promoting the credibility of the UK within the international system through professional competence.

.....
9 [Joint Doctrine Note \(JDN\) 1/15, Defence Engagement.](#)

Section 2 – The basics of understanding

1.9. Understanding falls into three types. These are individual understanding, collective understanding and common understanding, which are explored below.

- a. **Individual understanding** is defined as: the personal interpretation of the facts held by a person within their own mind.¹⁰ Individual understanding (even of the same problem) will inevitably vary across a group or population. Individual understanding is prone to being shaped by personal experience. Peer pressure can also affect individual understanding.
- b. **Collective understanding** is defined as: the shared perspective held by members of distinct groups that have their own ethos, creed and identity.¹¹ Members of specific institutions or professions have collective understanding ranging from professional standards or methods, to generally held perceptions of the institution's role in the world. Collective understanding also arises in political, religious or ethnic groups. Organisational cultures, rituals, stories and norms will shape collective understanding.
- c. **Common understanding** is defined as: the ability to comprehend perceptions of groups other than our own and to establish a common baseline for communication, interpretation and action.¹² Common understanding is achieved when institutions, professions, communities and other groups cooperate for a purpose, or to co-exist. These groups may have different kinds of collective understanding that involves potentially divergent interpretations of the world and events, including views of one another. Working within, between and across multiple groups with their different understanding provides opportunities to be exposed to divergent views. Common understanding may be a settled compromise of different views.

Philosophy

1.10. Our collective understanding dictates how we develop our attitudes and opinions and how we behave or operate. It is our responsibility as individuals, as single Services and as professionals to understand ourselves, the world around us, and our potential adversaries. Understanding is one of the cornerstones of our

¹⁰ JDP 04, *Understanding*, 2010.

¹¹ *Ibid.*

¹² *Ibid.*

military philosophy and we must want to understand. This philosophy embraces two principles.

a. **A professional approach.** Experience and knowledge, including the body of professional knowledge enshrined in doctrine, together with education and training, underpin effective understanding. This enhances both our ability to make timely and effective decisions and to take measured risk. We must seek knowledge, consider all available information sources (especially if they hold views opposed to our own) and conduct self-study as well as formal education and training.

b. **A proactive approach to sharing information.** Understanding depends on access to information and knowledge, but access is often problematic, particularly in the intelligence field where sources must be protected. The need for security may restrict information sharing, even when much of the same intelligence can be gleaned from open-source material; security caveats only apply once information is interpreted. The impact of any caveats may decrease as an environment and approach is created that enables intelligence sharing with those who need it.

(1) Sharing requires applying judgement, particularly regarding classification, and must be built upon trust.

(2) Sharing is resource intensive, requiring investment in information management and exchange systems, and relevant training. Being proactive is also an attitude of mind, and the approach to information may also extend to fostering individual, collective and common contacts.

1.11. Understanding has a number of meanings depending upon the context in which it is used and the communities or institutions which develop it. Military understanding relates to what military forces need to understand to complete their missions, deliver operational success and, when necessary, identify, monitor and defeat adversaries.



Understanding is one of the cornerstones of our **military philosophy** and it embraces two principles: a **professional approach** and a **proactive approach to sharing information**.



Insight, foresight and hindsight

'Forethought we may have, undoubtedly, but not foresight.'

Napoleon Bonaparte

1.12. Understanding involves acquiring and developing knowledge to a level that enables us to know why something has happened or is happening (insight) and be able to identify and anticipate what may happen (foresight).

- a. **Insight.** Developing understanding requires situational awareness to identify the problem. By analysing the context we can gain greater insight of the problem; applying judgement to this insight then generates understanding and in so doing may tell us why the situation has developed.
- b. **Foresight.** Foresight will never be complete, but improving both the quality and analysis of our information will help to refine it.

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'To grasp the meaning of a thing, an event, or a situation is to see it in its relation to other things: to see how it operates or functions, what consequences follow from it, what causes it, what uses it can be put to. In contrast, what we have called the brute thing, the thing without meaning to us, is something whose relations are not grasped. . . The relation of means-consequence is the center and heart of all understanding.'¹³

'To know which fact to use when requires more than another fact. It requires understanding – insight into essentials, purpose, audience, strategy, and tactics. Drill and direct instruction can develop discrete skills and facts into automaticity (knowing “by heart”), but they cannot make us truly able.'¹⁴

1.13. Many decisions (especially those that are new or novel) can only be assessed with **hindsight** (understanding a situation or event only after it has happened). We should be careful to avoid using hindsight to support any claim that we 'knew' an outcome was inevitable (this is a very common mistake). Commanders should consider historic situations with outwardly similar parameters when framing new problems, but treat them with caution; while history may appear to recur, it never repeats.¹⁵

¹³ J Dewey, *How We Think*, 1933.

¹⁴ G Wiggin and J McTighe, *Understanding by Design*, Association for Supervision and Curriculum Development, Alexandria, United States, 2005.

¹⁵ The phrase 'history does not repeat itself, but it rhymes' is commonly attributed to Mark Twain, the American writer.

Understanding and knowledge

1.14. Knowledge comprises the information and skills acquired through experience or education. Understanding, however, is about applying judgement to both make sense of, and recognise the significance of, facts in a given context. Table 1.1 illustrated the differences between knowledge and understanding.

Knowledge	Understanding
<ul style="list-style-type: none"> • The facts 	<ul style="list-style-type: none"> • The meaning of the facts
<ul style="list-style-type: none"> • A body of coherent facts 	<ul style="list-style-type: none"> • The ‘theory’ that provides coherence and meaning to those facts
<ul style="list-style-type: none"> • Verifiable claims 	<ul style="list-style-type: none"> • Fallible, in-process theories
<ul style="list-style-type: none"> • Right or wrong 	<ul style="list-style-type: none"> • A matter of degree or sophistication
<ul style="list-style-type: none"> • I know something to be true 	<ul style="list-style-type: none"> • I understand why it is, what makes it knowledge
<ul style="list-style-type: none"> • I respond on cue with what I know 	<ul style="list-style-type: none"> • I judge when to, and when not to, use what I know

Table 1.1 – The difference between knowledge and understanding

1.16. Understanding requires the ability to transfer what we have learned to new and sometimes confusing settings. The ability to transfer our knowledge and skills effectively, and on our own, involves the capacity to take what we know and use it creatively, flexibly and fluently, in different settings or to different problems. Transferability is not merely ‘plugging in’ of previously learned knowledge and skills.¹⁶

You know that running 100 metres in under six seconds is fast. If you were told that Jenny was capable of achieving this time, you may be amazed: you may even discount this as a fact. If you were told that Jenny is a cheetah, you would understand the facts in context.

Understanding – time and consequences

1.17. Building understanding takes time, and commanders may not have a comprehensive understanding at the outset of a crisis. While knowledge derived from information is a key source for building understanding, commanders should remain flexible and adaptive enough to consider views from a range of experts.

¹⁶ *Op. Cit.*, G Wiggin and J McTighe, *Understanding by Design*.

1.18. As factors including the context, the role of actors, politics and power can change over time, understanding is perishable. Evolving situations can present a challenge if insufficient time is available to develop, analyse or refresh our understanding. Commanders may have limited time to develop their understanding and accept that their responses to situations in an unfamiliar environment may result in greater risk, negative consequences or missed opportunities. This highlights the importance of recognising intended and unintended consequences, and the need to learn and adapt to improve our understanding.

a. **Intended and unintended consequences.** Potential consequences may be foreseen during planning in the form of best or worst case scenarios, and contingency plans developed accordingly. Unforeseen consequences will need to be addressed as they arise. Commanders should note that unintended consequences are not always negative and may provide opportunities for exploitation; understanding will enable opportunities to be seized.

b. **The need to learn and adapt.** Learning and adapting allows us to develop our understanding more quickly to account for the changing situation. Learning and adapting also enables:

- o reduced likelihood of negative consequences;
- o better mitigation of unforeseen consequences;
- o more effective exploitation; and
- o our ability to influence.

Developing a command culture that embraces a culture of learning and adaptation requires commanders to be both open-minded and able to learn from their own mistakes, as well as allowing their subordinates to make their own mistakes.

1.19. To develop understanding, commanders must clearly articulate their requirements. Commanders may have direction from a higher authority that frames thinking about a problem, and this will influence their intelligence requirements. A commander's own knowledge, analytical skills and the command climate they foster each shape the level of understanding that will be achieved. Commanders should ask the following questions as a situation develops:

- what do we want to understand;
- how soon do we need to understand;
- what do we know;
- what are the potential gaps in our knowledge;
- how do we fill those gaps;

To develop understanding, commanders must clearly articulate their requirements.

- how do we achieve continuity; and
- how do we improve the level of detail?

Annex 1A provides a summary of how to develop understanding.

The competitive nature of understanding

1.20. An inherent characteristic of understanding is its competitive nature. This may involve individuals and groups competing for the primacy of their own individual or collective understanding. This applies equally to our own internal collective and common understanding, as much as it does to our allies', other government departments', host nation's or our adversaries' understanding. However, commanders should guard against thinking of understanding as a finite resource. Understanding is not a zero-sum commodity, where if someone understands, someone else does not.

1.21. Deployed commanders may have to overcome the relative advantages in understanding enjoyed by local actors. Individuals or groups may compete for authority over, or ownership of, various information or knowledge sources that contribute to understanding. This places an emphasis on developing networks together with the requirement to share information when practicable.

The concept of the narrative

1.22. Narratives are spoken or written accounts of events. Narratives can dominate collective thought, and once ingrained can be very hard to shift. Moreover, narratives can be formed by imagination, myth and stories rather than fact, especially over time. The concept of the narrative can play a significant role in understanding; understanding the nuances that have contributed to widely-held beliefs can be very difficult to achieve.

1.23. Based on their comprehensive understanding of the situation, our adversaries will seek influence among local, regional and world audiences through their own narrative. Our narrative may be so different to our adversaries' narrative, they may never be reconciled. This is commonly termed 'competing narratives'. This places a premium on our ability to understand how people think, recognising both individual and cultural differences. Therefore, we may need to develop culturally-sensitive narratives that may not be our preferred option.

1.24. Some actors or groups will see any form of external intervention as an affront, complicating our ability to challenge a competing narrative. While competing narratives may never be fully reconciled, understanding (and much more importantly, not misunderstanding) can help us to identify common ground.

1

Understanding is **competitive**. It is **not** a **zero-sum commodity**, where if **someone understands**, someone else **does not**.

Misunderstanding

'We're all islands shouting lies to each other across seas of misunderstanding.'

The Light That Failed,
Rudyard Kipling

1.25. Misunderstanding differs from not understanding. Misunderstanding may occur between actors; it is easy to interpret information based on your own heuristics,¹⁷ biases and experience to make sense of them, but these may differ from another's. As misunderstanding often arises from making incorrect conclusions, misunderstanding may result from difficulties in communicating. Using common languages, narratives, agreed lexicons and shared doctrines can help to overcome these difficulties. Genuine misunderstanding should not be reprimanded – making sense of, and fusing, numerous facts in complex environments is not easy.

1.26. Language, and how we use it to articulate ideas, has a strong influence on perception and understanding. Specialist language may help to reduce ambiguity and can allow communication to be more precise, but it relies on a common understanding. Therefore, specialist language can be unintelligible to those not used to using it. Non-verbal communication, 'body language', is equally as susceptible to (sometime very subtle) cultural nuances that can impede understanding.

1.27. Successful communication depends ultimately on our ability to understand **what is meant** rather than **what is said**. The military in particular tend to be opaque to other organisations through over-use of specialist language and acronyms. Commanders must be aware of this tendency and encourage the use of plain, concise language, particularly in multinational and multi-agency environments.



Bridging language gaps to avoid misunderstanding is vital

¹⁷ Heuristics are rules of thumb learned through experience, trial and error, or discovering something for yourself. They can be useful short-cut methods, but applicability is not universal, especially when we assume that the factors underlying a previous event are the same for the present situation and that the past solutions can be applied to new problems.

The principles of understanding

1.28. The principles of understanding detailed below aim to improve awareness of our own strengths, weaknesses and biases. They also promote our capacity to recognise and consider the views of other actors and the need to think creatively and open-mindedly about problems.

- a. **Self-awareness.** We should be aware of why or how we know something (as opposed to thinking something) and the limitations to certainty that knowing entails. Subconscious knowledge may be so engrained that it is difficult for us to both recognise and assess it. We should regularly audit our knowledge for its assumptions, origins and composition, taking into consideration our own biases and perceptions.
- b. **Critical analysis.** Critical analysis is defined as: the intellectual discipline that applies deliberate introspective judgement to interpret, analyse and evaluate a problem and explain the context upon which that judgement is based.¹⁸ Critical analysis is subject to the same biases and perceptions as those inherent in developing understanding and it relies on intellectual integrity. Tools such as creating analogies and red teaming should be used as common practice to encourage individuals and groups to apply critical analysis.
- c. **Creative thinking.** Creative thinking is defined as: the examination of problems or situations from an original or unorthodox perspective.¹⁹ Background, training and experience can often create conditional thinking, which may be prejudicial to critical analysis. Creative thinking should be encouraged to examine a situation from a fresh perspective and to create imaginative and competing hypotheses. Hypotheses should be tested against existing information to deduce meaning, or to develop alternative solutions.
- d. **Continuity.** In areas where change is slow, or the requirement is enduring, developing and maintaining understanding requires continuity in observation and expertise. Achieving continuity requires us to:
 - o develop an effective network of sources to provide access to the knowledge needed;
 - o create a common way of storing and sharing knowledge; and
 - o share insight between relevant subject matter experts.

1

“
Successful communication depends ultimately on our ability to understand what is meant.

”

.....
¹⁸ JDP 04, *Understanding*, 2010.

¹⁹ *Ibid.*

Northern Ireland – how continuity helped to develop understanding

In 1969 the British military did not fully understand the nature of the situation in Northern Ireland. Used to fighting insurgents in colonial campaigns, applying similar processes and tactics to Northern Ireland did not work. By the early-1980s, however, through a process of learning and adapting, the military forces better understood the dynamics of the Province in terms of the roles played by individual and group actors, including paramilitary groups. This understanding was supported by the police and the military working together to develop foresight about how particular communities and actors would react to certain events. The police network, particularly the Special Branch, underpinned continuity of understanding, with the British Army working in support of the police (Royal Ulster Constabulary/Police Service of Northern Ireland) under the legal arrangements of military assistance to the civil power. A further pillar was the Ulster Defence Regiment (later the Royal Irish Regiment) who lived and worked amongst the community, and resident infantry battalions who served for two years to provide continuity.

Units on six-month tours often completed tours in the same locations, such as South Armagh, and retained knowledge of actors that developed further with each deployment. In addition, the introduction of intelligence Continuity Non-commissioned Officers to overlap between six-month rotational units provided continuity of intelligence until the new unit intelligence section had assimilated the knowledge and experience of their predecessors. Supporting intelligence staff also generally completed two to three year tours, as well as multiple tours. One further aspect of continuity was the training base; the highly successful Northern Ireland Training and Advisory Team in the UK and its subsidiary in Northern Ireland prepared all individuals and units for duty in the Province using veterans of multiple tours.



Working together

1.29. Defence must work with departments from across government and engage across the full range of state and non-state actors.²⁰ The Whole Force approach comprises a mix of regular, reserve, contractor and civil service personnel, each with different backgrounds, experiences and knowledge. To ensure that our human capital is fully leveraged, and diverse thinking is captured, commanders must include all stakeholders in their analysis of problems and be open to new thinking. Working together may demand working with another nation’s information and intelligence agencies. The ‘need to know’ principle endures, but a collaborative environment relies on information sharing (the ‘need to share’), underpinned by pragmatic risk-management. Working together helps to build a collective narrative: however, commanders should be aware of the potential for groupthink²¹ resulting from working together, which may distort analysis.

1.30. Fusing²² information requires agreeing a common set of rules and procedures between the agencies involved. A key element of fusion is the ability to corroborate sources or specific pieces of information. Some information or intelligence will not be coherent. The key to understanding is recognising why information that does not fit now may later take on significance. Successful fusion is based on:

- interoperability through a number of organisations working together within a shared framework of understanding; and
- integration through the use of fully integrated systems with shared operating protocols and management.

Networking

1.31. Networking is important to generate understanding and offers significant benefits including the potential for greater objectivity, burden sharing and innovation. Networking also serves to engender trust and helps us identify common risks. Successful networks combine the knowledge and experience of contributors and help to establish and maintain personal relationships. Networks may develop naturally or through a deliberate process, and they may share information on a

20 The current UK name for this is the ‘integrated approach’ – see [JDP 0-01, UK Defence Doctrine](#), page 44; in the future this is likely to change to the ‘full spectrum approach’ – for more details see the *Full Spectrum Approach Primer* (due in March 2017) or Joint Doctrine Note X/17, *Full Spectrum Approach* (due in May 2017). In the North Atlantic Treaty Organization (NATO) it is ‘NATO’s contribution to a comprehensive approach’ – for more information see [Allied Joint Publication \(AJP\)-01, Allied Joint Doctrine](#).

21 See Chapter 2, paragraph 2.19.b.

22 Fusion is defined in Allied Administrative Publication (AAP)-06, *NATO Glossary of Terms and Definitions* as: in intelligence usage, the blending of intelligence and/or information from multiple sources or agencies into a coherent picture. The origin of the initial individual items should then no longer be apparent.

“
Networking
also serves to
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common risks.
”

regular basis without a firm agenda. However, commanders should guide their staff on the need to balance less structured networking with the requirement for some discussion to be more formally documented. Commanders should also remember that individuals representing intelligence agencies may face constraints on what they can contribute to understanding.

Analysis

1.32. Analysis is the detailed examination of something to help us interpret or explain it. Analysis in itself is not understanding, but is an essential component in the process of converting situational awareness into understanding. We can use analysis to evaluate information about the current and past behaviour of a state, system, organisation or individual. Analysis tests and refines hypotheses about future behaviour, including responses to our behaviour, and enables decision-makers to evaluate potential courses of action as fully as possible. The analysis process comprises the following stages.

- a. **Collation.** Collation is the first stage in analysis, grouping together related items of information or intelligence to provide a record of events and facilitate further processing.
- b. **Evaluation.** Evaluation involves appraising an item of information in respect of the reliability and credibility of the source and the information.
- c. **Integration.** Integration involves a structured review to identify significant facts for subsequent interpretation using a variety of tools and techniques. The techniques chosen should ensure that the approach to a particular problem or issue is robust and not subject to cognitive or institutional biases.
- d. **Interpretation.** Interpretation judges the significance of new information in relation to the current body of knowledge. It is used to provide a final assessment and to integrate other relevant information or intelligence to identify patterns.
- e. **Continuous review.** Understanding is continuous; therefore, the analysis from which it derives must also be continuous. An assessment that is fixed in time has limited utility and a review process ensures that we will recognise, learn and adapt to changes in circumstances.

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“**Analysis in itself is not understanding, but is an essential component in the process of converting situational awareness into understanding.**”

Analytical frameworks

1.33. Analytical frameworks help us identify the context, social factors and stakeholders in a given situation. When selecting an analytical framework, the focus must be on whether it provides the appropriate degree of detail. The following frameworks help us to gain a wide perspective on problems.

- a. PEST – political, economic, social and technological.
- b. PESTLEI – political, economic, social, technological, legal, environmental and information.
- c. PMESII (PT)²³ – political, military, economic, social, infrastructure and information (physical terrain and time).
- d. STEEPLM – social, technological, economic, environmental, political, legal, ethical and military.
- e. ASCOPE – area, structure, capabilities, organisation, people and events.

Section 3 – Understanding the operating environment

1.34. The operating environment is defined as: a composite of the conditions, circumstances and influences that affect the employment of capabilities and bear on the decisions of the commanders.²⁴ Within the operating environment the nature of war remains constant, but the character of conflict itself changes. Therefore, while we hope to learn from experience, this must be tempered by anticipating change. Whenever a crisis arises, the character of the operating environment will determine possible courses of action. Developing and maintaining an understanding of the operating environment is a critical element in identifying future challenges.

The benefits of understanding

- 1.35. Commanders who understand the operating environment are better able to:
- develop an appreciation of the actors within an environment;
 - help develop alliances or agreements;

²³ This model is widely used by both the NATO and the United States.

²⁴ AAP-06, *NATO Glossary of Terms and Definitions*, 2015.

- develop empathy with another individual, group or community;
- write policy, strategy and plans;
- make better-informed decisions; and
- achieve influence.

1.36. As understanding is contextual, it is perishable and requires continual development to maintain its validity. Understanding can arise from internal and external sources.

a. Internal sources include our own formal education, historical precedent and practical experience.

b. External sources can be sub-divided into two broad categories – regulated and unregulated.

(1) Regulated sources include intelligence agencies and other agencies that control both their own sources and the intelligence they share.

(2) Unregulated sources include, amongst other things, the media and the Internet.

Commanders should be aware of favouring regulated sources over unregulated sources, as the validity of the data may be sound, or flawed, from either.

Failing to understand – planning the 2003 invasion of Iraq

The Report of the Iraq Inquiry (the 'Chilcot Report') concluded that planning the invasion of Iraq lacked the following vital fundamental elements:

- 'the best possible appreciation of the theatre of operations, including the political, cultural and ethnic background, and the state of society, the economy and infrastructure;
- a hard-headed assessment of risks;
- objectives which are realistic... and if necessary limited – rather than idealistic and based on optimistic assumptions; and
- allocation of the resources necessary for the task – both military and civil.¹²⁵

¹²⁵ *The Report of the Iraq Inquiry, Executive Summary, HMSO, 2016.*

Joint intelligence preparation of the operating environment

1.37. The joint intelligence preparation of the operating environment (JIPOE)²⁶ helps commanders develop their understanding of the operating environment and is a basis for planning. Drawing on the joint intelligence estimate, it focuses the intelligence effort and prioritises intelligence requirements. The JIPOE is a living product and as well as contributing to the early stages of the operational estimate, it assists in conducting the operation.

The operating environment

1.38. We are likely to face a congested, cluttered, contested, connected and constrained operating environment.²⁷ The operating environment impacts the decisions we make regarding the types of capabilities we need to both develop and maintain understanding. The speed and quality of data flow may provide commanders with significant amounts of information. This places additional requirements on commanders and their staff who should consider the following factors.

- a. **Information and communications technology.** Information and communications technology will continue to affect the way that we share and fuse information. The increasing volume of information available will have to be prioritised and analysed. Creating networks to help share this burden and enable understanding is a complex process. To help enable the process, commanders should seek to use common operating methods to enable information sharing wherever possible.
- b. **Information quality control.** Commanders should ensure that processes are in place to control the quality of information. Unregulated external information may inhibit our understanding. Our adversaries will exploit all information, including any that we release. This emphasises the need for quality control, placing demands on our ability to collate, analyse and understand information.
- c. **Automation of the analysis process.** Technological advances will further automate the analysis process. While automated analysis offers significant increases in the speed of processing, it can also incur risk. Technology can fail, and analytical processes that rely solely on logic lack judgement, intuition and human empathy.

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²⁶ AJP-2, *Allied Joint Doctrine for Intelligence, Counter Intelligence and Security*.

²⁷ DCDC, *Future Operating Environment 2035*, 2015.

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// We are likely to face a **congested, cluttered, contested, connected and constrained** operating environment. //

Human factors that affect the operating environment

1.39. The human factors that affect the operating environment can be broken into four areas for analysis, the:

- **culture** that affects how people interpret and orient themselves towards that environment;
- **institutions** that embody cultural ideas as practices;
- **technology and infrastructure** that people assemble to survive in their environment; and
- **physical location** in which people live.



We need to understand the human factors

1.40. The four areas described above overlap significantly. Considering the role of people as actors in isolation on the global stage – as states, non-state actors, populations, organisations, groups and individuals – provides insufficient depth to develop understanding. Commanders must analyse each area both in isolation and how they interact locally, regionally and internationally. Beyond that, commanders must consider where they can create effects and lever influence within the operating environment. Some facets may be so culturally distant from us that there is little common ground; others are universal, for example, the need for security and food.

1.41. Culture includes the general and pervasive ideas of a society: language; historically-rooted concepts of collective identity; and fundamental existential and moral beliefs such as those provided by religion. Culture may be sub-divided into two categories.

- Ideology.** Ideology concerns common ideas, language, rituals and theories providing a common bond for communities such as tribes, religious groups and ethnic groups.
- Psychology.** Psychology concerns the mental and emotional state, and behaviour, of individuals or groups and their interrelation. It concerns what motivates them, their fears, attitudes and perceptions, and how these factors affect the courses of action available to them. It relates to the notion of

Institutions embody ideas such as practices and conventions that form the landscape of social life.

competing narratives of individuals and groups with different interests and needs, which sometimes join in a common cause.

1.42. Institutions embody ideas such as practices and conventions that form the landscape of social life. This includes political institutions, law and judicial machinery, and bonded communities such as families, clans and tribes. It also includes criminal associations and dissident groups operating outside of institutional conventions. Institutions can be broken into four categories.

- a. **Political.** The political system within which a population operates and may include global, regional, national and provincial systems.
- b. **Military.** The system and allegiances within which military personnel operate, their reputation at home and abroad, their relationship to the political environment and the capabilities, structures and equipment they can bring to bear in support of the state.
- c. **Economic.** The economic bodies and organisations that influence the material prosperity of an area. This also covers the ability to produce and distribute goods, their consumption, and providing financial services. Economic considerations can be local, national or international and are linked to the political environment.
- d. **Legal.** These are the institutions that oversee the international and national laws applicable to a state, community or organisation. This includes institutions such as the courts and judiciary.

1.43. Analysing the technology and infrastructure essential for day-to-day life will help us to understand how communities shape the environment to suit their needs. This includes physical artefacts such as communications systems and infrastructure, roads, irrigation and buildings. Analysing technology should consider the level of technical and scientific development and supporting infrastructure within the environment, including:

- transport;
- manufacturing;
- energy generation;
- financial technology;
- information and communications technology;
- cyber capability;
- media; and
- military technology including sensors, weapons and intelligence gathering.

1.44. Analysing where people are located will contribute to a commander's understanding of the situation. Factors should include terrain, climate and access to resources.

Analysing actors

1.45. Analysing actors must go beyond the traditional characterisation of friendly forces, enemy forces and civilians. Some actors may change position, perhaps frequently, and may appear friendly and adversarial at the same time depending on their motivations. Motivation is based on a combination of self-interest, values, ideology, survival and fear. Those same factors affect our own position in relation to different actors.

1.46. Actors can be categorised in four ways – state actors, non-state actors, global actors and local actors.

- a. **State actors** are individuals or group actors aligned with or representing their state. State actors include:
 - o governments and government agencies (political, military and economic);
 - o state-controlled industries (such as defence industries or utilities providers in some states); and
 - o state representatives in global organisations or alliances.
- b. **Non-state actors** are individuals and groups that are independent of a state. Non-state actors include:
 - o state aspirants (for example, Palestinians and Kurds);
 - o independent groups (such as non-governmental organisations); and
 - o individuals (such as lobbyists, philanthropists, criminals, refugees and displaced persons).
- c. **Global actors** operate and have influence at the global level. These include:
 - o groups of states working together through a formal and legal body (such as the United Nations, North Atlantic Treaty Organization (NATO), the Association of Southeast Asian Nations or the African Union);
 - o transnational companies and multinational corporations;
 - o global organisations (for example, the nuclear protest movement); and
 - o individual actors who transcend their own state affiliations.

“Analysing actors must go beyond the traditional characterisation of friendly forces, enemy forces and civilians.”

d. **Local actors** possess the ability to hold a common or collective perspective at the lowest level within or without the formal state structure. Local actors include communities based on regional, provincial, town, village, family, ethnic or tribal lineage. They also include communities based on criminal activity and those supporting warlords.

Membership of multiple groups

1.47. We are all members of multiple groups, whether we are born into them (for example, families or ethnic groups), assimilate into them (for example, as members of political parties, or jihad supporters) or achieve status (for example, with higher education or profession).

1.48. Being part of a group usually means acting according to the rules or norms of that group, whether these rules are explicit or implicit. Each group we are a member of influences what we believe and how we behave. Individuals behave depending on the context they find themselves in.

1.49. Most people do not remain a member of the same groups throughout their life, instead they will join or leave groups either by choice or circumstance. In most societies, people change group allegiance when they move jobs or home, marry, vote for different political parties or make new friends. Even seemingly fixed groups (such



Most people are members of multiple groups

as families or tribes) can change within a lifetime, through marriage or other formal arrangements with new groups. It is therefore inaccurate (and potentially dangerous) to view personal group memberships as fixed.

1.50. Commanders must understand that individuals are not members of just one group. Therefore, allegiance to rules and norms are seldom fixed and can change through context and circumstance.

Section 4 – Factors that affect the development of understanding

Command climate

1.51. Leaders at all levels should establish and maintain a climate that enables the continuous development of understanding. They should create an atmosphere that encourages open-mindedness, critical analysis and creative thinking. The command climate should enable staff to tell commanders what they need to know, even if it appears to contradict the commander's views. However, this is a two-way process and commanders should clearly articulate their requirements for understanding and trust their staff to deliver.

Perceptions

1.52. Perception involves forming a view of something through intuition or interpretation of available knowledge. Internal sources, education, our experiences and prior beliefs shape the way we individually perceive situations. The fact that we are shaped by our perceptions reinforces the first principle of understanding: the need for self-awareness. However, there are limitations to perceptions. Our initial perception may be flawed or wrong because of biases in interpretation, inaccurate intelligence, false information or deception. There is also a tendency to look at a problem from only one standpoint. Commanders should recognise the impact that perceptions can have on the development of understanding and their decision-making process. Similarly, other actors have their own perception of a situation on which they base their actions. Commanders should strive to understand others' perceptions and the narratives they develop from them, as well as their own. Commanders should consider:

- the scope of the problem;

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Commanders may receive advice from specialists, both military and civilian.

- their own initial perceptions;
- what they believe or know to be the views of the other actors;
- how to identify those issues on which views are similar and those on which they diverge;
- how to identify, and close, the gaps in their understanding; and
- cultural awareness.

Cultural awareness

1.53. Cultural awareness is critical to understanding, requiring us to develop cultural expertise in areas where we are likely to operate, together with a more general awareness of other cultures. On multinational operations, commanders should also consider the wide cultural differences that may exist within an alliance. Commanders should ask the following questions to understand the operating environment.

- a. What defines the cultures (dominance, basic ideology, beliefs and practices)?
- b. What are the 'dos and don'ts' (accepted behavioural norms)?
- c. Who can tell us what we need to know (specific sources from that culture)?
- d. How can we exploit greater knowledge of the culture to our advantage (application)?

1.54. Commanders may receive advice from specialists, both military and civilian. Advice may also be available from other sources with varying levels of cultural awareness.

- a. **General awareness.** General awareness requires an active approach to learning more about different cultures. Providing lectures on culture during initial pre-deployment training for personnel, before they enter an operational theatre, is one example of general cultural awareness familiarisation.
- b. **Awareness competence.** Awareness competence is gained through proximity to a culture and may be achieved during an extended operational tour. A daily requirement to interact with another culture either directly (where basic language skills have been achieved) or, more likely, through an interpreter, requires confidence, interest and a willingness to succeed. This approach can deliver a degree of cultural competence which can develop over time into expertise. Commanders and key staff should aspire to this level of personal cultural awareness competence.

c. **Cultural expertise.** Cultural expertise requires immersion in another's culture and generally develops in concert with the ability to speak the language and to understand their mindset. Developing expertise is a long-term process, requiring opportunities for immersion and proximity to the culture, as well as continuity. Selecting individuals for such opportunities should focus on their aptitude and availability to develop such expertise; the attributes may not necessarily be those required in other aspects of military life. Commanders must recognise the value of cultural expertise; true cultural experts are invaluable.

Section 5 – Enabling understanding

1.55. Developing understanding is supported by information management, education and training, and collaborative networks.

a. **Information management** includes the physical aspects of managing information (personal and staff management procedures) and the technical aspects (procurement, operating systems, technical support and upgrades). Physical information management aims to present relevant information to commanders to enable effective decision-making and to protect commanders from the negative impact of information overload. Several factors should be considered.

- o What information is essential that we protect?
- o What are the priorities for information and intelligence?
- o How much detail is required to allow a decision to be made?
- o Which key decision-makers who need the information?
- o What resources are available and for how long?
- o How best to balance the need to circulate information to enable understanding and the need to maintain security (including operations security) and to protect sources and methods?

- b. **Education and training** enable understanding. Command and staff training must advance the skills that develop understanding; this should promote self-awareness, critical and creative thinking skills and open-mindedness. For a specific operation, subject matter experts will undergo specialised training. All other personnel should undertake pre-operational deployment training that includes a focus on cultural awareness and skills that enable military personnel to interact with the operating environment.

- c. **Collaborative networks.** The single intelligence environment²⁸ aims to establish a collaborative network that fuses all sources of intelligence to provide a common resource within the contemporary operating environment.
 - (1) A single intelligence environment will allow better adaptation to complex environments and the changing requirements for intelligence over time.

 - (2) Establishing networks requires significant investment in education and training, and the technical solutions to make it viable.

‘What differentiates revolutionary thinkers from non-revolutionary ones is almost never a greater knowledge of the facts. Darwin knew far less about the various species he collected on the Beagle voyage than did experts back in England who classified these organisms for him. Yet expert after expert missed the revolutionary significance of what Darwin had collected. Darwin, who knew less, somehow understood more.’

Born to Rebel: Birth Order, Family Dynamics and Creative Lives
F J Sulloway²⁹

28 [JDP 2-00, *Understanding and Intelligence Support to Joint Operations \(3rd Edition\)*](#) describes in more detail the single intelligence environment, for which the UK’s Defence Intelligence organisation is the lead agency.

29 F J Sulloway, *Born to Rebel: Birth Order, Family Dynamics and Creative Lives*, 1996.

Key points

- Understanding helps us to identify the causes of conflict, the nature of emerging crises, and the context required for determining deterrence, coercion or response postures.
- Defence support to national understanding falls into five broad categories:
 - o horizon scanning;
 - o situational awareness;
 - o support to policy and planning formulation;
 - o contingency planning; and
 - o Defence Engagement.
- Understanding involves acquiring and developing knowledge to a level that enables us to know why something has happened or is happening (insight) and be able to identify and anticipate what may happen (foresight).
- The principles of understanding are:
 - o self-awareness;
 - o critical analysis;
 - o creative thinking; and
 - o continuity.
- Developing and maintaining an understanding of the operating environment is a critical element in identifying future challenges.
- The human factors that affect the operating environment are: culture; institutions; technology and infrastructure; and physical location.
- Leaders at all levels should establish and maintain a climate that enables the continuous development of understanding.
- Developing understanding is supported by information management, education and training, and collaborative networks.

Annex 1A – A guide for developing understanding

‘Experts often possess more data than judgement.’

Colin Powell

1A

1A.1. In a crisis, our initial understanding could be limited. We are likely to know the location of the problem, the general nature of the situation, the rough time frame during which it has been developing and have a broad idea of the information sources we will need to access. We will develop and build on that initial understanding by defining more accurately the requirement for further knowledge, establishing networks and selecting the most effective analytical tool. Analysis allows us to construct a more accurate perspective of the human factors that affect the operating environment and enhance our understanding of how the separate environments interact with one another. This then allows us to identify what effects we can create, and who we can or cannot influence.

1A.2. It is very difficult to test understanding. Understanding cannot be observed, but can only be inferred by behaviours such as contextualising, comparing and contrasting, and analysing.³⁰

1A.3. The following list of activities provides a summary of how to develop understanding.

- a. Clearly articulate the requirements.
- b. Self-awareness: knowing ourselves as individuals and as organisations; and understanding our own strengths, weaknesses, prejudices and perceptions.
- c. Learn how our own cross-government approach and relationships work, how they may be improved, and how departments may gain a better appreciation of each other’s efforts.

.....
 30 Principles for Learning Meaningful Knowledge, available at <http://www.indiana.edu/~idtheory/methods/m6c.html>

- d. Research our own culture, society and the wider population and their perceptions of us and what we do, and how this impacts on political and military decision-making.
- e. Analyse our partners and allies; understand their interests, intent, values and best practice.
- f. Establish situational awareness by collating information and intelligence already available; this represents initial understanding.
- g. Determine what type of understanding you require. This might be to understand something for your own decision-making or to achieve collective or common understanding to try and influence others.
- h. Develop strategic understanding, appropriate for national leaders, or tactical-level understanding.
- i. Frame the context in which we may be intending to operate.
- j. Connect the aims of the strategy, operation, mission and/or role and how it fits into the bigger picture.
- k. Study the culture, traditions, population and society of the country/ countries in which we may operate, or from whom we may request support, or with whom we wish to remain neutral.
- l. Promote (through example) the value and importance of personal relationships with other actors throughout the operating environment.
- m. Develop a vision, intent and narrative and share it with staff and partners within a command climate conducive to developing understanding.
- n. Encourage staff to challenge the accepted wisdom.
- o. Build a network of information sources to answer your questions and provide specific knowledge; use all available resources, including headquarters staff, intelligence organisations and subject matter experts.
- p. Encourage working together and open-mindedness.

- q. Analyse the human factors that affect the operating environment based on the cultural, institutional, technological and physical factors in relation to the actors.
- r. Identify how to achieve influence (for example, using hard or soft power to affect the adversary's decision-making).
- s. Identify actors and their motivations, affiliations and needs. From this analysis, determine where internal and external narratives may compete.
- t. Learn from the consequences of decisions made and adapt when necessary.
- u. Remain aware that understanding is perishable and must be constantly refreshed.

How do you achieve understanding?

‘How’ you approach learning (strategy) depends on ‘why’ you want to learn it in the first place (motive).³¹ If your desire to learn springs from the urge to gain a paper qualification with minimal trouble or effort, it is likely that you will focus on what appears to be the most important topics (as defined by examinations) and reproduce them. Because of this focus, you will not see interconnections between elements or the meanings and implications of what is learned. However, if your motive to learn is based on curiosity, you will adopt a strategy to seek meaning. There is a personal commitment to learning, which means that you will relate the content to personally meaningful contexts or to existing prior knowledge, depending on the subject concerned. You will search for analogies, relate to previous knowledge, theorise about what is learned, and derive extensions and exceptions.’

Professor Y K Ip,
Associate Director,
Centre for the Development of Teaching and Learning,
National University of Singapore

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31 Biggs, J.B, *Student Approaches to Learning and Studying*. Victoria: Australian Council for Educational Research, 1987.



Decision-making

Chapter 2 begins by introducing a theoretical concept for thinking. It then develops ideas about the factors relating to problem solving and how and why we think the way we do. The chapter then discusses building effective teams and concludes with advice for commanders. It is supported by two annexes on organisational learning and adaptation, and biases and heuristics.

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// **Machines** don't fight wars. **People** do,
and they use their **minds**. //

John R Boyd

Chapter 2 – Decision-making

2.1. Understanding informs decision-making and it follows that the better our understanding, the better-informed our decisions will be. Decision-making is not a wholly rational activity and multiple influences will affect our judgement. Chapter 2 does not explain how to make decisions. Rather, it outlines the key components of decision-making (information, problem solving, how people think, using and influencing thinking, team dynamics and learning) to offer guidance for commanders and staff. This chapter reflects the principle of doctrine: it does not outline **what** to think, but rather **how** to think. Annex 2A discusses organisational learning and adaptation, and Annex 2B discusses biases and heuristics.

Section 1 – A conceptual framework for thinking

2.2. A conceptual framework for thinking can help to find and then apply the right thinking strategy to a particular situation. Figure 2.1 depicts a framework with two thinking dimensions – ways and means. No single way of thinking is better than the other. Divergent ways of thinking that explore, develop options, generalise and use inductive reasoning can both complement and contrast with convergent ways that conclude, decide, deduce and deconstruct.

2.3. The means of thinking (the resources applied) contrasts conscious methods (applying logic, analysis, rules and procedures, and scientific method) with unconscious methods (intuition, creativity, insight, social understanding, instinct and heuristics).

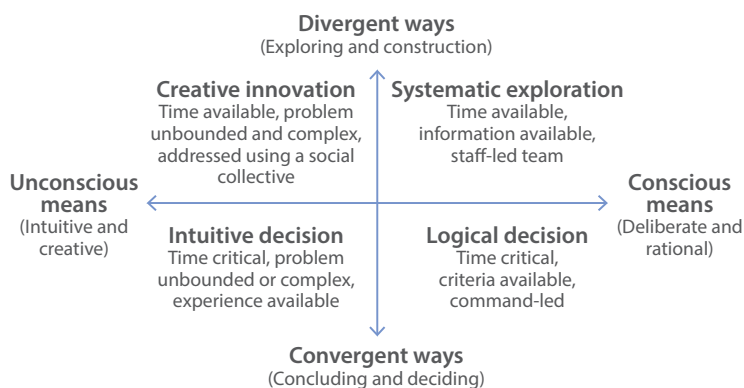


Figure 2.1 – A conceptual framework for thinking

Complexity

'Simplicity is a great virtue but it requires hard work to achieve it and education to appreciate it. And to make matters worse: complexity sells better.'

Edsger W. Dijkstra

2

2.4. The broad spectrum of Defence utility means that we must be prepared to engage in a wide range of activities from war fighting to peacekeeping. Such activities may have to be done concurrently, in different locations, within different contexts. The operating environment is often referred to as complex, with much written to suggest it will only become more so. Complex military operations (operations consisting of many different and connected parts) are not a new phenomenon. Wrongly, complexity has come to be synonymous with difficult to understand.

2.5. Commanders are increasingly required to work with civilian partners and this more inclusive approach is not just cross-governmental; it is a key element for all those with a stake in operations. The typical breadth of inter-agency and multinational engagement increases the complexity of problem solving, but diverse perspectives across a complex network can also generate significant opportunities.



We are likely to work with key civilian partners who are not part of the governmental system

Information

2.6. Military decision-makers should consider the following with respect to information.

- a. **Data proliferation.** Modern information and communications technology has increased the amount of readily available data. The ability to supply, process and transmit this data raises expectations and demand for even more information. Technology has enhanced the range, speed and bandwidth of information bearers, resulting in the ability to manipulate large amounts of information. However, this does not necessarily enhance understanding or the ability to exploit the information for decision-making. The volume of information, the requirement to integrate numerous sources and speed of reaction can result in information overload and decision paralysis.
- b. **Technological dependency.** Technology continues to transform the information flow in the battlespace, providing commanders with new capabilities to lever operational advantage. However, over-relying on specific technology, applications or bearers to deliver mission critical information, can lead to single points of failure. Advances in technology may lead to an over-estimation of its ability to enhance sensing, thinking and understanding. Technology should be exploited to facilitate understanding, but a technological approach does not necessarily serve the more people-centric approach required for complex operations.
- c. **The media.** The reach of global media both facilitates and complicates our ability to influence and manage perceptions, both within and external to the operating environment. Media reporting of apparently minor events can create significant interest, placing an additional burden on deployed personnel to understand the potential implications of their actions. Commanders must contend with multiple audiences simultaneously – domestic, allied, in-theatre, regional and global – by tailoring their messages.

“**Commanders** are increasingly required to work with **civilian partners** and this more **inclusive approach** is **not just** cross-governmental; it is a **key element** for all those with a **stake in operations**.”

”

Section 2 – Problem solving

2

Unbounded problems

2.7. The solution to bounded problems may lie in a consistent approach based on precedent or process, but unbounded problems demand a more innovative response. Approaching unbounded problems using individual or single institutional frameworks may prove unsuccessful if the nature of the problem demands creative or novel thinking. To encourage collaboration and creativity, commanders facing unbounded problems must first consider asking questions rather than focusing on answers. Outcomes of actions are particularly uncertain in complex environments and with wicked problems.³² It does not follow that a repeated action will generate the same outcome it did on the first occasion.

Time criticality and stress

2.8. Training, education and experience allow us to base our decision-making in time-critical situations largely on intuition, rather than on deliberate reasoning or analysis. Forming patterns and mental templates from realistic training and operational experience allows us to associate current problems with past examples and to select appropriate options. Adopting certain practices (procedures, using checklists and challenge teams) can help to overcome biases inherent in these intuitive approaches to problem solving. The approaches relevant to tactical situations and the more deliberate analysis applicable to operational design and strategic thinking may differ.

Heuristics and biases

2.9. Heuristics are cognitive 'rules of thumb' that allow us to make quick mental calculations that are necessary for quick decisions and responses. An awareness of cognitive biases and heuristics has been shown to help people avoid their effects, particularly for people of high intellectual capabilities.³³ A summary of some key heuristics and biases is provided at Annex 2B.

32 Grint K, *Wicked Problems and Clumsy Solutions: The Role of Leadership*, Clinical Leader, Volume I (2), 2008. Note the use of term 'wicked' here has come to denote resistance to resolution, rather than evil.

33 Stanovich K E and West R F, *On the Relative Independence of Thinking Biases and Cognitive Ability*, Journal of Personality and Social Psychology, Volume 94, Number 4, pages 672-695, 2008.

Thinking at the operational level

2.10. Decisive, fast-acting leadership may be appropriate in the initial response to a crisis; initial judgements and first impressions apply to many aspects of problem solving. Problems at the operational level of command tend to be less structured and may require divergent thinking to provide novel or creative solutions. Mental and procedural templates for such problems may prove ineffective.

Organisational thinking

2.11. Successful organisations evolve to develop a range of resources to manage complexity. They facilitate the development and sharing of specialist knowledge and skills to resolve complex challenges. However, competition for resources between and within organisations and self-serving intra-organisational interests may impede rational thought. Moreover, at the highest levels of an organisation, assumptions can be shared and consequently 'mutually reinforced'.³⁴ Commanders should guard against this tendency for decision-making by consensus.

Military culture

2.12. It may not be helpful to consider 'military culture' as a single entity. All three of our single Services have distinct cultures that shape their attitudes and behaviour. Each has a strong culture that conditions how they perceive the external environment, the challenges that they face and their potential responses. This affects the way we interact with each other, with external agencies, and the way we operate. Military culture can have a positive impact: loyalty, trust, cohesion and shared values have a positive impact on our ability to make decisions and enact them.

2.13. Commanders must account for the resulting biases when operating in a joint environment and recognise that perceptions and bias can be even more prevalent and entrenched when working with allies or occasional partners. Open-mindedness and a willingness to challenge our own perceptions and ideas are vital in the multinational and inter-agency environments. Patience and listening skills are key, as is the ability to grasp different perspectives. Commanders should plan to operate at a tempo that allows time to develop such perspectives.

.....
 34 Schein, E. H. *Organizational Culture and Leadership*, 2004.

“
Successful organisations evolve to develop a range of resources to manage complexity.
 ”

Section 3 – Thinking

2

2.14. Thinking is a mental activity that allows us to understand, plan, reason, solve problems, innovate and make decisions. However, the thinking required in all these tasks is not the same type. Long-term planning does not use the same mental resources as short-term planning and a person's thinking will not be equally effective in all tasks. Commanders may encounter circumstances in which their own and their staff's thinking could be, for example, more imaginative or less vulnerable to mistakes. Unless we have some awareness of how we think, we cannot begin to mitigate potentially adverse effects.

2.15. Understanding how thinking fails allows us to develop ways of avoiding such failures. Comprehending how thinking works allows us to create the best conditions for thinking through training and education, selection and the equipment design, processes, organisations, doctrine and information. In sum, training, mental discipline and rigour are key components for good analytical thinking, while intuitive thinking relies on the right conditions, knowledge, an uncluttered mind, positive emotions and confidence.

Cognition

2.16. Cognition is a term used by psychologists to describe the acquisition, storage, retrieval and use of information or knowledge. This takes place within a brain that has evolved specialised structures and functions that predetermine the ways in which cognition can work. We begin life with memory, attention, perception and some cognitive processes already working in specified ways. Cognition develops further through life and our environment has a significant influence; those with common experiences and those sharing a culture will develop some similarities in the way that they think. The converse is also true; different experiences can cause people to perceive and understand the same situations very differently. In multinational and multi-agency operations such differences may not be recognised until something goes wrong. Liaison officers can play an important role in ensuring that mismatches in assumptions, values, language or expectations are discovered and bridged. Cultural differences in cognition are also important when assessing potential enemy courses of action. Commanders must understand that an adversary's thinking can be very different to their own while being wholly rational to the adversary.

Individuals

2.17. Within cultural groups, there will be significant differences in some aspects of thinking. Factors that can account for this include:

- intelligence;
- personality;
- experience;
- learning;
- motivation;
- status and role; and
- physical condition.

Furthermore, the emotional state of individuals, influenced by many of these individual factors, has a fundamental role in thinking.³⁵

Groups and organisations

2.18. Group and organisational ideas, understanding, perceptions and attitudes are developed through accumulated thinking by individuals interacting with each other. The products of thinking are captured in external constructs such as concepts, languages and processes that are shared and used collectively.

2.19. Working together, collaboratively or in teams, is a central tenet of the approach to solving complex problems. While cognitive factors influence teams, there are a number of factors that can affect how teams develop perceptions, construct meaning, judge, decide and act. These factors include the following.

- a. **Peer pressure.** Peer pressure is the influence exerted on an individual within a peer group to change their opinions, values or behaviours to conform to group norms. This influence can be positive, particularly in terms of team building, and has a fundamental role in building and maintaining team discipline. However, the pressure to conform can inhibit a team's ability to challenge its collective understanding and its ability to think creatively or to innovate.
- b. **Groupthink.** Groupthink is the tendency to adopt majority decisions, particularly by group members who are similar in background and values and where they perceive a need to present a consensus view (or simply wish to keep their leader happy).³⁶ Although the focus of such cohesive groups is

³⁵ Damasio A, *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*, 1999.

³⁶ Irving J, *Groupthink: Psychological Studies of Policy Decisions and Fiascos*, 1982.

“**Working together, collaboratively or in teams, is a central tenet of the approach to solving complex problems.**”

on the external problem, internal group dynamics may draw out conformity of opinion that is difficult for any individual to overcome, even when they know that the opinion of the group may be wrong. This can lead to the group shortcutting the rational decision-making process so that the majority view is not challenged.³⁷ In extreme cases, a group may begin to feel invulnerable and may be prone to take excessive risk; it may discount warnings, apply pressure to those who oppose the prevailing mood and create an illusion of unanimity.³⁸ Overcoming groupthink requires acceptance of authentic dissent; commanders should be aware of this and both encourage and acknowledge dissenting views.

The attack on Pearl Harbor – December 1941

Senior officers at Pearl Harbor did not take warnings from Washington DC about a potential invasion seriously, despite the fact that Japanese messages had been intercepted. They collectively believed that the Japanese would not dare to attempt an assault against the United States because they would recognise the futility of war with the United States.



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c. **Social prejudice.** Social prejudice is a belief that another social group is less capable than one's own. Operating within groups can amplify such beliefs and their unconscious acceptance within a group. The nature of modern operations, set against a diverse cultural and social backdrop, places a priority on the ability to overcome or set aside such prejudices, whether between individual Services, departments or nations.

.....
³⁷ McConville T, *The War on Terrorism: A New Classic in Groupthink*, 2003.

³⁸ Brooks I, *Organisational Behaviour – Individuals, Groups and Organisation*, 2003.

Polish pilots in the Second World War

During the Second World War, having fought two courageous, but ultimately losing battles in Poland and France, many Polish airmen and airwomen arrived in Britain determined to seek revenge. They immediately sought to join the Royal Air Force (RAF). While the Poles were keen to fight, the RAF would not let them fly operationally: few of the exiles spoke English and there was concern about their morale. The RAF had failed to understand that many of the Poles were excellent pilots. Having come through the Polish and French Campaigns, they had more combat experience than most of their British comrades and they employed superior tactics.

As the Battle of Britain wore on, and the shortage of trained pilots became critical, the exiles were accepted into RAF squadrons and two Polish fighter units, Nos. 302 and 303 Squadrons, were formed. Once committed to action, the Poles flew and fought superbly, shooting down 203 enemy aircraft for the loss of 29 pilots killed. No. 303 Squadron was the most successful Fighter Command unit in the Battle of Britain.



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d. **Education and culture.** Education and culture can influence the way in which we, as individuals, approach problem solving; the same influence applies to groupthink and analysis. In particular, groups that receive better levels of education unconsciously adopt analytical methodologies and thinking strategies consistent with that education and culture.

Dealing with complexity

2.20. The operating environment may produce large amounts of data that constantly changes and not all of which is relevant. Since processing this data would require a much larger brain than we possess, we have evolved mechanisms to deal efficiently with the data most relevant to our needs. Comprehending how the brain works helps us to overcome some of the inherent weaknesses. Annex 2A outlines a range of mechanisms that help us to frame why we think the way we do.

Dealing with social situations

We have evolved to think about and understand factors that influence social interaction, making sense of other people's behaviour by interpreting intent, motivation and attitude. However, a social factor such as behaviour is not fixed and so to understand social situations, we frame them within the context.

- a. Over time, people have developed cultural tools such as traditions, languages and beliefs, as well as legal, political and educational systems to function effectively in cooperative social groups. These cultural tools can be very powerful, influencing core values that are very slow and difficult, if not impossible, to change. They have to work in accordance with an inherently social brain, which is dominated by emotion.
- b. Emotion drives important social behaviours such as communication, kinship, dominance and submission, and the control of behaviour through reward and punishment. Our emotional experiences arise from two main areas of our brain: a primitive area that drives the powerful inherited emotions that we have in common with all people; and an area which drives our ability to learn emotional reactions and to control our more basic instincts. The balance of control between these two areas varies between individuals and will determine the extent to which they can override emotionally-driven behaviour. However, whether we realise it or not, emotions colour most aspects of our thinking.³⁹ They can enhance or degrade how effectively we observe, learn, remember, reason, judge and make decisions.⁴⁰ Some emotions, for example, fear of failure, may degrade mental performance: others, such as feeling valued, may provide the motivation and energy to perform well. Strong emotions leave us more vulnerable to our inherent biases and encourage tunnel vision, where we can focus too much on our principal task at the cost of other factors.⁴¹

Our subconscious perception of other peoples' emotions will influence how we respond to them and will become part of the subconscious processes that make sense of the world for us.^{42,43} Commanders can make effective use of this, not only for leading and managing their own organisations, but also for understanding complex social situations in an operational context.

39 Schwarz N, *Situated Cognition and the Wisdom of Feelings: Cognitive Tuning*, in Feldman L, Barrett and Salovey (Editors), *The Wisdom in Feeling*, pages 144-166, 2002.

40 Dror I E, Peron A E, Hind S-L and Charlton D, *When Emotions Get the Better of Us: The Effect of Contextual Top-down Processing on Matching Fingerprints*, *Applied Cognitive Psychology*, 19, pages 799-809, 2005.

41 Dolan R J, *Emotion, Cognition, and Behaviour*, *Science*, Volume 298, number 5596, pages 1191-1194, 2002.

42 McClelland D C, *Testing for Competence Rather than Intelligence*, *American Psychologist*, 28, pages 1-14, 1973.

43 Goleman D, *Emotional Intelligence*, 1995.

The leadership skills required for volatile, uncertain, complex and ambiguous military situations such as inference, improvisation, divergent thinking, creativity and intuition are all thinking skills derived from the subconscious ability to find meaningful patterns in complex, ambiguous and emotionally-charged situations.⁴⁴

When we learn, we are creating new patterns of connections in our brains. The more connections we make with new patterns, the better we have learned; we are able to remember and apply new knowledge in more situations. We generate more connections through using the new knowledge and also by optimising our ability to make new connections. If we are over-anxious or under-stimulated we do not learn well.

Modes of thinking

2.21. Psychological research generally focuses on two main types of thinking – intuitive and analytical – to compare how effective they are in different situations.⁴⁵ Intuitive thinking has been compared with analytical thinking, particularly against reasoning, judgement and decision-making. Complex problems may involve a combination of both thinking modes and it helps to understand which thinking mode is best suited, both at which time and for which part of the problem. Table 2.1 summarises a comparison between analytical and intuitive thinking.

Intuitive	Analytical
Can be very effective under time pressure and reacting to sudden, unexpected events	Superior when accuracy and evidence are needed, and time and information are available
Expertise is often based on intuitive thinking developed through experience, and can be very accurate	Novices will rely on analytical thinking until they become more expert
More vulnerable to heuristics and biases	Skilled analytical thinking is less influenced by emotion and heuristics
May use valuable situational information that is perceived unconsciously	Can encourage 'stove-piped' thinking
Has been shown to be superior to analytical thinking for some types of complex or unstructured problems	Many tools and techniques have been developed in the tradition of objectivity and determinism and only use conscious means
General (non-expert) intuition can be more effective than analysis for novel, undefined problems	Training in logic can enhance analytical reasoning
Large capacity and concurrent	Limited capacity and therefore consecutive

Table 2.1 – Comparison of thinking styles

44 Paparone C R, Anderson R and McDaniel R, *Where Military Professionalism Meets Complexity Science*, *Armed Forces and Society*, 34, pages 433-449, 2008.

45 For example, see Pretz J E *Intuition Versus Analysis: Strategy and Experience in Complex Everyday Problem Solving*, *Memory and Cognition*, 36 (3) 554-566, 2008.

“ We have different abilities and preferences that affect when and how well we use different types of thinking. ”

2

Cognitive styles and preferences

2.22. We have different abilities and preferences that affect when and how well we use different types of thinking. Education, training, experience and changing circumstances influence abilities and preferences. Evidence suggests that people use both types of thinking and can vary the predominance of either according to situation or preference. With self-awareness, gained through education and feedback, people can adapt their thinking strategies.

Situational factors

2.23. Logical, analytical approaches to clearly defined problems work well. People (and technologies) can apply systematic reasoning according to rules very effectively. Analytical approaches may not work well in situations that are poorly understood, where there is ambiguity and uncertainty and with no common agreement about the nature of the problem or the desired outcome. Such approaches can give a false sense of progress while the reassuring process of analysis is underway, and can lead to narrow perceptions and result in lost opportunities. The skill is to identify what levels of analytical and intuitive thinking should be used for what sort of situations. It is unlikely to be a question of ‘all analysis’ or ‘all intuition’ for either completely defined problems or completely undefined problems. Most problems demand a blend of analytical and intuitive thought.

Framing

2.24. Framing is a personality-dependent blend of conscious and subconscious thought. How information is framed can result in individuals drawing different conclusions. Information presented in vivid detail will often lead people to disregard abstract or statistical information that may have greater evidential value. Things that we see or hear directly are likely to have greater impact than second-hand information, even though the latter may have greater value. Similarly, case histories and anecdotes tend to have greater impact than more informative but abstract aggregate or statistical data. We also seldom reflect on an absence of information. The framing effect has implications for how commanders task their staff to present information and the weight they attribute to it.

Framing the decision

'The frame is used to guide the decision maker's cognitive interpretation of the situation.⁴⁶ At times, the frame may be incorrect, but until feedback or some other stimulus reveals the error, the frame remains the foundation for understanding the situation and for deciding potential courses of action. If it is possible to identify the frame that the decision maker is using – and personality type may offer some clues – then it may be possible to predict the decision outcome.⁴⁷ Such information may be particularly useful for those who must interact with decision makers, such as planning staff employed in operational headquarters; in such circumstances decision-making can become a social behaviour.

Framing provides the context within which new information is used, and different frames concentrate on different kinds of information. Individuals tend to avoid taking risks when outcomes are framed as gains and they tend to take risks when outcomes are framed as losses.⁴⁸ Inflexible people tend to be overconfident in their frame's 'correctness', which makes them vulnerable to mistakes. At the other extreme are those who are erratic and inconsistent, they see every side of every issue; 'seeing it first this way and then that, they never resolve much of anything.'⁴⁹ Beach *et al* suggest that experts often exhibit the desirable flexibility without being inconsistent; experts perform better in fields involving physical processes and less well in those involving human behaviour. If military commanders are experts in their field, swift and accurate risk decisions will be made when the environment is predictable. Lacking this depth of experience, less senior officers must rely on the visible characteristics of the situation to guide their decision-making, with the result that they are more likely to behave rationally and do things 'by the book'.⁵⁰

*The Influence of Personality on Decision-Making*⁵¹
Squadron Leader T Keeling

2

Leadership

2.25. Those dealing with complex and uncertain situations require a range of thinking skills and the ability to get the best thinking from their organisation. Studies have described leadership in these situations as enabling an organisation to think for itself, to develop ideas and coordinate in a bottom-up manner. In such cases,

.....
46 Beach and Connolly, *The Psychology of Decision Making*, page 21.

47 *Ibid.*, pages 32-33.

48 *Ibid.*, pages 18-19.

49 *Ibid.*, pages 19-21.

50 *Ibid.*

51 Squadron Leader T Keeling, *The Influence of Personality on Decision-Making*, Joint Service Command and Staff College, 2009.

Common processes are vital to help disparate organisations work together effectively, particularly when under pressure.

the means for executing leadership is through social mechanisms that encourage communication and dialogue, develop trust, and stimulate interest and creativity.

Cognitive resilience

2.26. Individuals are cognitively resilient if they are able to recognise, adapt to and absorb variants, changes, disturbances and surprises.⁵² This is essential for operating effectively in a complex environment but can be degraded by physiological stressors including physical exertion, dehydration, hypothermia, sleep loss and poor diet.⁵³

2.27. Cognitive (or brain) fitness is described as ‘a state of optimised ability to reason, remember, learn, plan and adapt that is enhanced by certain attitudes, lifestyle choices and exercises’.⁵⁴ Cognitive fitness is comparable with physical fitness since cognitive fitness is increased by mental stimulation, physical exercise, good nutrition, stress management and sleep. Equally, it is eroded by chronic stress, fatigue, distraction, anxiety, depression and ageing.

Over-dependency on technology and processes

2.28. Some tools such as planning templates, mind maps, whiteboards and other visual displays can help to overcome the limitations of short-term memory. For example, doctrine contains templates, derived from best practice, to help execute complex tasks such as the operational estimate and recommends battle rhythms with their associated meetings. However, these templates are only ever guides and they require judgement in application. It is essential to dispel any belief that completing the template means that a satisfactory result has been reached.

2.29. Common processes are vital to help disparate organisations work together effectively, particularly when under pressure. We should not, however, become slaves to technology or process at the expense of adapting to, and innovating in, a new operating context. The key is to be flexible enough with any template and to take other partners with you when adaptation is required.

Reasoning by analogy

2.30. People will often look to their own experiences or other similar situations to make comparisons and diagnose courses of action that have worked previously. This approach relies upon how accurate the comparison is with the previous situation (and context). Situations may be superficially similar but have radically different

52 Woods D D and Hollnagel E Prologue, *Resilience Engineering: Concepts and Precepts*, Ashgate: Aldershot, 2006.

53 Wesensten et al, *Cognitive Readiness in Network Operations*, Parameters, Spring, 2005.

54 Gilkey R and Kilts C, *Cognitive Fitness*, Harvard Business Review, November, pages 1-10, 2007.

underlying properties. When situations are inherently uncertain and ambiguous, there is a higher risk of using inappropriate analogies.⁵⁵ Training and education, which includes a wide range of real-world scenarios, can help people to become more effective in using analogy as a tool for understanding.

Multiple perspectives

2.31. Expertise is not always the most effective resource. Experts can develop highly efficient ways of thinking, but may inadvertently become less flexible and unable to recognise new perspectives. Sometimes a naive viewpoint will provide a valuable new approach to a situation.⁵⁶

Organisational constraints

2.32. The opportunity for, and ability of, individuals to think will depend on external factors, such as individual development, organisational structure and processes, culture, leadership and rewards. The collective ability of individuals within organisations (and organisational ability to capture the product of thinking) will shape an organisation's capability to generate effective thinking.

Section 4 – Choosing the right team

2.33. When making decisions, commanders will have to rely on information, ideas and suggestions from their team. Good teams provide balanced, critical advice, and provide the staff functions that enable the commander time to think. There are different ways for commanders to structure teams to mitigate the individual, group and organisational limitations for problem solving. Some of these approaches are explored in this section.

- a. **A multi-discipline approach.** Increasing specialisation is a natural response to the opportunities created by modern technology, but places high demands on technical knowledge. This requires a multi-discipline approach to problem solving, including approaches such as joint organisations, albeit with the

.....
55 Gavetti G and Rivkin J W, *How Strategists Really Think: Tapping the Power of Analogy*, Harvard Business Review, April, pages 1-11, 2005.

56 Frensch P A and Sternberg R J, *Expertise and Intelligent Thinking: When is it Worse to Know Better?*, in *Advances in the Psychology of Human Intelligence*, Volume 5, 1989.

purpose of integrating specialist knowledge and capabilities without diluting them.⁵⁷

b. **Task-orientated teams.** Rigid organisational structures may not adjust effectively to new tasks and can stifle effective inter-agency collaboration. Commanders should consider forming task-orientated teams and, if necessary, realign existing structures.

c. **Red teams.** One way to counter the effects of cognitive bias is to form a group whose aim is to challenge the commander's plan. Red teams may have a broader role to seek out dissenting and novel ideas and to present alternative and critical perspectives on all aspects of the problem. A red team can monitor groupthink bias and ensure that sufficient analysis and debate has been completed before a policy, plan or strategy is decided.

d. **Knowledge networks.** Knowledge networks that extend beyond the organisation can allow commanders to gain access to new ideas and multi-disciplinary expertise. Knowledge networks are also a useful means to test the reliability of existing information and ideas. Deployed commanders have traditionally used reachback to draw on mainly UK-based expertise; however, (within the bounds of operational security) they should also consider wider sources.

Supporting red teams

2.34. It can be difficult for a red team to gain traction within an existing organisation; such teams, which often approach problems from a novel perspective, can cause anxiety amongst mainstream elements. For red teams to work effectively, commanders must ensure that they have:

- the authority, patronage and support of the commander and chief of staff;
- good lines of communication with the rest of the command; and
- sufficient independence to think critically.

Since red teams are not staff branches, their products need to be injected at some point into the mainstream processes of the organisation.

.....
57 Multi-disciplinary teams have proven highly effective in areas such as air-land integration, but are equally applicable to humanitarian relief, peace support, stabilisation, counter-insurgency and even strategic planning in the Ministry of Defence, which all demand comprehensive approaches to integrate the available expertise and capabilities.

Regional Command (South) Prism Cell

On taking command of Regional Command (South) in Afghanistan in November 2009, Major General Nick Carter established a Prism Cell within his headquarters. It functioned as a red team, but was also directed to focus on issues that were receiving insufficient attention in the headquarters, such as political engagement, reintegration and mobilising the religious establishment. In this latter role, the Prism Cell pushed the boundaries of conventional J5 planning and was proactive in anticipating issues and scoping solutions.

Among other tasks, the Prism Cell was directed to look into the reintegration of insurgents. Previous reintegration programmes had been generally ill-conceived, poorly executed and contaminated by corruption and, as a result, the Afghan people and international community were cynical about new schemes. The task given to the Prism Cell was to draw together a common approach to overcome resistance and cynicism – joining up with Headquarters International Security Assistance Force’s (ISAF’s) Reintegration Cell and the Reintegration Team at ISAF Joint Command. The Prism Cell successfully produced a policy and guidance for reintegration and designed the cross-functional team to make the Coalition’s approach in the South operational.



Building trust in teams

“Successful coalitions are based upon building and having trust. It needs leaders who can rise above the obvious exasperations that are natural and to be expected.”

General Mattis,
US Marine Corps

2.35. Establishing trust within, and between, groups from different organisations or cultural backgrounds is an essential prerequisite to effective partnering. Such teams require incentives for developing trust, including shared goals and objectives. However, trust takes time to develop.⁵⁸ During crises, teams often develop on an

⁵⁸ Christopher *et al*, 'A taxonomy for selecting global supply chain strategies', *International Journal of Logistics Management*, 2006.

ad hoc basis and without a long-term perspective. We characterise such groups as either crisis driven, task-orientated, self-evolving, time-sensitive or temporary.

2.36. Commanders need to understand the level of trust that exists within their teams. Table 2.2 lists the attributes of high-trust and low-trust teams,⁵⁹ highlighting the advantages of high-trust teams and providing a checklist for commanders to alert them to low-trust team behaviour.

	High-trust teams	Low-trust teams
Shared goals	Awareness of shared goals	Lack of awareness of shared goals
	Time given to build shared goals	Lack of shared goals
	Early and open debate of goals	Opinions of others not considered
	Primacy of team-based goals	Primacy of individual goals
Power	Availability of facilitators	Power battles
	Facilitators' focus on win-win	Coercion
	Recognition of knowledge as power	Misunderstandings and conflicts of interest
	Recognition that power can shift between team members and across the distributed environment	Use of hierarchical power
	Power differentials minimised	Perception of 'I have power'
Communication	Face-to-face where possible	Over-reliance on electronic means

Table 2.2 – Trust in teams

Building trust quickly

2.37. The term 'swift trust' encompasses the vulnerability, uncertainty, risk and expectations that surface within hastily-formed networks.⁶⁰ Although behaviour within such personal networks presupposes trust, traditional forms of trust such

⁵⁹ Colonel Mclay E, *Strengthening RC(S) – Unity of Effort*, CJTF-6/DCOS/001, 19 July 2009.

⁶⁰ Meyerson D, Weik K E, Kramer R M, *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, pages 166-195, 1996.



When responding to crises, we will need to build trust and work with a wide range of actors

as familiarity, shared experience and reciprocal disclosure are not obvious.⁶¹ A framework based on the following conditions will serve to build trust more quickly.

- a. **Reputation.** Trust may be based on the reputation of the organisation, rather than the capabilities of an individual. Reputation is context-dependent, so leaders should understand the concerns and aims of prospective partner organisations.
- b. **Dispositional trust.** This refers to the general disposition of an individual to trust other people; some people are more trusting than others.
- c. **Rules or protocols.** The presence of rules or protocols, and the adherence to them, is a safeguard against behaviour which may destabilise an organisation and reduce inter-personal and inter-organisational trust.
- d. **Organisational factors.** Differences in organisational goals, negative organisational stereotypes and ideological differences serve to complicate working relationships between the military and other organisations. Military organisations are typically hierarchies and the members largely conformist; other organisations may prize individualism and be less hierarchical.
- e. **Specialist roles.** People make assumptions about individual ability based on their specialisation, rather than knowledge about their competence or

⁶¹ *Ibid.*, page 167.

motives. Role-based trust is also described as assumed competence; for example, most people trust doctors to care for their health.

f. **Personal contact.** Personal contact is vital for building trust within newly formed, multi-disciplinary teams.

Section 5 – Advice to commanders

The role of judgement in the decision-making process

2.38. Judgement is a key element of decision-making and requires experience and practise. Judgement can be exercised through a collaborative (deliberate) process, through intuition, or a combination of both. Deliberate judgement is a command-led staff process considering all of the facts and determining the options before the commander makes a decision. Intuition is the ability to understand something without the need for conscious reasoning. Intuition may appear subconscious; however, ‘intuitive’ decision-making is based on intellect, experience, education and training which enables decision-makers to recognise patterns, problems and solutions. Intuition is subject to the individual’s own biases, insecurities and idiosyncrasies borne of experience.

Managing risk

2.39. Understanding can help us to identify risk, as well as actions we can take to mitigate risk. Risk management is an important part of decision-making. Decision-makers may become risk-averse when they have insufficient understanding of a given situation. They may also take greater risk when they believe they have achieved a ‘full’ understanding.

Communicating understanding

2.40. Communicating understanding is an important element of the decision-making process. Creating a clear vision and intent is articulating foresight, the primary outcome of understanding. At the strategic and operational level, the commander’s intent determines campaign design, how we prosecute the campaign or operations, how we allocate resources and the operational priorities.

2.41. At the tactical level, intent provides the rationale for personnel to fight and to know why they are fighting. Vision and intent also form the narrative, which

can be general or specific, tailored for an internal or external audience and can be communicated by a number of means. The narrative will evolve over time as understanding and the situation changes.

Network exploitation

2.42. Systematic exploitation of available networks, and identifying the future potential of emerging networks, is critical to developing understanding and to communicating it. Commanders need to develop their own informal and formal networks to gain information and have their understanding of a particular situation scrutinised and tested. Knowledge is often thought to be synonymous with power, and not always shared freely in large organisations. The need to challenge views and perceptions underpins understanding and this cannot always be achieved by accepting the institutional *status quo*. A careful balance must be struck between using formal and informal networks to enable understanding. However, the value inherent in using open-minded informal networks often outweighs the disadvantages.



There is a need to challenge the views of others

Continuous review

2.43. Understanding requires continuous review. The decision-making process provides a useful vehicle for enabling review through monitoring and evaluation, particularly after action has been taken. This allows further analysis to enhance our understanding. The staff environment at each level should incorporate a formal continuous review process that is properly resourced.

Prioritisation and task allocation

2.44. Conducting operations with limited resources demands careful prioritisation and allocation of tasks. Leaders at all levels – political leaders, military commanders and those with the ability and authority to direct a particular group – will usually have resources at their disposal dedicated specifically to developing understanding. Effectively using these resources will require commanders to articulate what needs to be understood. Subordinates should be willing (and able) to add or challenge the commander's requirements, based on their own understanding of the situation.

Cognitive readiness

2.45. Commanders should consider their own as well as their staff's cognitive readiness. This requires assessing the ability to:

- recognise patterns in chaotic situations;
- modify problem solutions in the light of a changing situation; and
- execute plans based upon these solutions.⁶²

In the same way that analytical and creative reasoning can be tested, the brain can also be trained.

Avoiding cognitive pitfalls – mitigation strategies

2.46. Some mitigation of cognitive pitfalls is possible through good mental hygiene and habits. Commanders should consider:

- their physical fitness;
- their willingness to change their mind;
- embracing uncertainty and working with it;
- using prompts, frameworks and checklists to explore different perspectives;
- seeking out and challenging assumptions – not doing so is one of the most common pitfalls;
- always seeking alternatives, not stopping at the first good idea;
- using competing hypotheses rather than seeking evidence to support a preferred theory;
- using one-to-one dialogue with a trusted, but culturally different person to stimulate constructive thinking;
- being emotionally self-conscious in decision-making; and
- checking for the effects of bias and heuristics.

.....
⁶² Fletcher J D, *Cognitive Readiness: Preparing for the Unexpected*, Institute for Defense Analyses Document D-3061, September 2004.

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// In the same way that **analytical** and **creative reasoning** can be tested, the **brain** can also be **trained**. //

Choosing the right approach – analysis or intuition?

Intuition as recognition

Commanders in the United States National Fire Department are required to make decisions under conditions of uncertainty and time pressure that preclude any orderly effort to generate and evaluate sets of options. Klein, Calderwood and Clinton-Cirocco (1986) investigated:

'how the commanders could make good decisions without comparing options. The initial hypothesis was that commanders would restrict their analysis to only a pair of options, but that hypothesis proved to be incorrect. In fact, the commanders usually generated only a single option, and that was all they needed. They could draw on the repertoire of patterns that they had compiled during more than a decade of both real and virtual experience to identify a plausible option, which they considered first. They evaluated this option by mentally simulating it to see if it would work in the situation they were facing. If the course of action they were considering seemed appropriate, they would implement it. If it had shortcomings, they would modify it. If they could not easily modify it, they would turn to the next most plausible option and run through the same procedure until an acceptable course of action was found.'

Thinking Fast and Slow
Daniel Kahneman⁶³

2.47. Conscious processes are particularly good for analytical thinking, and we recognise and use conscious analysis as the main approach to problem solving. Many of the tools and techniques we deploy support this kind of thinking. We tend to neglect, however, the kind of thinking provided by unconscious processes, which are particularly good for dealing with large amounts of information, complexity, ambiguity and volatility. When we do use unconscious processes, for example, in the form of intuition or creativity, it is often *ad hoc* and fortuitous. In some situations, especially when there is a need to understand and influence other people, unconscious processes are very effective and commanders should learn to exploit them.

.....
63 Kahneman D, *Thinking Fast and Slow*, 2011.

2.48. To ensure an effective balance of thinking skills for any particular situation, commanders can:

- monitor staff over-reliance on analytical thinking;
- employ techniques such as brainstorming that support unconscious thinking and trigger lateral thinking, innovation and new insights;
- assign staff with particular thinking styles or skills to roles and teams; and
- diagnose their own, their staffs', partners' and adversaries' thinking to exploit or mitigate strengths and weaknesses.⁶⁴

Group cultures

2.49. Shared cultures within military groups may reinforce cohesion under stress and contribute towards the moral component of fighting power. However, group culture can be destructive when disparate groups are brought together, even when working towards a common aim. Problems could include:

- antipathy between separate groups developing before they meet; or
- a clash of different group cultures inhibiting creativity, distorting decision-making or making people reluctant to voice different opinions.

Diverse groups

2.50. Diverse groups typically consist of members who do not recognise formal structures or authority. Leaders of diverse groups tend to emerge naturally, particularly if they begin as strict conformers but later start to lead in a new direction attractive to other members. In contrast, leaders within the military and other agency groups are appointed and while they can establish their credibility, authority and responsibility within their own hierarchies, they may have to earn this within the wider groups that typically respond to complex problems.

Group size

2.51. In large groups, individuals may be able to 'hide' or fail to recognise the importance of any one task. Also, key contributions can be lost where the dynamics

.....
⁶⁴ Dahl A B, *Command Dysfunction: Minding The Cognitive War*, Thesis, School of Advanced Airpower Studies, Air University, Maxwell Air Force Base, Alabama, 1996.

// **Diverse groups typically consist of members who do not recognise formal structures or authority.** //

of a large group inhibit discussion. Group sizes must be managed to ensure that all participants are both seen and able to contribute.

Dysfunctional group decision-making

2.52. Other factors can make group approaches to decision-making dysfunctional.

- a. Initial preferences can become exaggerated during group discussions, a phenomenon known as group polarisation. This can be limited by avoiding uniformity in the composition of the group.
- b. Group behaviour may inhibit the ability to share information effectively. Rather than revealing vital information known only to them, individual team members may talk about things that everybody already knows. We can reduce this counter-productive behaviour by disciplined pre-meeting routines that expose what is already known and establish clear boundaries for what the meeting intends to achieve.

Group roles

2.53. Groups have norms or rules that apply to every member, but they often have specific roles and corresponding rules that apply to sub-groups within them. Individuals may be susceptible to group conformity and external pressures when adopting such roles, and may adapt their behaviour to conform to views other than their own. Contributory factors include the fear of disapproval from others, a lack of self-belief or the need to avoid confrontation.

Brainstorming – A note of caution

Brainstorming may produce fewer new ideas and less innovation than when people work in isolation. Operating within the group environment, especially in large groups, can lead to individuals contributing less than they might if working on their own. This is often the case with introverts, potentially some of the deepest thinkers in a group, who will be less likely to project alternative ideas than their more extrovert colleagues. In addition, many individuals are apprehensive within a group environment owing to a perception that they are being evaluated. Even when brainstorming conventions are clearly articulated, some individuals may feel that others are scrutinising their input. Overall, large groups may be more effective when evaluating ideas, rather than creating them. Group members might be tasked to generate ideas before the meeting and leaders should mediate discussion about those ideas to allow the group to evaluate the options. Participant involvement in the evaluation process may also help to build consensus on the final outcome.

Key points

- Understanding informs decision-making and it follows that the better our understanding, the better-informed our decisions will be.
- The typical breadth of inter-agency and multinational engagement increases the complexity of problem solving, but diverse perspectives across a complex network can also generate significant opportunities.
- Problems at the operational level of command tend to be less-structured and may require divergent thinking to provide novel or creative solutions.
- Unless we have some awareness of how we think, we cannot begin to mitigate potentially adverse effects.
- There are a number of factors that can affect how teams develop perceptions, construct meaning, judge, decide and act. These include:
 - o peers pressure;
 - o groupthink;
 - o social prejudice; and
 - o education and culture.
- Psychological research generally focuses on two main types of thinking – intuitive and analytical.
- Those dealing with complex and uncertain situations requires a range of thinking skills and the ability to get the best thinking from their organisation.
- Good teams provide balanced, critical advice, and provide the staff functions that enable the commander time to think.
- Judgement can be exercised through a collaborative (deliberate) process, through intuition, or a combination of both.
- Understanding requires continuous review.
- Group culture can be destructive when disparate groups are brought together, even when working towards a common aim.

Annex 2A – Organisational learning and adaptation

2A.1. Organisational learning is critical to avoid repeating failure. Organisations identify lessons from their own experiences and from the experiences of others, but organisational learning involves codifying those lessons in modified or new organisational routines. Militaries express their routines in doctrine, training and standard operating procedures that allow them to act in a coordinated and effective way in often highly dynamic and chaotic situations, where failure can have fatal consequences.

Organisational learning

2A.2. Learning is difficult for most organisations, especially if it challenges routines, special interests and cultural norms. These factors will often lead the organisation to reject or ignore important lessons. Organisational learning also requires tolerance of criticism, both internal and external. However, militaries are hierarchical organisations and can be resistant to internal questioning or dissent. Militaries also tend to be sensitive to external criticism, especially from civilians lacking military experience.

Adaptation and innovation

2A.3. Organisational learning should lead to adaptation and, if necessary, innovation. Military adaptation involves incremental changes to tactics, techniques, procedures, structures and equipment to improve performance. However, adaptation is sometimes insufficient and militaries must innovate to retain their advantage over potential adversaries. Innovation often involves large-scale changes, requiring a mix of doctrinal, structural and technological change.

2A.4. Innovation questions the routines and systems that underpin core competencies, which can deteriorate quickly without rigorous training, exercises and experience on operations. Innovation may be viewed as threatening existing capabilities in which militaries have made heavy investment and around which sub-community interests and cultures have developed. However, organisational innovation is crucial if we are to develop the capacity to anticipate and prepare for the future characteristics of conflict.

Centralised *versus* decentralised organisations

2A.5. Unhindered by bureaucracy and process, the relatively decentralised organisational structure of irregular opponents may enable them to learn and adapt faster than our own highly centralised structures. Similarly, fewer, less well-defined routines should make them more responsive to their environments, with a faster learning capacity. Organisation-wide application of lessons and the ability to codify and disseminate them relies on organisation and a large repertoire of competencies and capabilities. Irregular organisations will vary in their ability to adapt; some will be highly adaptive, others will be surprisingly slow to adapt and make persistent tactical errors. However, militaries are usually slow to innovate and irregular opponents may enjoy the advantage of not being bound by narrow organisational interests defending existing ways of operating. They also often lack cultural and bureaucratic obstacles to innovation. In summary, decentralised organisations tend to be fast learners and are better at innovating than adapting; centralised organisations are better at organisation-wide learning and adapting.

2A

Annex 2B – Biases and heuristics: why we think the way we do

<p>Attention</p>	<p>Attention allows us to direct our conscious thinking in different ways according to our needs. We can concentrate with a narrow focus to read detail or to apply analytical rigour, or look more widely and superficially to remain alert to the broader environment. Attention (and therefore conscious thinking) has a limited capacity, being able to deal with no more than about seven items at a time.</p> <p>A useful characteristic of the way the brain handles information is that an item can contain variable amounts of information, so long as you can conceptually chunk the information into one construct. So, '4 8 7' could be either three items as the numbers four, eight and seven or one item as the number 487. A significant part of expertise in many fields is the ability to chunk information into meaningful complex items that can be remembered and recognised.</p>
<p>Subconscious pre-filtering of data</p>	<p>Pre-filtering data that we acquire through our senses can sensitise us to things that are important so that we only focus mental effort on relevant factors. This is a subconscious function of which we are not aware of doing. It explains why we are not very good at discovering the unexpected as we tend to see what we expect to see and find what we are looking for.</p> <p>While looking for a certain person in a crowd, you are less likely to notice other factors such as the proportion of middle-aged people, the predominant colour of clothing or even another person whom you happen to know. While pre-filtering affords us mental efficiency in many situations, it can be a weakness in others.</p>
<p>Bias</p>	<p>The human tendency to be biased has evolved to allow us to achieve our objectives more efficiently by pre-disposing us to give more weight to information that leads us in a desired direction. We are unaware of many of our biases, which contain both innate and learned aspects. They can be counterproductive if our biases influence us in the wrong direction and lead us to discount or over-weight evidence. In such circumstances, we should take steps to apply a counter-weight, such as someone with the opposite bias, or by using an objective measure.</p>

Listening and hearing are worthwhile skills, even if you find the source or the subject irritating. Our genetic potential, formative experiences and learning all strongly influence our cognitive (mental activity or thinking) abilities. They also give rise to unconscious influence through biases that serve to influence the way in which we think. Examples of bias include the following.

- **Confirmation bias.** Confirmation bias is the tendency to search for or interpret new information in a way that confirms one's preconceptions, or to irrationally avoid information or reject new evidence that contradicts an established view. This is especially pertinent to developing intelligence where any failure to rigorously analyse competing hypotheses can introduce confirmation bias.
- **Optimism bias.** Optimism bias is a systematic tendency for over-optimism about the outcome of a planned course of action. This includes over-estimating the likelihood of the positive and under-estimating the likelihood of the negative. This is one reason why contingency planning, rehearsal of concept drills and red teaming are so important; branches and sequels in operational planning hedge against such over-optimism.
- **Bandwagon effect.** The bandwagon effect is the tendency to do or believe things because others do or believe the same. Cultures within military hierarchies for senior-subordinate relationships vary from an expectation of blind obedience to one that encourages open challenge or concepts of loyal opposition. Commanders must exercise care when working across national cultural lines and foster an open culture that encourages subordinates and seniors to test the accepted wisdom to safeguard against the bandwagon effect.
- **Premature closure.** The human need for closure varies between individuals, situations and cultures. Those with a high need for closure prefer order and predictability, and are decisive, but more likely to have a closed mind at a critical juncture. They can be good in a crisis, but tend to dislike ambiguity; they will seek to make rapid decisions even if the information supporting that decision is of relatively poor quality. Those with a low need for closure will tend to express more open-mindedness and be more creative. Organisational and time pressures can reinforce the need for closure and a formal commitment to a course of action may result in a vested interest in maintaining the position.

Bias (continued)

- **False certainty effect.** The false certainty effect inclines us to make risk-averse choices if the expected outcome is positive and risk-seeking choices if the outcome is negative. Experiments show that how such choices are presented will influence our choices, with clear implications for the way in which we articulate risk.
- **Hyperbolic discounting.** Hyperbolic discounting is a tendency to prefer more immediate pay-offs. Often associated with economic gains, it is proven as a psychological phenomenon with implications for military planning. Commanders should prepare to invest in longer-term, higher pay-off strategies rather than the proven tendency to bias towards the short-term pay-off. This is a significant issue in security and stabilisation, but relatively short operational tours and political imperatives can create pressure to seek short-term (but lower overall yield) pay-offs.
- **Information.** We tend to seek too much information even when it cannot influence a course of action or analysts already have more than they can digest. Analysts often need more useful information – such as reliable human intelligence – to develop better understanding. Information supporting an existing hypothesis reinforces this bias; information that weakens it is often judged unreliable or anomalous.
- **Choice supportive.** We tend to remember our choices as better than they actually were or to view our past performance through ‘rose-tinted glasses’. Surveys indicate that we generally perceive our own actions as the cause of our successes, but not of our failures. Self-awareness that this is the case is the only safeguard.
- **Blind spot.** Some people fail to compensate for blind spots in their own cognitive biases, even when aware of them. Open planning cultures and thorough staff procedures are good defences.
- **Distinction.** Distinction is a tendency to view two options as more dissimilar when evaluating them simultaneously than when evaluating them separately. This has implications when reviewing and selecting operational courses of action.

Bias (continued)

2B

- **Extreme aversion.** Extreme aversion is an inclination to avoid extremes by choosing an option that is an intermediate choice. This can also affect course of action selection if there are obvious extremes of risk between the proposed courses.
- **Focusing effect.** People can focus too intently on one aspect of an event, introducing errors in predicting the overall utility of a future outcome.
- **Irrational escalation.** This is a tendency to make irrational decisions based upon rational decisions in the past or to justify actions already taken.
- **Mere exposure.** Mere exposure effect is a predisposition to express undue liking for things because of familiarity. Commanders should guard against a natural tendency to engage too deeply in subject matters with which they are familiar or expert; their comfort zones.
- **Neglect of probability.** Neglect of probability is an inclination to disregard probability when making decisions under uncertainty.
- **Omission.** Omission is a tendency to judge harmful actions as worse or less moral than equally harmful omissions or inactions. Commanders must on occasion be cruel to be kind and show the moral courage to take difficult, but necessary, action.
- **Zero-risk bias.** There is a preference for reducing a small risk to zero over a larger but incomplete reduction of a bigger risk.

Bias (continued)

Heuristics are cognitive rules of thumb that allow us to make the rapid mental calculations that are necessary for quick decisions and responses. They are shortcuts, tried and tested in survival situations, but as they lack rigour they do not work in all situations. They act as a sort of mental anchor that makes it difficult to escape their influence. For example, in many cases a quick estimate of the frequency of an event is sufficient to get an idea of how likely it is to occur, so you do not need to go to the trouble of calculating a statistical probability. It requires conscious thinking and significant effort to overcome such an innate rule of thumb and disassociate, in this example, frequency with probability.

Our brains attempt to avoid cognitive overload by using learned or innate thinking strategies known as heuristics.⁶⁵ These mental shortcuts reduce the burden on cognitive resources but have significant limitations and risks.

Heuristics

- **Anchoring and adjustment.** Our brains often anchor mentally onto specific information or values and adjust for other factors. This could occur, for example, when an intelligence analyst or a commander moves to a new appointment and is responsible for updating judgements or estimates made by a predecessor. The previous analyst's work acts as an anchor and, once set, it introduces an unconscious shift toward that value and a tendency to give other aspects of the problem insufficient weight.
- **Availability, similarity or familiarity.** Availability, similarity and familiarity are technically discrete but practically similar heuristics describing how we associate past experiences with a current situation. They can explain how we tend to predict the frequency of an event depending on how easily an example can be brought to mind. For example, if asked to rate the probability of a variety of causes of death we tend to rate newsworthy causes as more likely because we can more readily recall an example from memory. Recent media coverage can therefore influence our choice of example and leads to flawed judgement. Over-reliance on current or recent operational experience falls into this category. Although past experience can bring significant value, we must apply it in the correct context.

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65 A method of solving a problem, for which no formula exists, based on informal methods or experience.

- **Naive diversification.** If asked to make several choices at once we tend to diversify more than if making the same type of decisions sequentially. Thus, three courses of action developed simultaneously by a commander to answer an operational problem will be illogically more diverse than three developed sequentially.
- **Affect.** Individual feelings can affect the decisions we take. Feelings such as fear or happiness are shorter in duration than moods and can occur rapidly and involuntarily in response to a stimulus. This is particularly relevant to our perception of the risks associated with a course of action. A positive affect could lead to a perception of lower risk and higher benefit, even when illogical for the situation. The implication is that a strong emotional response to a stimulus can alter our judgement and decision-making, even if subsequent facts weigh against it. Safeguards might include sleeping on the problem to allow re-appreciation, without the emotion that accompanied its initial inception.
- **Recognition.** If we recognise one of two objects, but not the other, we infer that the recognised object has the higher value. This heuristic applies more broadly to comparison of the relative frequency of two categories. If we recognise one category, but not the other we can wrongly conclude that the recognised category has a higher frequency of occurrence. Narrow experience exacerbates this and the study of military history is a reasonable, if limited, mitigation technique.
- **Contagion.** The contagion heuristic leads us to avoid dealing with people, objects or facts associated by previous experience with someone or something considered bad. Less frequently, it can lead to association with people, objects or facts that have been in contact with people or things considered good.
- **Effort.** The effort heuristic reflects the tendency to assign a value to something based on the amount of perceived effort that went into producing it, for example, deep personal involvement in an intelligence hypothesis or an operational course of action. Alternatively, if a goal is of little importance the amount of effort we are willing to put into it will be lower.

Heuristics (continued)

Heuristics (continued)

- **Peak-end rule.** We judge our past experiences almost entirely on how they were at their peak – pleasant or unpleasant – and how they ended. Other information, including the net pleasantness or unpleasantness and how long the experience lasted, is not lost but it is generally not used for future judgements.
- Our subconscious processing is adept at creating links to make sense of situations. Different ideas and memories, which may not have been related, are associated into new groupings, sometimes called patterns of meaning. These processes have a particular knack for filling in where information is missing to create a pattern that makes sense. This form of sense-making underpins our ability to make inferences, to be innovative and to understand the world. Unfortunately, this great capacity for creating holistic patterns from pieces of information can also go wrong when our strong drive to make sense causes imperfect memories to be reconstructed and false memories can be created.
- We occasionally make sense of something suddenly without knowing how and label it intuition, insight or creativity. This is the product of subconscious sense-making. It may be the result of a build up of experience providing effective patterns (which is typical of a commander's intuition), or it may be the result of an instant connection made subconsciously that completes a new pattern: the 'light bulb moment'.

Subconscious sense-making

Notes

2B

Lexicon

Acronyms and abbreviations

AAP	Allied administrative publication
AJP	Allied joint publication
DCDC	Development, Concepts and Doctrine Centre
FSA	full spectrum approach
ISAF	International Security Assistance Force
JDN	joint doctrine note
JDP	joint doctrine publication
JIPOE	joint intelligence preparation of the operating environment
MOD	Ministry of Defence
NATO	North Atlantic Treaty Organization
RAF	Royal Air Force

Terms and definitions

collective understanding

The shared perspective held by members of distinct groups who have their own ethos, creed and identity. (JDP 04)

common understanding

The ability to comprehend perceptions of groups other than our own and to establish a common baseline for communication, interpretation and action. (JDP 04)

creative thinking

The examination of problems or situations from an original or unorthodox perspective. (JDP 04)

critical analysis

The intellectual discipline that applies deliberate introspective judgement to interpret, analyse and evaluate a problem and explain the context upon which that judgement is based. (JDP 04)

Defence Engagement

The means by which we use our Defence assets and activities, short of combat operations, to achieve influence. (JDN 1/15)

fusion

In intelligence usage, fusion is the blending of intelligence and/or information from multiple sources or agencies into a coherent picture. The origin of the initial individual items should then no longer be apparent. (AAP-06)

hard power

The threat or use of military or economic coercion or physical effect to achieve influence. (JDP 04)

horizon scanning

In intelligence usage, horizon scanning is the systematic search across the global environment for potential threats, hazards and opportunities. (JDP 04)

individual understanding

The personal interpretation of the facts held by a person within their own mind. (JDP 04)

operating environment

A composite of the conditions, circumstances and influences that affect the employment of capabilities and bear on the decisions of the commanders. (AAP-06)

situational awareness

Generically, the understanding of the operational environment in the context of a commander's (or staff officer's) mission (or task). (JDP 0-01.1)

soft power

The ability to persuade or encourage others to adopt an alternative approach. (JDP 04)

understanding

In the context of decision-making, understanding is the perception and interpretation of a particular situation in order to provide the context, insight and foresight required for effective decision-making. (JDP 04)



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