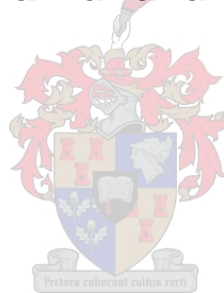


Intelligence Analysis in the Knowledge Age

**An Analysis of the Challenges facing the Practice of Intelligence
Analysis**

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Thesis presented in fulfilment of the requirements for the degree of
Master of Philosophy
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DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously submitted it for obtaining any qualification.

Date: 12 February 2010

Afrikaanse Opsomming

Die internasionale intelligensie gemeenskap steier steeds na verskeie intelligensie terugslae die afgelope dekade. Voorstelle om intelligensie analise te verbeter het weinig impak terwyl analiste, hulle bestuurders en organisasies voortgaan om vas te hou aan uitgediende bedreigingspersesies, analitiese metodes en organisatoriese strukture en kulture. Deur die lens van Kennis Bestuur, poog hierdie verhandeling om die verskeie uitdagings wat die Intelligensie Analise praktyk in die Kennis Era in die gesig staar, te identifiseer. Eerstens word bestaande teorieë en konsepte in Intelligensie Analise met dié in Kennis Bestuur vergelyk en die moontlikheid van 'n nuwe woordeskat vir intelligensie word bespreek. Die tweede uitdaging vir intelligensie analiste is om by die nuwe wêreld en versnellende verandering aan te pas. Hulle word nou gekonfronteer met 'n bedreigingsprent wat veelvlakig, kompleks en multi-dissiplinêr is. Die derde uitdaging is om die bestaande analitiese metodologieë, hulpmiddels en tegnieke te herwaardeer in die lig van hierdie nuwe wêreld. Die vierde uitdaging is om na ander dissiplines, insluitend dié van Kennis Bestuur, uit te reik sodat Intelligensie Analise verbeter kan word deur die toepassing van hierdie dissiplines se analitiese metodes (beide intuitief en gestruktureerd), hul kognitiewe en samewerkings modelle, sowel as organisasie struktuur konsepte. Laastens word geargumenteer dat Intelligensie Analiste dalk gereed is om hulself te vernuwe, maar dat hul intelligensie organisasies nie 'n nuwe intelligensie paradigma kan ondersteun terwyl hulle voortgaan om bedreigingspersepsies, strukture en bestuurbeginsels toe te pas wat eerder by die Koue Oorlog tuis hoort nie.

English Summary

The intelligence community throughout the world is still reeling after several intelligence failures. Proposals to improve Intelligence Analysis have had little impact as analysts, their managers and their organisations continue to cling to outdated threat perceptions, methodologies and organisational structures and cultures. This thesis looks through the lens of Knowledge Management at the various challenges that the Intelligence Analysis practice is faced with in the Knowledge Age. Firstly, theories and concepts from Intelligence Analysis are challenged when compared with those in Knowledge Management and the possibility of applying new vocabularies in intelligence is discussed. The second challenge intelligence analysts face is to understand and adapt to the changed world with its connected, non-linear and rapidly unfolding events and patterns which broadens their scope to a multi-faceted, complex and multi-disciplinary threat picture. The third challenge is to re-look the existing analytical methodologies, tools and techniques, realising that these are most probably inadequate in a complex environment. The fourth challenge Intelligence Analysis faces is to reach out to other disciplines and assess how new analytical techniques, both intuitive and structured, as well as cognitive models, collaborative and organisational structure concepts from within the Knowledge Management discipline can improve Intelligence Analysis' grasp of the Knowledge Age. In conclusion, it is argued that intelligence analysts might be ready to reinvent themselves to address Knowledge Age issues, but that intelligence organisations are not able to support a new intelligence paradigm while still clinging to threat perceptions and structures befitting the Cold War.

Dedication

I would like to dedicate this thesis to my husband, Awie, for his unwavering support and patience when I struggled to find balance between my studies and the demands of being a mom and entrepreneur.

To my sons, Armand and Cornel, this thesis bears testimony that studies can be fun and rewarding when you love what you're doing. I hope you fulfil all your dreams!

Prof Johan Kinghorn, my study leader, allowed me enough leeway to exploit a new topic - the nexus between Knowledge Management and Intelligence Analysis. I am grateful for his enthusiasm and guidance.

My friends and colleagues, both from South Africa and those overseas, have added value and insight to my arguments - giving this thesis a much broader application value than what I could have achieved on my own.

Above all, the faithfulness of my Lord, Jesus Christ, has proved yet again infallible – I am truly blessed!

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CHAPTER 1

Introduction

“In this rapidly changing and volatile world, the expectations required of those in the intelligence discipline are high - knowledge of the hidden and foreknowledge of the unpredictable.”

Edward Waltz¹

We are living in an age where the landscape is characterised by accelerating change, rising uncertainty and increasing complexity.² Our survival, to a large extent, depends on our ability to understand, interpret and act using our skills, experience and knowledge. The global intelligence community, those structures and organisations responsible for providing *foreknowledge* to decision-makers, has been catapulted into a new era where Thomas Friedman’s metaphor of the flat earth³ has become a stark and threatening reality.

The conflict space is now global and extends across the physical, symbolic, and cognitive realms.⁴ Governments, their security apparatus and other non-state actors function within an era where the compression of time and space and the easy movement of people, weapons, toxins, drugs, knowledge and ideas have become the norm. Intelligence organisations, whether in or outside the government, find it difficult to understand and provide warning on complex, asymmetric, real and emerging threats and risks.

Few countries, companies, groups and even individuals in today’s globalised world have escaped the intangible consequences of a post-9/11 world, namely, a new, trans-national and globalised security risk, heightened public awareness of the role of intelligence and the rapid spread of ideas, ideologies and alliances on local, national and international security and other issues. Bilateral and multilateral intelligence cooperation have increased significantly on topics such as counterterrorism, economic and food security, organised crime, corruption,

¹ Waltz, Edward. 2003. *Knowledge Management in the intelligence enterprise*, xiii

² Bennet, Alex and David. 2004. *Organizational survival in the New World: The Intelligent Complex Adaptive System*, 17

³ Friedman, Thomas L. 2006. *The world is flat: the globalized world in the twenty-first century*

⁴ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 8

health risks, military and peace-keeping issues, technological advances and other shared concerns.

Never before has intelligence, and specifically Intelligence Analysis, been so exposed to public scrutiny and discourse. This has been the case especially in the US, where the 9/11 “post mortems” mainly focused on organisational and systemic reform, but more importantly, raised questions about the traditional, secret “need to know” intelligence paradigm. The new environment made it imperative for all stakeholders in intelligence, on all levels, to share intelligence and study improved ways to develop insight in the new era and anticipate surprises.⁵

Moreover, intelligence is not the lone prerogative of governments and their secret organisations anymore. It has become a critical success factor for all the actors on the world stage like multi-national corporations, non-governmental organisations (NGOs) and smaller interest groups that have become more powerful than the traditional nation-states. From being regarded with scepticism and surrounded by myths found in books and movies, intelligence is now practised in business, the public and private sectors - wherever the two factors of power and competition exist.⁶ The veil of secrecy around intelligence tradecraft, especially Intelligence Analysis is gradually lifting.

1.1 Focus of the thesis

With the increased focus on intelligence, and Intelligence Analysis in particular, this thesis considers how Intelligence Analysis as a discipline meets the challenges posed by the new knowledge landscape. Firestone and McElroy’s comment that “there is no more important, more urgent need for the new Knowledge Management than in the intelligence business,”⁷ illustrates the seriousness with which those outside the conventional intelligence community regard the situation. With the emphasis on knowledge organisations in the Knowledge Age, and the growing importance of intelligence, the question is posed about those challenges Intelligence Analysis, as the nexus of knowledge creation in the intelligence organisation, faces and how they are met, if at all?

A literature study of Knowledge Management, intelligence and Intelligence Analysis was undertaken to determine what the impact of the Knowledge Age landscape is on Intelligence

⁵ George, Roger Z. 2007. *Studies in Intelligence*, 51(3)

⁶ Marrin, Stephen P. 2007. *Intelligence and National Security*, 2(1), 828

⁷ Firestone, Joseph M and McElroy, Mark W. 2003. *Key issues in the New Knowledge Management*, 327

Analysis as a discipline or profession and to what extent it has adapted or not, to the new context. The purpose was to develop an *overview* or bird's eye view of this landscape and not delve in the details, many of which might prove to be interesting research topics in themselves. Challenges in this new landscape that will be addressed are:

- understanding the concepts and distinctive vocabularies of the new landscape;
- understanding the changed world;
- evaluating current analytical methodologies to determine their aptness for the new landscape and
- reinventing Intelligence Analysis by adapting paradigms, concepts and practices from Knowledge Management that suit the new reality more appropriately.

1.2 Literature study

The literature study in itself was challenging as the viewpoints of scholars and leaders had to be brought together to address the wide scope of the research question, without going into too much depth. Although Knowledge Management has grown rapidly as a multidimensional discipline during the last 20 years with contributions by various scholars, publications in journals, and an emerging epistemology, Intelligence Analysis is still very young and disorganised. To a significant degree, scholars and practitioners still disagree on definitions and taxonomies and whether intelligence can justifiably be recognised as a discipline.⁸ Despite this, the body of knowledge in the field of Intelligence Analysis has grown exponentially over the last 7 years, fuelled by intelligence-relevant events and the increased interaction between scholars and practitioners. There is sufficient overt and academic material available that makes the use of covert or classified material for this type of study unnecessary.

The “father of Intelligence Analysis”, Sherman Kent, in 1955 stated that although intelligence has taken on the aspects of a discipline with a recognisable methodology, vocabulary, and a body of theory, doctrine and techniques, it lacked literature.⁹ Fifty years later, literature on

⁸ There are three international peer-reviewed journals dedicated to intelligence and intelligence studies, while various other journals in the social and technological sciences publish intelligence-related articles regularly. At least 30 public and private universities and colleges worldwide offer intelligence as undergraduate and postgraduate studies, some of them solely dedicated to Intelligence Analysis, while there are at least five professional intelligence organisations, some with their own professional certification processes. Most intelligence organisations in the traditional secret governmental domain have their own training institutions. Other interest groups loosely associated by their interest in intelligence matters, not necessarily aiming at professionalism, number about 45. See <http://www.iafie.org>

⁹ Kent, Sherman. 1955. *Studies in Intelligence* 1(1),1. Kent, a former Yale history professor who became the head of the CIA's Office of National Estimates, had a major influence on the practice and academic study

intelligence and Intelligence Analysis continues to favour practice to theory, and there are constant debates on the feasibility of standardising intelligence theory. Marrin¹⁰ posits two reasons for the failure to develop intelligence theory: 1) the fact that consensus has not yet been reached on definitions which are the precursors for theory formulation, and 2) as intelligence is an applied field, the practitioner has a natural “distaste for theorising”. Another reason for the “absence” of an agreed-upon theory on intelligence might be the postmodernist rejection in the search for grand, unified theories of society as well as knowledge in favour of fragmented “world-views”.¹¹

A limiting research factor is the fact that the literature on intelligence and Intelligence Analysis in particular, focuses mostly on current events and the discipline as espoused in the United States, and to a lesser extent in some European countries and Australia. Very little has been written on intelligence in Africa from an African perspective. Despite these manifestations, the rapidly growing literature on Intelligence Analysis (albeit mostly based on the discipline in the US) provides a realistic picture of this evolving practice and academic discipline. The debate on the future of Intelligence Analysis in the US is, understandably, universally relevant. This thesis therefore presents both current and future trends, as well as issues and methodologies which, if not already a reality, will in due course become so for most intelligence analysts and their organisations, also in South Africa.

The author’s interaction with intelligence organisations from other countries has confirmed that intelligence analysts worldwide experience common problems and face similar challenges. These include the understanding and interpretation by management of the nature of intelligence and therefore the effective use of analysis in decision-making as well as the level of knowledge and application of analysis methodologies, tools and techniques for different clients, contexts and intelligence products.¹²

of Intelligence Analysis. His book, *Strategic Intelligence for American World Policy*, written in 1949 and reprinted, was instrumental in formalising analytical tradecraft and methodologies. The CIA named its analysis training institute after Kent.

¹⁰ Marrin, Stephen P. 2007. *Intelligence and National Security*, 2(1), 822

¹¹ Rathmell, Andrew. 2002. *Intelligence and National Security* 17 (3), 97-104

¹² Disclosure: The author’s career in the South African civilian intelligence and membership of professional international intelligence organisations required liaising with intelligence analysts and/or their managers from all domains of intelligence (foreign intelligence, domestic intelligence, law enforcement, military and business) from countries such as the US, UK, Netherlands, Mexico, Cuba, India, Australia, Ireland, Northern Ireland, Nigeria, Namibia, Chile and others.

CHAPTER 2

New vocabulary and concepts

So how, apart from adapting to a new vocabulary, is the intelligence community going to achieve the transformation it advocates?

Linda Popova¹³

This chapter aims at establishing a conceptual basis from which Intelligence Analysis in the Knowledge Age can be understood. Firstly, intelligence and related terminologies are explained, after which intelligence in the recent South African context is discussed to anchor later recommendations for the African context. Knowledge Management (KM) concepts are then dealt with, focusing on the three so-called generations of KM, and referring to relevant Intelligence Analysis practices. In conclusion, Intelligence Analysis is defined as knowledge work, which has implications for the way the discipline and its practitioners are regarded.

2.1 Intelligence

Intelligence is sometimes described as a “much abused” term in both scholarly literature and official discourse. This is in part due to the fact that national and institutional differences of perspective exist, complicating the search for definitions.¹⁴ Broadly speaking, intelligence can be defined in three contexts:

2.1.1 Intelligence as organisation¹⁵

Here intelligence refers to those functional organisations established by national law (or not) to conduct activities related to information-obtaining or denying the associated secret means by which this is done. Waltz coined a new term, the “intelligence enterprise” which includes the collection of people, knowledge (both internally tacit and explicitly codified),

¹³ Popova, Linda. 2008. *Cultural Revolution in Intelligence: From Government to Business Enterprise*. <http://www.isn.ethz.ch/isn/Current-Affairs/Special-Reports/The-Revolution-in-Intelligence-Affairs/Analysis/>

¹⁴ Rathmell, Andrew. 2002. *Intelligence and National Security* 17(3), 97-104

¹⁵ Shulsky, Abram N. 1993. *Silent Warfare: Understanding the World of Intelligence*, 3 and Lowenthal, Mark M. 2003. *Intelligence: From Secrets to Policy*, 9, Goldman, Jan. 2006. *Words of Intelligence: A dictionary*, 78-79

infrastructure, and information processes that deliver critical knowledge (intelligence) to the customers. This intelligence enables them to make accurate, timely and informed decisions to accomplish the mission of the enterprise.¹⁶

Lowenthal¹⁷ states that the main role of intelligence is to reduce uncertainty, which is problematic in itself. Policy or decision-makers usually want to know what is happening as well as what is likely to happen. More often than not, they require that intelligence organisations tell them exactly what *is* going to happen, ignoring the fact that intelligence does not exist to provide definitive answers or necessarily to point to winning or losing policy choices. He cites four reasons¹⁸ why intelligence organisations exist:

- *To avoid “strategic surprises”* - those threats, forces, events and developments that are capable of threatening a nation’s existence, and are mostly totally unexpected. Most of these *surprises* were of a military nature in the past, such as the Yom Kippur War in 1973. He contrasts these with tactical surprises, where there are signals or forewarnings of possible events, such as the 11 September 2001 US terrorist attacks where there were indications of heightened activity and threats but not sufficient collection and sharing of intelligence. Quite a lot has been written about intelligence “failures” since the attacks, mostly by those outside the intelligence arena who argue that the intelligence community in the US, and elsewhere, failed in their task. The reality, however, is that the complex interplay of various factors contributes to the imperfect nature of intelligence warning.¹⁹ These include limited collection (such as insufficient penetration of targets), faulty and incomplete analysis, the nature of communicating nuances of uncertainty, the decision-maker’s own perception and policy preferences, and organisational and

¹⁶ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 17

¹⁷ Lowenthal, Mark M. 2008. *Intelligence and National Security*, 23(3), 313

¹⁸ Lowenthal, Mark M. 2003. *Intelligence: From Secrets to Policy*, 2-5

¹⁹ See the analysis of Dahl, Erik. 2004. *Warning of Terror: Explaining the Failure of Intelligence against terrorism* where he critiques the “traditional” views of intelligence failures as aspects relating to the decision-maker, the intelligence itself, the deception of enemies, and the “information age optimist” view that better collaboration, data mining and technological tools might prevent intelligence failures. He proposes the use of the “Normal Accident Theory” of Perrow who argues that accidents and failures in complex, tightly coupled systems are inevitable, largely because it is impossible to anticipate all possible failures. Dahl states that efforts to improve the intelligence system are just as likely to make things worse than improve them and that much of current intelligence theory may be misguided in its emphasis on psychological factors and problems of cognition. His conclusion is that normal accident theory suggests that while intelligence failures may be *caused* by the classic problems of intelligence, the *inevitability* of failure may be the result of the complex nature of the intelligence system, 71

cultural issues. Lowenthal proposed a “recalibrating of expectations”²⁰ of what intelligence can do.

- *To provide long-term expertise and stability* to political appointees and decision-makers whose terms of office are often short-lived.
- *To support the policy process* because policy makers and decision-makers constantly need tailored and timely intelligence that will provide background, context, information and warning, as well as an assessment of the risks, benefits and the likely outcomes. The extent of support to the policy process differs from country to country, but in most democracies there is a strict dividing line between politics and intelligence. Although politicians are allowed to cross this line by dismissing, ignoring or offering their own intelligence, intelligence officers must maintain their distance and may not enforce specific policy outcomes or choices.
- *To maintain the secrecy of information, needs and methods.* Whether in national security/governmental context or in business, information exists that is not readily available through overt means and which is crucial to the organisation’s overall success. Intelligence organisations or units exist both to protect those secrets from disclosure to competitors *and* attempt at obtaining them from counterparts. Most national security intelligence organisations monopolise secrets for the government and its secret services. The irony is that governments have *never* been the sole custodians of secrets or intelligence. Collecting secrets from human sources are not unique to governments and their intelligence agencies as individuals and business have done that for centuries to survive or prosper. It is estimated that up to 95% of all intelligence is available from overt sources, at least since the 1990s with the commencement of the Information Revolution.²¹ A grey area, however, is that of obtaining secrets by clandestine means. In many countries, also in South Africa, only government agencies are allowed by law to obtain information through interception and other technical measures. However, the technology is now freely available, and statutory limitations have limited impact where (outdated) laws are not enforced.

²⁰ Lowenthal, Mark M. 2008. *Intelligence and National Security*, 23(3), 314

²¹ Steele, Robert D. 2002(a). *The New Craft of Intelligence: Personal, Public, & Political*, 148

2.1.2 Intelligence as an activity or process²²

Intelligence can be thought of as the process by which certain types of information are required and requested, collected, analysed, and disseminated; and as the way in which certain types of covert actions are conceived and conducted. Berkowitz equates the intelligence community with that of a Weberian “classic bureaucracy”, characterised by centralised planning, routinised operations and a hierarchical chain of command, which leaves it “ill suited for the Information Age”. The bureaucratic model manifests itself in the traditional intelligence cycle, resembling an assembly line.²³

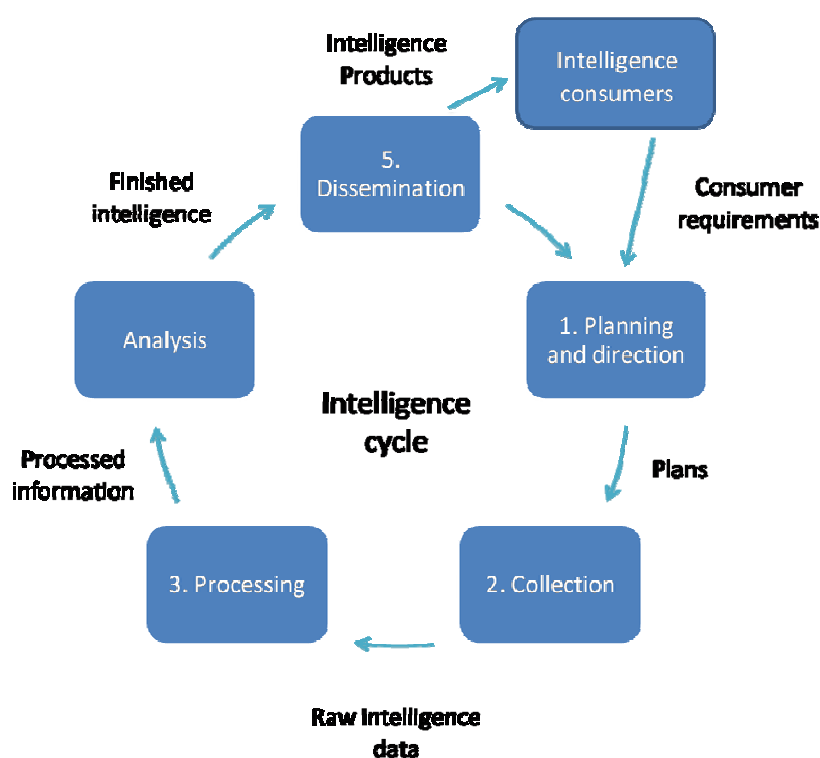


Figure 1: Intelligence Cycle²⁴

In this *traditional intelligence cyclic* model (Figure 1), taken from the military intelligence apparatus of the US in the 1940s, the process starts with the intelligence consumer requesting information from the intelligence organisation. The intelligence community then sets out those policy requirements in distinct priorities, plans according to its resources and provides collection plans to the collecting divisions. The latter then collect information from various

²² Shulsky, Abram N. 1993. *Silent Warfare: Understanding the World of Intelligence*, 3 and Lowenthal, Mark M. 2003. *Intelligence: From Secrets to Policy*, 9, Goldman, Jan. 2006. *Words of Intelligence: A dictionary*, 78-79

²³ Berkowitz, Bruce D. and Goodman, Allan E. 2000. *Best Truth: Intelligence and Security in the Information Age*, 67-73

²⁴ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 34

sources²⁵ and provide the raw information to the processing divisions responsible for the translation or decryption (if necessary). The information is then indexed and captured in the databases before this processed information is forwarded to the analysis divisions where they evaluate the information according to reliability, timeliness and relevance to the original tasking. The information is thereupon analysed and intelligence products drafted according to a preset product range extending across current, operational or strategic “finished” intelligence. These products are then disseminated, usually in written format or briefings to the consumer/client.

There has, understandably, been much criticism over the past eight years or so in the intelligence community and academia of the accuracy of the “cyclical” framework. Some of the criticisms voiced were that in reality there is little, if any interaction between the decision-makers and the intelligence producers. Decision-makers do not “give guidance” or stipulate their requirements. Collection divisions would also often not wait for tasking or collection plans; they are sometimes the first to identify salient issues and report on them. Collection and analysis therefore usually work in tandem, and not sequentially. In crisis situations, some steps in the intelligence cycle are by-passed, creating half-finished or unfinished intelligence products. In many instances, especially in those countries and cultures where there is no separate, dedicated analytical function, or where extreme need-to-know silos exist, all information does not enter the cycle, but might go directly to the decision-maker.²⁶ More often than not, the analysis function’s interpretative role in the traditional cycle has created an elitist attitude and arrogance among analysts and their managers. Analysts like to call themselves the “nexus” of the intelligence process, forgetting that without good information from grassroots level, there will be little to analyse.

Treverton’s *real intelligence cycle*²⁷ (Figure 2) is driven by intelligence “pushing”, and not by policy “pulling”. He excludes the decision-maker from the process as the latter does not have the time or patience to articulate his requirements. In this model, the intelligence organisation

²⁵ Sources of information can be divided in two main categories: 1) open and 2) covert. Open, readily available human and technical source intelligence (OSINT), is the mainstay of intelligence collection. Covert sources include HUMINT (of which the most risky and difficult are human sources, either occasional or clandestine/under-cover) and TECHINT (information from technical sources which includes imagery intelligence (IMINT), signals intelligence (electromagnetic signals for electronic data – SIGINT), and measurements and signatures intelligence (typically to do with the range of sonar detection applications – MASINT).

²⁶ See Hulnick, Arthur S. 2006. *Intelligence and National Security*, 21(6), 962 and De Valk, Guillaume. 2005. *Dutch Intelligence - Towards a Qualitative Framework for Analysis*. 13, 14

²⁷ Treverton, Gregory F. 2001. *Reshaping National Intelligence in an Age of Information*, 106

infers its needs and goes about its task – ensuring better understanding in the heads of the people who must decide or act, not necessarily producing “products”. Treverton’s model has feedback loops or responses between the different segments, ensuring a flatter hierarchy and timely response to anticipated policy needs.

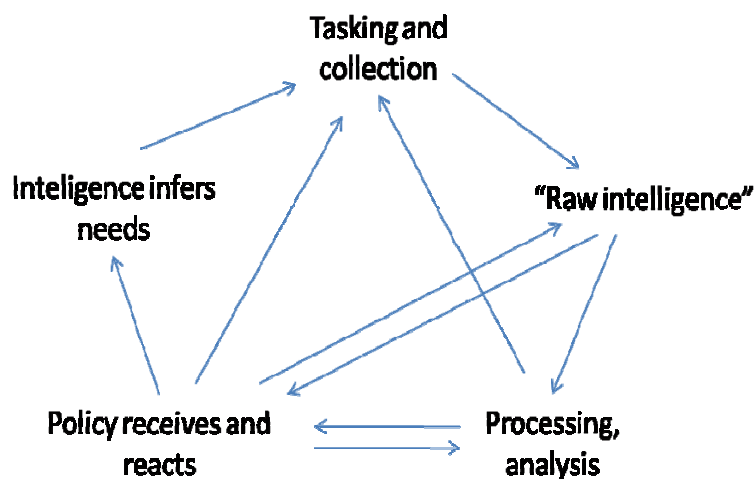


Figure 2: Treverton's "Real" Intelligence Cycle²⁸

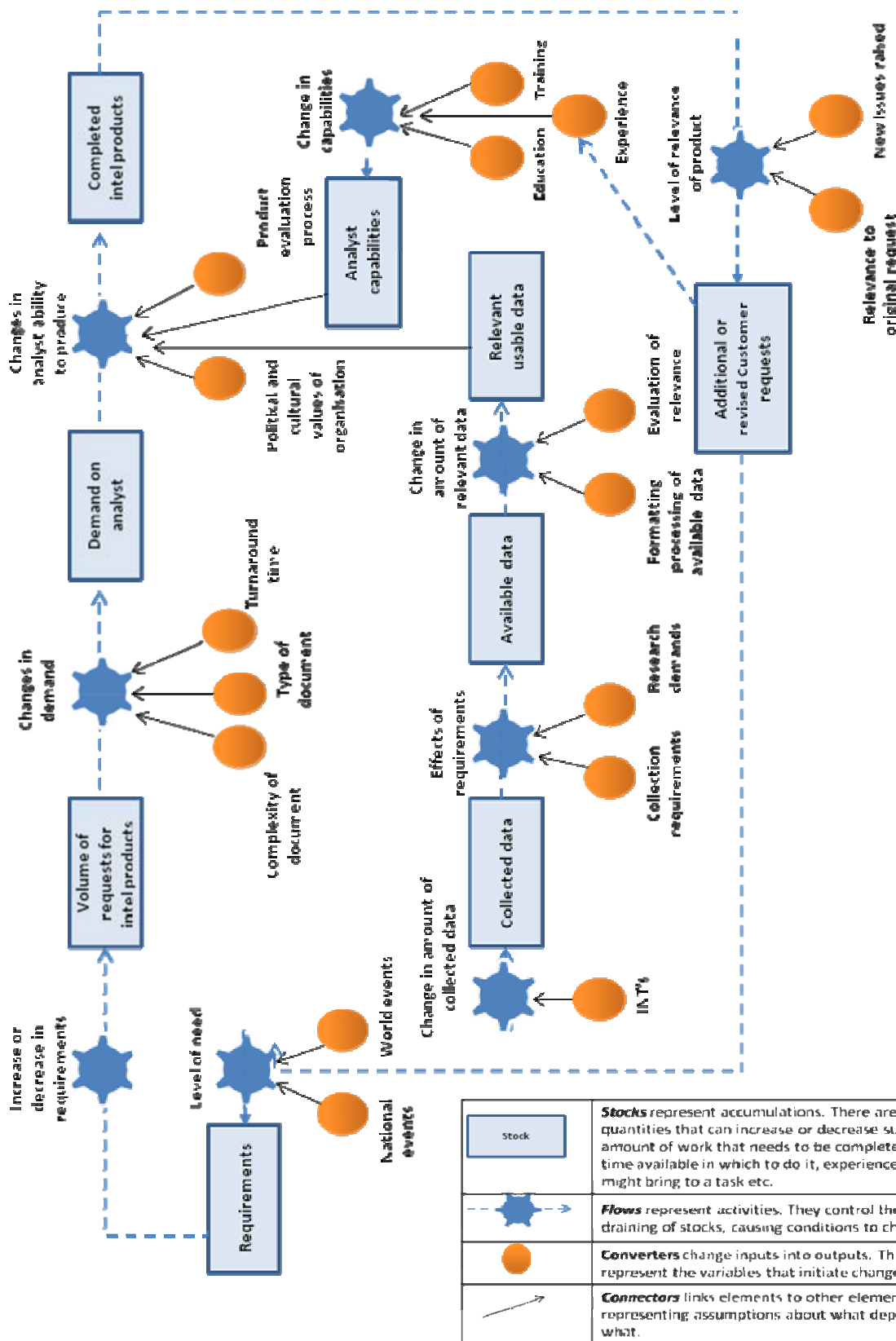
Johnston designed a *systems model of the intelligence cycle* (Figure 3) is an attempt to explain intelligence as a process in a systemic, complex environment. This three-section model (demand, production and product influences) also identifies factors that can influence the successful and timely completion of an intelligence task.²⁹

As in the traditional Intelligence Cycle Model, the systems model begins with *requirements* for information from the different stakeholders or decision-makers. These requirements are represented by a *stock* (found in the upper left-hand quarter of the diagram) because they can increase or decrease, based on the level of need for information (a *flow*). The change in the level of need stems from national and world events, as well as new questions or requests for clarification of items in previously delivered products. Each request is dealt with differently and entails different volumes of work. Again, the latter is influenced by the types of documents or products requested, the complexity of the products, and the turnaround time imposed.

²⁸ Treverton, Gregory F. 2001. *Reshaping National Intelligence in an Age of Information*, 106.

²⁹ Johnston, Rob. 2005. *Analytic Culture in the US Intelligence Community: An Ethnographic Study*. 50-55

Figure 3: Johnston's Systems Model of the Intelligence Cycle³⁰



30 Johnston, Rob. 2005. *Analytic Culture in the US Intelligence Community: An Ethnographic Study*, 52.

The *Production* section focuses on the process of producing intelligence products. This section of the model deals with numerous and complex factors that influence the *act* of analysis. These are: 1) the capabilities an analyst brings to the task - a *stock*, usually an increasing one, that is derived from an analyst's education, training and experience; 2) the number and frequency of evaluations and reviews of products that have a constraining effect on the timeliness and relevance of a product, especially when it is of immediate concern; 3) political and cultural values of the organisation which also have a constraining effect; 4) the amount of relevant, usable data (a *stock*) available which is in turn influenced by a variety of *other* people, organisations, systems and technologies. This process is represented by the stock-and-flow chain that appears across the middle of the diagram.

The *Product Influences* section is in actual fact the feedback loop of the system where the consumer responds to a delivered product, revising his initial requirements and setting the systemic phases in action again.³¹

Each iteration of the process is different, because those inside the system have changed due to their interaction with one another and the variables in the system, whether with the customer, the topic area, or the organisation and its processes. The changes are a manifestation of the concept that the system is greater than the sum of its parts.

From yet another perspective on intelligence as a process, Clarke³² designed a *target-centric approach* (figure 4) which is not a linear process or a cycle (despite the many feedback loops within) but a network-centric collaborative process. In this model, the goal is to construct a shared picture of the target from which all participants in the process can extract those elements they need to do their job and contribute from their own contexts to create a more accurate picture of the target.

The process would start with the problem the customers have regarding the current picture of the target (left middle element) and identify information needs. Analysts and collectors together share the same target picture and translate those needs into knowledge gaps or information requirements for those collectors to address. As collectors obtain the needed

³¹ It is interesting to note that Johnston is of the opinion that the consumer *does* actually provide feedback. The reality for most analysts is that there is hardly ever feedback, and that the system kicks into action due to various reasons, i.e. environmental scanning by either the analyst or the collector through which a new issue or trend is identified, new information or insights gained that change the value, context or impact of existing information, or when an anticipated future need of the client is identified by the intelligence officer.

³² Clark, Robert M. 2003. *Intelligence Analysis: A Target-Centric Approach*, 17-27

information, it is added to the shared picture of the target, after which the analysts provide the customers with answers and actionable intelligence. They then add to the picture again by identifying new needs and the process starts again.



Figure 4: Clarke's Target-Centric Intelligence Process³³

The model will mainly work in operational and networked environments where the client has access to the picture of the target and can offer an interpretation of it to those collectors and analysts working on it. This approach will save quite a lot of time, as the “picture” of the target is most probably a shared database or other technological collaborative platform. However, in more traditional set-ups, the client is far removed from the operational environment and does not share viewpoints on the target. This network-centric view, while better enabling an understanding of the new challenges of transnational targets, still emphasises a predictable, but changing series of communication channels and actors.³⁴

Although the intelligence cycle is not a true reflection of the realities intelligence analysts face everyday, it is a useful, simplified tool to introduce the uninformed and novice to the very essence of the intelligence process. The other models described are definitely improvements and should stimulate a re-investigation of what the intelligence process should approximate in the Knowledge Age.

³³ Clark, Robert M. 2003. *Intelligence Analysis: A Target-Centric Approach*, 18

³⁴ Ayoub, Phillip J, Petrick, Irene J, and Mcneese, Michael D. 2007. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 314

2.1.3 Intelligence as a product³⁵

The third context in which intelligence can be defined is that of the product of these processes; a body of information and conclusions drawn from that which is acquired and furnished in response to the known or perceived requirements of a client. It is often derived from information that may be concealed or that is not intended to be available for use by the acquirer.

In Intelligence Analysis, there are three types of intelligence products:

- *Operational intelligence*, which assists and directs the collection or investigation on an ongoing basis and where the analyst is usually part of the investigating team. Typical products include memorandums, operational plans and status reports, as well as visual analytical aids such as network/association charts, etc.
- *Current intelligence*, which contextualises “snapshots” of an event or issue for the client and ranges in length from between a paragraph to two to three pages.
- *Strategic intelligence* which provides the client with estimative and/or warning by presenting medium- to long-term analyses on the nature, dynamics and impact of an event or issue. Some clients prefer analyses that spell out options as well as their possible consequences, while others prefer only to have the analyst’s input on an issue without policy “advice”.

The focus on the “product” or output context of intelligence broadens the definition of intelligence to include that specific type of information that has been analysed and evaluated and which provides foreknowledge to a client or decision-maker. *This expands the actors, rules and tradecraft beyond the traditional nation-state viewpoint.* Waltz³⁶ broadens the scope of intelligence to include other sectors by defining intelligence as “that knowledge that is deemed most critical for decision-making both in the nation-state and in business. In each case, intelligence is required to develop policy and strategy and for implementation in operations and tactics.” Wheaton³⁷ succinctly defines intelligence as “an information picture that is useful to a decision-maker”, opening up the application of intelligence to any sector

³⁵ Shulsky, Abram N. 1993. *Silent Warfare: Understanding the World of Intelligence*, 3 and Lowenthal, Mark M. 2003. *Intelligence: From Secrets to Policy*, 9, Goldman, Jan. 2006. *Words of Intelligence: A dictionary*, 78-79

³⁶ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 1

³⁷ Wheaton, Kristan J. 2001. *The Warning Solution: Intelligence Analysis in the Age of Information Overload*, 8

that needs and applies this information product context. However, with the broadening of the concept of intelligence, it has lost some of its original meaning and “flattened” as well. According to Agrell³⁸ the term “intelligence” has become a management catchword and he describes how information processing skills, media press cuttings and marketing have been renamed “intelligence”. Other examples where “intelligence” is confused with “information” is in the field of informatics, research or even electronic and hard-copy information dissemination for specific interest groups like designers, architects, computer professionals and even for interactive entertainment research purposes.³⁹

Business, however, has looked beyond and is now applying (and has probably done so for a very long time) intelligence as a management tool.⁴⁰ George Friedman, a former CIA analyst who started the respected private intelligence organisation, Strategic Forecasting (Stratfor) in the 1990s, explains in his book *The Intelligence Edge: How to profit in the Information Age* how the same intelligence principles also apply in the business domain. He uses the example of “Chief Knowledge Officers” whose task is identical to that of the head of an intelligence service that requires maximising the efficiency of data collection, collation and analysis. He calls these types of businesses intelligence agencies, dedicated to collecting information and turning it into knowledge.⁴¹ Together with strategic planning, intelligence in the business context provides knowledge and foreknowledge about current and emerging markets, technology, competitors and trends.

The dilemma with a broader definition of intelligence is that it increases the complexity of the system by including other, non-traditional role-players which import new dynamics as well as problems. On the one hand, an elitist, narrow approach is outdated as it is ignorant of the new environment and alienates other disciplines and theories from which intelligence and specifically Intelligence Analysis could learn. On the other hand, regarding mostly anything as intelligence, as indicated earlier, creates the danger of it becoming irrelevant. Intelligence, whether secret or open, governmental or privatised, will nonetheless remain an instrument of power and influence, even more so now in the Knowledge Age.

³⁸ Agrell, Wilhelm. 2002. *Sherman Kent Center for Intelligence Analysis Occasional Papers*, 1(4),5

³⁹ See <http://www.di.net>; <http://www.dfcint.com>, <http://www.intelligence.co.za> etc.

⁴⁰ Meyer, H.E. 1991. *Real-World Intelligence: Organized Information for Executives*, 7

⁴¹ Friedman, George, et al.1997. *The Intelligence Edge; How to profit in the Information Age*, 2-4

Aspiring to find the middle ground in this debate, intelligence, for purposes of this thesis, is *the result of a rigorous process that provides the decision-maker in all domains with knowledge and foreknowledge on priority issues.*

2.2 Intelligence in the recent South African Context

The South African intelligence history is closely related to its political history. Most of the emphasis since 1994 is on the “cloak and dagger”, dark side of intelligence and not on the professional, decision-making support aspect. The literature on South African intelligence is also sparse, and mostly focuses on the transition period and oversight issues. The new democratic government has found it difficult to define intelligence in the new constitutional democratic context. None of the Acts passed since 1994 provides a clear definition of what “intelligence” constitutes, but emphasises that intelligence is secret and should serve “national security”.

Only the White Paper on Intelligence gives a definition – using the *product* as a contextual definition of intelligence by stating that “intelligence refers to the product resulting from the collection, evaluation, analysis, integration and interpretation of all available information, supportive of the policy- and decision-making processes pertaining to the national goals of stability, security and development. Modern intelligence can thus be described as organised policy related information, including secret information.”⁴²

In view of the definition of intelligence put forward in this thesis, the above definition, which regards intelligence as decision-making support, is considered as positive. However, it has two inherent weaknesses: 1) the fact that a White Paper has no statutory status, and 2) that the statement of “national goals of stability, security and development” places the government structures in control of what those goals constitute. In government circles, intelligence is still equated with spying and secrecy, both which are regarded as key state security functions.⁴³ The broadening of the intelligence concept has not yet taken root in the South African governmental sector.

The government’s official viewpoint is out of touch with the Constitution, as well as with reality. Firstly, the Ministerial Review Commission on Intelligence in a Constitutional Democracy states that the Constitution views national security in a comprehensive and

⁴² *White Paper on Intelligence*. 1995

⁴³ Butt, Stephan Grant. 2007. *University of Cape Town, Department of Political Studies Masters Thesis Presentation*, 2

holistic fashion that is much broader than a narrow concept of state security, territorial integrity and law and order⁴⁴ apparent in the relevant Acts. Also, parallel to international trends, “private intelligence organisations” have grown dramatically, offering a range of products and services which include investigations, political and security risk analysis, espionage and counterespionage, surveillance services and corporate competitive intelligence to a diversity of clients. The latter include governments (often the South African government), businesses and individuals.⁴⁵ Competitive intelligence especially, has grown significantly by at least 30% within the larger companies in South Africa that currently perform some form of intelligence. This is apparent when compared with a mere handful that existed in the early 1990s.⁴⁶

In 2003 the accusations by the former Minister of Intelligence, Lindiwe Sisulu, that foreign intelligence agencies might use local companies as fronts,⁴⁷ led to a ministerial review of the private intelligence industry. Various companies providing Intelligence Analysis in the risk and competitive intelligence environments made submissions to the ministry, but the review panel’s activities were suspended without providing any reason later the same year. In a promising development, during the Parliamentary Intelligence Legislation Committee on 30 September 2008, the committee heard that the State’s legal advisers did not have any problem with other intelligence structures *per se* as it is difficult to define what a private intelligence company is. Their approach was rather to define those illegal activities that posed a problem to the State security as opposed to those companies that collected overt information to provide strategic support.⁴⁸ Such a level-headed approach is aligned with the essence contained in the Constitution and might even pave the way for better cooperation between government structures and private intelligence organisations in fulfilling a critical decision-making support function.

⁴⁴ *The Ministerial Review Commission on Intelligence in a Constitutional Democracy*, 2008, 52. It was not the scope of the Commission to review the definition of intelligence but to analyse the extent to which the government intelligence structures are subservient to the Constitution.

⁴⁵ Butt, Stephan Grant. 2007. *University of Cape Town, Department of Political Studies Masters Thesis Presentation*, 3

⁴⁶ Whitehead, Steve. 2008. Personal correspondence, Director: Corporate Business Insight and Awareness, 9 January

⁴⁷ Sisulu, Lindiwe. 2003. *Intelligence Department Budget Vote Speech*, South African National Assembly, 17 June, 6

⁴⁸ Parliament of South Africa. 2008. Intelligence Services Amendment Bill, National Strategic Intelligence Amendment Bill & Protection of Information Bill. *Meeting Report Information*.

The government's mistrust of private intelligence organisations is compounded by illegal activities by some of these private intelligence organisations, unlawful access to State information and, specifically, information peddling where false information is deliberately passed on to security and intelligence structures.⁴⁹ Although not relevant to this thesis, it is significant that the abuse of the intelligence structures of the government for political purposes will most probably remain a problem in South Africa, unless there is more public debate, and proper constitutional checks and balances introduced. The Billy Masetlha and Zuma Tapes affair, the resulting court cases and the media coverage on the politicisation of intelligence structures, highlighted the damage to the stature and credibility of the intelligence community.⁵⁰

A positive outcome of these unfortunate events is the media coverage on the nature of intelligence, the role of the government and other private intelligence structures as well as the supremacy of the Constitution in this regard. The debate and extent of public consultation on a rethink of intelligence will unfortunately be dictated by government, which does not bode well for the process.

2.3 Knowledge and the Knowledge Age

While the millennia-old epistemological debate on knowledge and knowledge processes continues, it might be useful to look at the difference between data, information and knowledge in brief. The Bennets⁵¹ distinguish between these three concepts by stating that:

“... *data* is discrete, objective facts about events which include numbers, letters and images without context, while *information* is data with some level of meaning as it describes a situation or condition. *Knowledge* is built on data and information, and is created within the individual. This knowledge represents understanding of the context, insights into the relationships within a system and the ability to identify leverage points and weaknesses and to understand the future implications of actions taken to resolve problems”.

⁴⁹ The most recent case is the Browse Mole report, which allegedly contained information that was obtained illegally by the Directorate of Special Operations (DSO – which does not have an intelligence mandate) from private intelligence companies. The information related a conspiratorial attempt by high ranking South African and other African leaders to get ANC president Jacob Zuma in power. The Parliamentary committee found that a private intelligence organisation sold this information to the DSO. See National Assembly and National Council of Province. 2007. Committee Reports: *Browse mole report*.

⁵⁰ For detailed discussion on the politicisation issue see Malala, Justice. 2007. Games leaders play. *Sowetan*. 4 June 2007, Hutton, Lauren. 2007. South Africa: Smoke, Waiting for the fire? *ISS Today*. 23 March 2007 and Hutton, Lauren. 2007, The state of democracy in South Africa. *ISS Today*. 19 November 2007 and <http://www.mg.co.za/article/2009-04-09-the-spy-who-saved-zuma>.

⁵¹ Bennet, Alex and David. 2003. *Handbook on Knowledge Management 1: Knowledge matters*, 8

In this thesis, knowledge is defined as *the human capacity to take effective action in varied and uncertain situations*.⁵²

We are living in an age where the landscape is characterised by accelerating change, rising uncertainty and increasing complexities.⁵³ To a large extent our survival depends on our ability to understand, interpret and act, using our skills, experience and knowledge. Peter Drucker defines this Age as one in which the means of production is Knowledge⁵⁴ – the Knowledge Age. Unlike the Industrial and more recently the Information Revolution, with all its technological advances and resultant information overload, the central theme of the Knowledge Age is that all the information is useless unless it is interpreted and acted upon by the cerebral competencies and capacities of the new society. Drucker’s maxim “Knowledge is being applied to knowledge itself”⁵⁵ is embodied in the fact that knowledge is a utility which is applied for two purposes: to determine how existing knowledge can be applied to be more effective (productive) and to define the need and then produce new knowledge (innovation).

In the Knowledge Age, hierarchical structures are replaced with networks, Taylorist management practices with lower-level tiers, distributed decision-making and corporate loyalties with autonomous knowledge workers. This has far-reaching implications for all organisations, but more so for those whose core business is the creation, distribution or application of knowledge. According to Drucker,⁵⁶ the main economic challenge of the Knowledge Age will be the productivity of knowledge work and specifically that of the knowledge workers, because for the first time in history, they own both the means and tools of production.

To meet the challenge of productivity in the new economy, knowledge work has to result in action. Knowledge processes, systems and tools are utilised to continually make choices between countless options, without knowing what consequences those decisions might have in an increasingly interdependent world. As a result, decision-making has become increasingly complex and difficult, even more so for knowledge organisations. New

⁵² Bennet, Alex and David. 2004. *Organizational survival in the New World: The Intelligent Complex Adaptive System*, 5

⁵³ Bennet, Alex and David. 2004. *Organizational survival in the New World: The Intelligent Complex Adaptive System*, 17

⁵⁴ Drucker, Peter. 1994. *Post-Capitalist Society*, 8

⁵⁵ Drucker, Peter. 1994. *Post-Capitalist Society*, 42

⁵⁶ Drucker, Peter. 1994. *Post-Capitalist Society*, 8

vocabularies, management techniques, technologies and strategies are imperative to prosper in the Knowledge Era.⁵⁷

Yick goes so far as to say that we are entering an *intelligence era* where the individual's mind and intelligence (not to be confused with intelligence as forewarning) is the centre and where organisations should organise themselves around this intelligence to utilise the intrinsic intelligence and knowledge structures in the individual and collective minds more effectively.⁵⁸

2.4 The Knowledge worker

It is clear that the Knowledge Age requires a very specific type of person who will be able to adapt to the constant change and its associated challenges. Thomas Davenport⁵⁹ defines knowledge workers as those people who “think for a living”.

Recent research has focused on those skills and attributes that such “knowledge workers” should have. They have significant degrees of expertise, education or experience, and the primary purpose of their jobs involves the creation, distribution or application of knowledge – making sense, interpreting and understanding. Due to their emergent and intellectually divergent but also interdependent types of work, they have to collaborate with others across functional, organisational and national borders to resolve and comprehend complex problems and situations.

Knowledge workers generally feel that traditional management and organisational practices such as Taylorist hierarchies, functional compartmentalisation, and bureaucratic politics, stifle their effectiveness. This has far-reaching implications for motivating and managing such workers. Their work is less structured, for example, than that required by administrative or production work and they are loyal to their profession, rather than to a company. They are mobile and focus on gaining experiences that will position them well for future opportunities – often in new companies or even new countries.

⁵⁷ Stewart, Thomas A. 2001. *The Wealth of Knowledge: Intellectual Capital and the Twenty-first Century Organization*, 5

⁵⁸ Yick, Liang Thow. 2004. *Organizing Around Intelligence*, 3-21

⁵⁹ Davenport, Thomas H. 2005. *Thinking for a living: how to get better performance and results from knowledge workers*, 10-15

In her research, Alison Kidd⁶⁰ found that knowledge workers solve problems and generate different outputs mainly as a result of internal changes and perpetual “configuration” of their thinking and learning, rather than those of external rules and procedures. Because of this, their outputs are different every time, thereby perpetuating the constant flux in which the organisation finds itself. This is not true of other kinds of workers where there are templates, rules and standard operating procedures that are followed to achieve organisational objectives.

The personal attributes of knowledge workers should ideally include the following:⁶¹

- They can work in multiple domains simultaneously, moving in and out of them, continuously expanding their knowledge, capabilities, perceptions, capacities and networks.
- They manage knowledge in the sense of recognising, creating, finding and moving knowledge that is valid, useful and applicable to the issue at hand. They can create ideas, solve problems, make decisions and take effective action, either individually or as a group.
- They have foresight to sense the future knowledge needs and acquire that knowledge to handle challenging problems well before they arise. Their understanding of systems and complexities helps them to identify possible future knowledge needs.
- They are ongoing learners who have sound discipline, knowledge and a broad competency that spans many dimensions. This implies that they realise that they cannot be experts in all domains and are therefore willing to forego their perspectives and beliefs to adopt a broader understanding of an issue at hand.
- They are convergent thinkers who have knowledge of systems, complexities and critical thinking and who can use different approaches and techniques to better understand complex issues.
- They develop and nurture their relationship networks to gain knowledge and actions in new environments.

⁶⁰ Kidd, Alison. 1994. *Proceedings: ACM CHI'94: Human Factors in Computing Systems*, Boston, Mass, 24-28 April 1994, 186-187

⁶¹ Bennet, Alex and David. 2004. *Organizational survival in the New World: The Intelligent Complex Adaptive System*, 213-226

- They are information literate. They know how to find, evaluate and use information effectively to solve a particular problem or make a decision.
- In knowledge organisations, where change happens rapidly and the creation and use of knowledge to gain a competitive advantage is paramount, the knowledge workers will spend more time learning, thinking and collaborating and less time applying what they already know.

2.5 The generations of Knowledge Management

In a widely accepted analysis of KM theories and practices, Snowden defined three distinct movements or generations of Knowledge Management in 2002.⁶²

2.5.1 The first generation of Knowledge Management

The first generation of Knowledge Management dates back prior to 1995. It focused on computer-based business process re-engineering and the structuring and flow of information in databases and information systems to support decision-making. The catch phrase “the right information in the right place at the right time” is still widely used today to market intelligence or information-based repositories. Knowledge was, in this generation, viewed as a *thing* or *object* to be managed and distributed – the *management of information* phase. Here, “knowledge” is in fact data or information without human interaction and contextualisation. In an Intelligence Analysis context, the raw information obtained through technical means like Signals Intelligence (SIGINT) or economic data from a competitor’s sales revenues or crime statistics would qualify as first generation “knowledge”. Software companies, wishing to bolster sales, would advertise that the outcome of their algorithms is “intelligence”.

2.5.2 The second generation of Knowledge Management

The second generation of Knowledge Management stretching over a period from 1995 to the beginning of the twenty-first century focused on *the management of people* and of knowledge processes. Nonaka and Takeuchi’s SECI model (see Figure 5) of the conversion of tacit/explicit knowledge served as the theoretical basis for this generation. The SECI model’s quadrants of Socialisation, Externalisation, Combination and Internalisation attempted to explain the flow of knowledge; however, the model was simplified by practitioners to be more digestible in an industry where knowledge was still required to be measurable and therefore manageable. In the domain of Intelligence Analysis, the focus was about the process of brainstorming an intelligence problem and then writing (codifying) the analyst’s tacit

⁶² Snowden, David. 2002. *Journal of Knowledge Management*. 6(2), 100-111

knowledge in a prescribed format for the client.⁶³ There is, apart from reference by Waltz, little evidence in the intelligence literature relating second generation KM to the intelligence process.

In that generation, people were brought back into the Knowledge Management equation, with phrases like “intellectual capital”, so too with strategies and tools and techniques to capture, extract and codify the knowledge that “walks out of your door every night”. Although more humanised, knowledge was still a “thing” that could be measured with people – the organisational assets – who should be managed, motivated and rewarded for sharing and codifying their tacit knowledge.⁶⁴

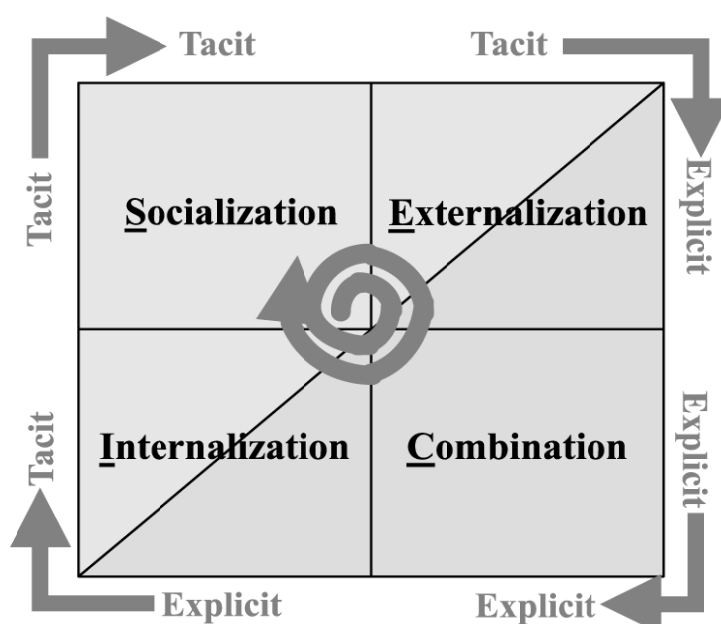


Figure 6: Nonaka and Takeuchi's SECI model⁶⁵

However, many of the initiatives, strategies and techniques used in the second generation of KM, still did not create better functioning organisations. Both scholars and practitioners blamed the “failure” of KM on the absence of thorough KM strategies, bureaucratic organisational structures and specifically on the culture of organisations that inhibited people from sharing their knowledge to benefit the organisation. However, the fault line may lie in

⁶³ Waltz used the SECI model extensively in his book to describe the different Knowledge Management processes within the intelligence organisation. See Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, p 55-106

⁶⁴ The main proponents of the intellectual capital school are Karl-Erik Sveiby and Thomas A Stewart

⁶⁵ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 72

the fact that “there is no conversion of tacit knowledge to explicit knowledge; there never has been and never will be”.⁶⁶

2.5.3 The third generation of Knowledge Management

This definition of the thesis that “knowledge is the human capacity to take effective action in varied and uncertain situations” finds itself in the so-called third generation or Next Generation of Knowledge Management. The concept of the third generation started around 2001 with Stacey and Snowden’s notion that knowledge should be managed as both a “thing” and a “flow”.

They base their theories and models on the principles of Complex Adaptive Systems (CAS), a version of the complexity theory. Cilliers⁶⁷ summarises the thirteen characteristics of complexity as follows:

- Complex systems are open systems which make the *context* in which they operate as important as the characteristics of the systems themselves.
- They operate under conditions not at equilibrium.
- Complex systems consist of many components; some of them are often simple or can be treated as such.
- The output of components is a function of their input. At least some of the functions must be non-linear.
- The state of the system is determined by the values of the input and outputs.
- Interactions are defined by actual input-output relationships and they are dynamic (as they change over time).
- Components interact with many others, there are often multiple routes possible between components, which are mediated in different ways.
- Some sequences of interaction will provide feedback routes, whether long or short.
- Complex systems display behaviour that results from the interaction among and between components and not from characteristics inherent to the components themselves – the so-called characteristic of emergence.

⁶⁶ Firestone, Joseph M and McElroy, Mark W. 2003. *Key issues in the New Knowledge Management*. 324

⁶⁷ Cilliers, Paul in Aaltonen, Mika. 2007. *The Third Lens: multi-ontology sense-making and strategic decision-making*, 100-101

- An asymmetrical structure (temporal, spatial and functional organisation) is developed, maintained and adapted in complex systems through internal dynamic processes.
- Complex systems display behaviour over a divergent range of timescales in order to cope with their ever-changing environment. They must adapt to changes quickly, but can also sustain themselves if a part of the system changes at a lower rate than the environment. The latter is seen as the “memory” of the system.
- The behaviour and characteristics of complex systems unfold over time. The history of the system co-determines the current behaviour of the system.
- More than one description of a complex system is possible. Different descriptions will decompose the system in different ways, which may also display different degrees of complexity.

To survive in this complex environment, organisations should have the core competencies of: 1) creating new ideas, 2) solving problems, 3) making decisions, and 4) taking action to achieve a desired result – knowledge being the driving force behind each of these processes/competencies.⁶⁸ Complex Adaptive Systems therefore exist and operate in perpetual flux, moving uncertainly between different degrees of stability and instability, depending on the context and impact of internal and external events on relationships with internal and external agents and systems.

Stacey critiques the previously described first and second generations by saying that they are based on the perception of an outside observer that designs in advance, and then manipulates the systems from a macro, external position. Seen from the perspective of the complexity theory, this is impossible, as observers are also part of the system which they try to describe or manage and therefore unable to be objective or removed from the interactions with and dynamics of a system. Returning to a definition of knowledge, Stacey⁶⁹ states that it is neither stored nor shared because it is not an “it” *but an ephemeral, active process of relating*. Knowledge, according to Stacey, “cannot be managed, and there is no need to manage it, because knowledge is participative self organising processes patterning themselves in coherent ways”.

⁶⁸ Bennet, Alex and David. 2004. *Organizational survival in the New World: The Intelligent Complex Adaptive System*, 27- 29

⁶⁹ Stacey, R.D. 2001. *Complex Responsive Processes in Organisations*, 3, 4, 229 – 235

Snowden⁷⁰ agrees and indicates that the second generation prescriptive paradigm is flawed, *that knowledge is contextual* and that our thinking about knowledge should change for the following reasons:

- Knowledge can only be volunteered, it cannot be conscripted. People will not share knowledge if they do not wish to. No technique, motivation or rewards have been able to change this. This explains why knowledge-sharing drives and other organisational incentives associated with the second KM Generation did not have the desired effect.
- We can always know more than we can tell and we will always tell more than we can write down. The nature of knowledge is such that we always know, or are capable of knowing more than we have the physical time or the conceptual ability to verbalise. Writing something down is reflective knowledge that is time-consuming and involves loss of control over its subsequent use.
- We only know what we know when we need to know it. Human knowledge is deeply contextual, and is triggered by circumstance. In understanding what people know, we have to recreate the context and then ask a meaningful question to enable the use of knowledge. This strengthens Cilliers' notion of the importance of a system's context in trying to understand it better and also impacts on the intelligence analyst's efforts to make sense of threats and issues.

Using the contextual, interaction, flow and emergence principles of complexity and CAS, Snowden designed the Cynefin framework⁷¹ (figure 6) in an attempt to argue against "single or idealised models" where cause and effect are clear and where something is either ordered or un-ordered. Snowden argues that things are both ordered and un-ordered at once, because in reality "order and un-order intertwine and interact"⁷², and that makes sensing and acting difficult.

⁷⁰ Snowden, David. 2002. *Journal of Knowledge Management*, 6(2), 6

⁷¹ Snowden, David. 2002. *Journal of Knowledge Management*, 6(2), 17

⁷² Kurz, CF. and Snowden, D. 2003. *IBM Systems Journal*, 42(3), 466

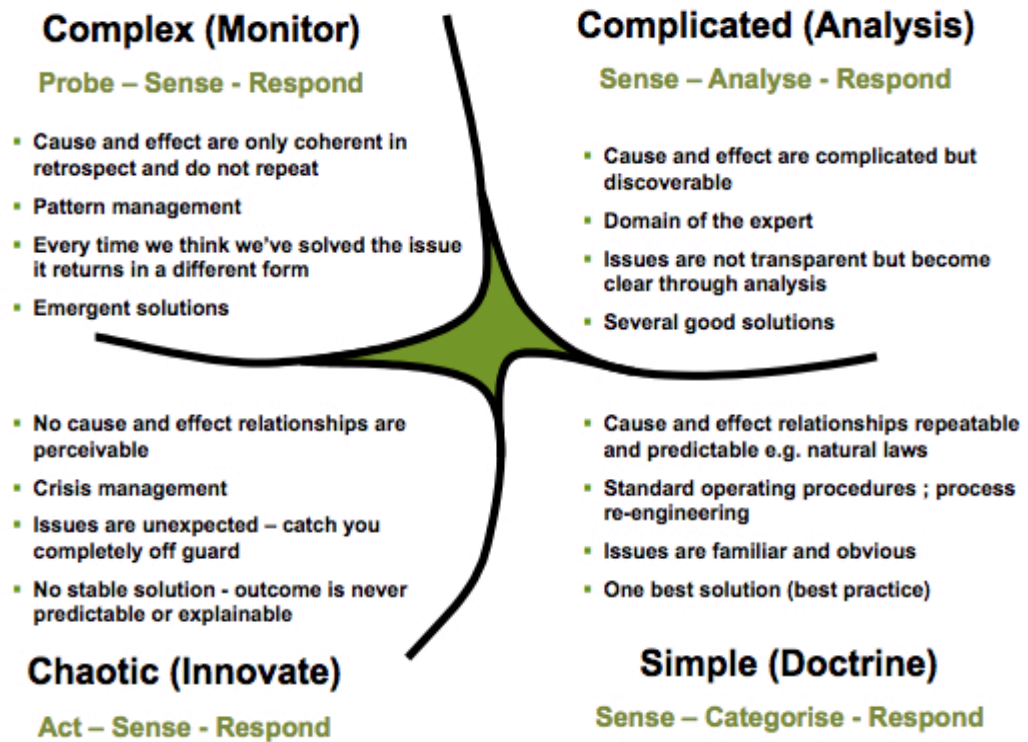


Figure 6: Snowden's Cynefin model⁷³

The Cynefin framework explains how organisations and decision-makers move within and across different spaces or domains; applying knowledge both as a “thing” and a “flow” in an effort to makes sense. To describe this movement of relating processes and contexts, he uses four domains to explain the various cultural, leadership, or decision-making aspects and the manner in which agents or systems flow, depending on the interactions and contexts:

- **Known domain:** Where the cause and effect are known, repeatable and predictable. Decisions can be made and actions taken according to standard operating procedures, doctrine and best practice. The mode of action here is following doctrine through sensing, categorising and responding.
- **Knowable domain:** Where information that is not fully known at present, can be known given enough time, resources and research. Here groups of professionals or experts can create and share knowledge and clarity is achieved through analysis. When there is uncertainty, scenario construction is performed by creating a domain where several good solutions are applicable. The mode of action here is *analysis* by sensing, analysing and responding.

⁷³ Kurz, CF. and Snowden, D. 2003. *IBM Systems Journal*, 42(3), 468.

- *Complex domain*: Here it is difficult to discern a pattern, or even identify factors constituting a pattern. Cause and effect are only coherent in retrospect. These patterns do not repeat as issues and problems emerge and return in different forms. Collaboration and different perspectives lead to a better understanding of the complex information; contexts and solutions to problems are emergent. The mode of action here is *monitoring* by probing, sensing and responding.
- *Chaos domain*: Cause and effect relationships are unclear and crises erupt unexpectedly, catching one completely off guard. There is no stable solution as the outcome is totally unpredictable. Completely new situations dominate and there is a need to impose patterns on chaos to make it comprehensible and manageable. The mode of action here is to *innovate* by acting, sensing and responding..

The Cynefin model was used as the conceptual framework for Singapore's Risk Assessment and Horizon Scanning Experimentation Centre to assist in recognising and acting upon signals in the complex and chaotic domains.⁷⁴ Bellavita was the first intelligence scholar who applied the Cynefin model on the intelligence discipline by using narratives to describe the US Home Security environment. He recommended a strategic process that incorporates the dynamic realities of complex adaptive systems by recognising and managing systemic patterns, rather than focusing on programmes.⁷⁵

To conclude, Grant and Grant⁷⁶ analysed those theories and models belonging to the more holistic third generation KM and identified propositions or themes of Knowledge Management that provide an excellent summary of what KM constitutes in the third generation. Although some of them originate in the first and second generations, the fact that they are applied in combination and not as single-focused concepts, asserts the adaptive principles of this school of thought. These themes can be encapsulated as follows:

- The role of IT should not dominate, but be an enabler.
- Early models and taxonomies of knowledge (such as the tacit/explicit dimension) are useful to understand the nature of knowledge in organisations, but are not the end-all.

⁷⁴ Ho, Peter. 2007. Opening address at the official launch of the Singapore Risk Assessment and Horizon Scanning (RAHS) experimentation centre. See also <http://www.rahs.org.sg>.

⁷⁵ Bellavita, Christopher. 2006. *Homeland Security Affairs*. 2(3)

⁷⁶ Grant, Kenneth A. and Grant, Candace T. 2008. *Issues in Informing Science and Information Technology*. 5, 584-587

- It is more important to improve on how new knowledge is acquired, than to effectively use existing knowledge, especially in terms of business innovation.
- There is greater understanding of complexity and how it impacts on organisations in the context of complex adaptive systems.
- The personal, social and collective nature of knowledge enhances complexity and makes it difficult to institutionalise knowledge.
- Organisations still have an intangible or market value – intellectual assets – that needs to be managed explicitly.

2.6 Intelligence Analysis through the lens of the third KM generation

The point of departure of this thesis is that *intelligence analysts are knowledge workers in a knowledge organisation*, as defined by some of the previous writers. The Knowledge Age introduced new challenges for the intelligence analyst and the discipline which changed the landscape irrevocably. The analysis phase of the intelligence process represents the area where the raw information from the collectors is analysed, synthesised and contextualised and then presented as intelligence. A knowledge worker's function in the core business of an intelligence organisation is to create and distribute intelligence critical for decision-makers. Intelligence Analysis is a generic discipline found in all domains involved in the intelligence environment. The cognitive processes, dynamics and methodologies of knowledge creation are the same, whether for an analyst working on the political situation in the Democratic Republic of Congo, investigating an organised crime syndicate involved in money-laundering, evaluating a competitor's strengths and weaknesses, proposing global business partners, formulating the government's new energy policy or evaluating the impact of HIV/AIDS on the education sector. The difference, however, lies in the content, scope and objectives of the various domains.

This knowledge worker – the intelligence analyst – has the same task now as previously when the first intelligence product was written by the US' Office of Strategic Services in June 1942.⁷⁷ At the core of knowledge creation, reasoning processes are used moving from the “known” to the assertion of entirely new knowledge about the previously “unknown”.⁷⁸

⁷⁷ Central Intelligence Agency. 1992. *Factbook on Intelligence*, 4. Although intelligence has a very long history dating back from Biblical times when Moses sent a reconnaissance team to Canaan and Sun Tzu wrote his seminal “The Art of War” in the 6th century B.C., there is no evidence that Intelligence Analysis as a separate job description or profession/discipline existed before the first analysts were appointed as such

In this “journey” from the known to the unknown, the intelligence analyst tries to reduce uncertainty by collecting, analysing and synthesising information. Continuous value judgments are called for and made on the reliability and validity of a variety of high-volume sources, some of them reliable, but mostly inadequate, incomplete, ambiguous or outright deceptive. The timely knowledge products generated are based on hypotheses, predictions or estimations and customised to the strategic or operational context and needs of the client. In Drucker’s terms, the intelligence analyst applies knowledge to knowledge when value (meaning) is added to existing knowledge and then descriptive, estimative or warning knowledge products are generated in different formats to support the decision-maker.

The scope of Intelligence Analysis culminates in the timely production and dissemination of knowledge. Even though the product provides the decision-maker with a thorough explanation of problems or events, and even posits and argues different options and their possible consequences, there is no guarantee that the recommendations will be accepted or implemented. The intelligence analysts rarely (if ever) have control over the actual decisions and actions of their clients. The consequences of those decisions or indecisions will, however, inform the process of continuous sensemaking and analysis.

Drawing from Cilliers’ summary⁷⁹ of the impact of complexity on our understanding of the world around us, it can be concluded that the intelligence community should realise that a threat or issue can only be understood and analysed within its own environment or context and not from the outside. This supports the argument from scholars and practitioners that analysts and other intelligence professionals should have the opportunity to gain first-hand exposure to, or immersion in those cultures and problems that are of intelligence value. Also, while analysing an issue or threat, it has to be borne in mind that the context itself changes continuously, which means that the issue or threat is also continuously adapting to its changing environment, increasing the possibility that our understanding could well be dated or even irrelevant. Our understanding of any system is always just a “snapshot” of it at a specific time and within a specific context, and not the whole truth. This forces the analyst to

in the OSS. Previously, the intelligence operative or his client evaluated and interpreted the raw information themselves. The modern intelligence organisation only emerged in the last century. See Jackson, Peter (ed) 2005. *Intelligence and Statecraft: The Use and Limits of Intelligence* in International Society for an excellent essay on the history of intelligence and Kuhns, Woodrow. 2007. *Studies in Intelligence*. 51(2) for a history of Intelligence Analysis in the CIA.

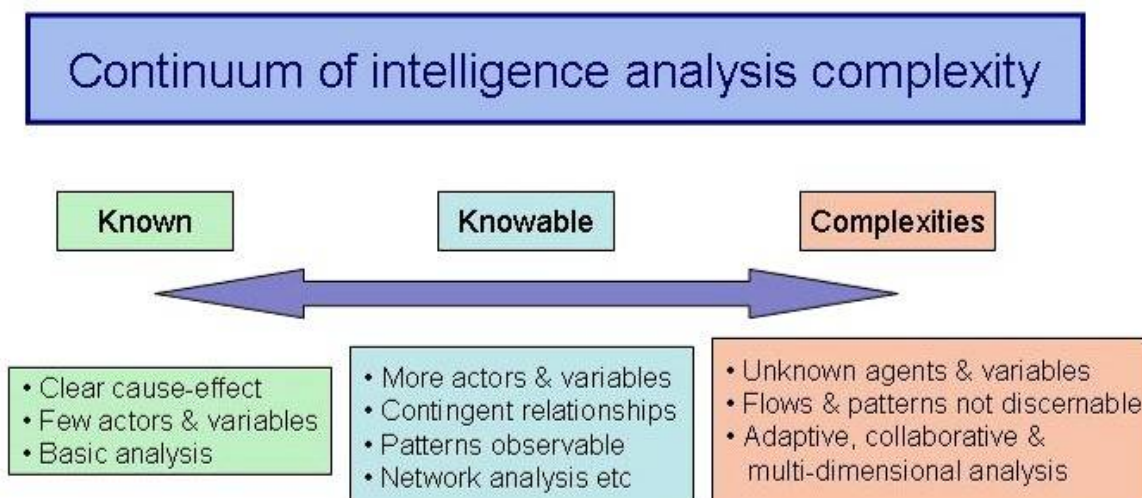
⁷⁸ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 159

⁷⁹ Cilliers, Paul in Aaltonen, Mika. 2007. *The Third Lens: multi-ontology sense-making and strategic decision-making*, 109-110

be actively aware of the fluidity of an intelligence problem, focusing on variables that might change its essence and dynamics.

The fact that a specific intelligence issue can be described in different ways and from different perspectives emphasises the necessity for bringing in multiple analysts or experts to evaluate it. One analyst might only view the problem from one angle at first, but by engaging in conversation and collaborating with others, these perspectives could grow and be enhanced to become more encompassing.

The “Al Qaeda” Phenomenon⁸⁰ is a typical example of what happens in the interaction between the analyst and the target where interpretation and description of a system, issue or threat lead to that system understanding itself differently and new characteristics and behavioural manifestations emerge as a result of the description. The analysts trying to understand the system are also transformed by their own understanding of it. Our understanding of such a system, issue or treat can never be neutral, objective, complete or permanent. We can only try to explain it from a certain perspective, not even knowing what effect our viewpoint might have on our own understanding or the system we are trying to



explain.

Figure 7: The continuum of Intelligence Analysis complexity (author)

⁸⁰ Author: Al Qaeda was a relatively unknown factor in the international arena before 11 September 2001. However, since the US intelligence agencies' detailed reports in the media on the terrorist network, its reach and strategies, as well as the resulting war in Afghanistan and Iraq and the world's criticism against the US' "War of Terror", Al Qaeda has displayed typical CAS behaviour in that it understood itself to be the big threat the US purported it to be. This led to new and different characteristics and behaviours, both within Al Qaeda and the intelligence community in the US and the rest of the world.

By applying the Cynefin framework to Intelligence Analysis, new contextual insights are brought to the world of intelligence. The analyst functions simultaneously in a fluid world with different types of problems in different domains – one where the analyst and the intelligence organisation are not bound to only one domain, but have to cope with multiple domains simultaneously. It becomes clear that the analyst moves on this continuum between the different domains while addressing intelligence requirements on different issues (see figure 8), most of the time functioning in the knowable domain, analysing and thinking about problems.

When problems become more exacting, the analyst will embark on scenario building, all the while cognisant of the fact that most of the cause and effect relationships between known actors are knowable. However, sometimes unexpected events like 9/11 will erupt, or a coup d'état will take place without forewarning, or the outbreak of a pandemic or collapse of an economic system will manifest. Very little of the expert knowledge could be used in such situations, but a collaborative effort could try to make sense of the complex interactions and emergent behaviours of the unknown agents.

The remainder of the thesis continues with the application of third KM generation concepts to Intelligence Analysis; focusing on the changed world, how Intelligence Analysis functions in it, and which new perspectives could enhance the profession.

CHAPTER 3

A changed world

“We have slain a large dragon, but we now live in a jungle filled with a bewildering variety of poisonous snakes. And, in many ways, the dragon was easier to keep track of.”

James Woolsey, Former Director of the CIA on the fall of the Soviet Union

“The security environment has undergone the equivalent of a shift in tectonic plate, with the result that only shifts of an equivalent magnitude in the way we think about this environment and analyse the new security threats will provide an adequate basis for good intelligence and sound decision-making in the first few decades of the 21st century.”

Prof Phil Williams⁸¹

The world has become increasingly complex where open systems, democratisation, and interactive media have not only resulted in infinite choices, but also involved more people in decision-making. From the most basic, individual to the intra-institutional and multinational levels, the milieu in which decisions have to be made has changed dramatically. The importance of this is illustrated by the fact that the United Nations identified the capacity to decide as one of the Millennium Project’s Global Challenges.⁸²

Although the new world poses serious challenges for individuals, systems, organisations, governments and multinational role-players, the situation is compounded by the fact that many parts of the world are still part of the “old” world. Additionally, new threats have not replaced old ones which mean that actors or stakeholders must factor in both traditional and “new” threats.

Intelligence organisations’ missions, and specifically that of the intelligence analysts, namely to provide knowledge of the current situation and foreknowledge of coming events and trends, have thus become exponentially more difficult. In this chapter the impact of the increasing speed and connectivity of transactions and events, the effects of the information revolution, the widened scope of threats, as well as the increasing complexity of Intelligence Analysis will be discussed.

⁸¹ Williams, Phil.2004. *Conference Proceedings of “New Frontiers of Intelligence Analysis: Shared Threats, Diverse Perspectives, New Communities”*, Rome, Italy, 31 March – 2 April 2004. 35

⁸² United Nations. 2007. *The Millennium Project: Global Challenges for Humanity*.

3.1 Speed and connectivity

The decision-making “window” is only open for a very short time due to the increasing speed with which transactions and events occur throughout the world. This has been brought about by the internet, multimedia and other networks. History is often only seconds old and with it, individual, organisational and national memories have shortened, making it difficult to sense the consequences of decisions and actions. Individuals and organisations are overwhelmed because events and patterns are unfolding so rapidly and non-linearly. This frequently results in confusion, anxiety and ultimately decision paralysis.

This immediacy psyche also has an impact on intelligence. Intelligence analysts have to compete with media and other information brokers who communicate and disseminate information on world events instantaneously through the multi-media, internet and cellphone technology, like the Mumbai terrorist attacks in November 2008 and the Iran post-election demonstrations in June 2009 where text messaging (SMS), Flickr and Twitter were used to stream happenings to the world.⁸³ The policy maker or decision-maker’s attention is the most valuable commodity to be valued and sought after. They must spend their time judiciously, paying attention only to those sources of information that are valuable enough to be worth their time and consideration.⁸⁴

Although one of the characteristics of intelligence is the *timely* delivery of analysis to the decision-maker, few intelligence organisations have adapted their processes and technology to provide real-time intelligence to the client. Most intelligence agencies and organisations now have 24/7 “Alert Centres” which scan incoming information (mostly open) and disseminate either the raw information or a basic analysis of it to the relevant client. However, if the client were to use RSS and other “as-it-happens” feeds to his cellphone, the time lag before receiving the official intelligence report could be quite significant. The total “intelligence – decision – implementation” cycle time can be as short as a mere 15 minutes.⁸⁵ This

⁸³ In Iran, the government confined foreign journalists to their hotel rooms, forcing them to resort to Twitter and YouTube to send footage of demonstrations back to their headquarters. Twitter was mainly used by foreigners and people outside Iran to convey messages about the uprising. The Iranians themselves maintained contact through cellphones after the government disabled text messaging before the election. For more background see Arthur, Charles. 2008. How Twitter and Flickr recorded the Mumbai terror attacks. *The Guardian*. 27 November 2008. <http://www.guardian.co.uk/technology/2008/nov/27/mumbai-terror-attacks-twitter-flickr>, as well as <http://search.twitter.com/search?q=%23iranelection>, and http://therealnews.com/t/index.php?option=com_content&task=view&id=31&Itemid=74&jumival=3941

⁸⁴ Teitelbaum, Lorne. 2005. *The Impact of the Information Revolution on Policymakers’ Use of Intelligence Analysis*. 91

⁸⁵ Andrus, D. Calvin. 2005. *Studies in Intelligence*, 49(3), 1. With technological advances, this has most probably been reduced even further.

strengthens the viewpoint that intelligence has become irrelevant, and is the main reason why clients increasingly rely on the media for current intelligence.

3.2 The impact of the information revolution on Intelligence Analysis

When, in 2000, Bruce Berkowitz and Allan Goodman wrote that the “information revolution may be the single most important factor affecting intelligence today”⁸⁶, they could not have imagined exactly what the consequences would be for Intelligence Analysis by 2009. The World Wide Web reached 22,89 indexed billion pages on 1 June 2009,⁸⁷ and that is just one of the analyst’s sources of information! The sheer volume of information sources is overwhelming. Open Source Intelligence (OSINT)⁸⁸ has become the major source of information for the intelligence analyst. It increasingly forms the basis of an analyst’s frame of reference, and in addition to general research, is useful for determining a target’s priorities, capabilities and ideologies. Furthermore, it is less expensive and risky than human intelligence (HUMINT), although the latter is still the best suited to gauge the real intentions of a target. OSINT is immediate, while it may take years to infiltrate an agent into a terrorist organisation or run an effective double-agent operation.

The information “tsunami” poses serious challenges for the intelligence analyst. Firstly, the main challenge is now to *add value and context* to information that the client has most probably already seen. Most policy makers have access to at least the Internet, or even better still, they can pick up the phone and talk to a counterpart in another organisation or country on issues of mutual concern.⁸⁹ The value of intelligence capabilities is questioned by users

⁸⁶ Berkowitz, Bruce D. and Goodman, Allan E. 2000. *Best Truth: Intelligence and Security in the Information Age*. 2

⁸⁷ See <http://www.worldwidewebsite.com/> accessed 30 June 2009

⁸⁸ OSINT is that information lawfully obtained through observation, purchase or request. This includes radio, television and internet sources, geospatial data, photos and commercial imagery, all publicly available printed/published materials, experts and academics, as well as “grey” literature – that open source material which is not publicly available and which has distribution controls, such as databases and subscription journals. However, traditionalist intelligence professionals who still equate intelligence with secrets do not support the high profile that OSINT enjoys. Robert Steele, advocate of the OSINT movement in the US has been critical of the continued lack of comprehension among US senior intelligence officials about the value of OSINT. (see Steele, Robert D. 2002(b). *Time*. 11 January 2002.) In what might be seen as a step in the right direction, the Director of National Intelligence (DNI) established an Open Source Centre in July 2006 to coordinate OSINT activities in the US intelligence community. (see Office of the Director of National Intelligence. 2006. *Intelligence Community Directive Number 301*)

⁸⁹ See Teitelbaum, Lorne. 2005. *The Impact of the Information Revolution on Policymakers’ Use of Intelligence Analysis*, 205. In the study, Teitelbaum found that policy makers primarily rely on CNN for ongoing information, while intelligence briefings assist in contextualising the news. It is interesting to note that they preferred using the telephone to the Internet. In another study in 2000, when senior policy makers

when so much other information is available while traditional intelligence sources are slow, inconclusive or hidebound by classification rules and other controls.⁹⁰ Competition with commercial information suppliers, who provide raw data as well as sophisticated analysis, will most probably intensify in the future as the economic value of knowledge increases. With all these information-rich sources, decision-makers actually create their own knowledge as they filter and merge intelligence from multiple sources and place it in their own context.

Secondly, the intelligence analysts *struggle to carve out a niche* in this field of overabundance of information. They have to find a balance between reporting on current events and long-term strategic intelligence. Too often, their time is wholly focused on monitoring current intelligence, and not on medium- to long-term warning. The result is an analytical cadre whose main activity is to be “special” journalists, collating current intelligence on a specific topic from various sources, often merely regurgitating what others have already voiced without contextualisation. Their strategic analytical abilities have become superficial and mostly consist of stating the obvious short-term forecasting. Heuer suggests that more should be expected from analysts than that which is produced by journalists, academics and think-tanks. He proposes that analysts should rather question assumptions and develop analytical frameworks to guide the interpretation of current intelligence.⁹¹

Thirdly, the task of evaluating the veracity, reliability and timeliness of information gleaned from open sources has become extremely difficult. Analysts have to be aware of the possibility of *deception and misinformation*, now to a greater extent and occurrence than with covert intelligence. A recent example is the allegations that many of the tweets in the Iran post-election demonstrations were either the product of Israeli and US attempts to build public sympathy for the Iranian opposition, or attempts by Iranian intelligence operatives who used Twitter to entrap locals.⁹² This again highlights the importance of analysts’ capabilities to be able to discern between reality, perception and possible denial and deception efforts by unknown actors.

were asked to identify the unclassified information sources they relied on, 85% of the respondents chose all four of the following sources: foreign newspapers and weekly periodicals; US newspapers and weekly periodicals; their professional networks, and official, informal communications, such as e-mail – see Medina, Carmen A. 2002. *Studies in Intelligence* 46(3), 23-28

⁹⁰ Barger, Deborah G. 2005. *Toward a Revolution in Intelligence Affairs*, 18

⁹¹ Heuer, Richards J. 2004. *Orbis*. Winter, 94

⁹² <http://www.patronusanalytical.com/files/Twitter%20and%20disinformation%20in%20Iran.php>

Fourthly, the analysts are aware that they do not have all the relevant information and *have to make quick judgement calls on information that most probably is incomplete*.⁹³ Not only are they looking for the proverbial “needle in a haystack” but most of OSINT has already been drafted or communicated within the framework of an English (or Western) paradigm. Chinese is quickly overtaking English on the Internet⁹⁴ and intelligence organisations do not have the capacity to understand and translate critical information quickly. Most of the threats and opportunities of the new world are found in countries and regions outside the English rim. The Middle East, Korea, India and China all pose a linguistic and cultural nightmare for intelligence organisations.

Furthermore, the access to information has *broadened the client base* to such an extent that when intelligence analysts prioritise and produce, they have to be cognisant of every possible decision-maker that might need to know the information or with whom they should share it. Depending on the nature, mandate or scope of the intelligence organisation, these clients might be law enforcement or other intelligence agencies, the private security sector or businesses on local, provincial/regional and national levels. In addition, governments’ involvement in transnational institutions like the UN, EU, AU or SADC makes the “market” for intelligence products even vaster. Each individual potential client has his/her own information needs, intelligence priorities and contexts which compound the analysts’ tasks to deliver effective intelligence timely even further.

Lastly, the interconnectedness of the new world has an *unintended consequence* for intelligence organisations. Should an intelligence report be leaked to or lawfully shared with the press, it may shape phenomena that are being analysed or used in public debate for political purposes. Berkowitz and Goodman provided the example of an official US government intelligence estimate that concluded that the value of the Indonesian rupiah was shaky. The consequence, one can almost guarantee, might be that if it was not, it would soon be.⁹⁵ As was the case with the US’ National Intelligence Estimate (NIE) on Iran’s nuclear weapons capabilities in December 2007, intelligence disclosure can also impact on national, bilateral and multi-lateral relationships and steer events in a totally different direction.⁹⁶ On a

⁹³ Many intelligence organisations only focus on the Internet as OSINT resource.

⁹⁴ Mercado, Stephen C. 2004. *Studies in Intelligence*. 48(3)

⁹⁵ Berkowitz, Bruce D. and Goodman, Allan E. 2000. *Best Truth: Intelligence and Security in the Information Age*, 100

⁹⁶ The DNI’s NIE stated that Iran ceased its nuclear weapon programme in 2003, countering Pres. Bush’s threats of a possible invasion of Iran to stop the nuclear weapons programme. Those political role-players

more positive note, Interpol used the interconnectivity of the Internet and media in October 2007 and succeeded in identifying an alleged paedophile by posting his photograph on Internet news pages, youtube.com and Interpol's website. Law Enforcement agencies worldwide have used social media since 2007 to identify and apprehend suspects.⁹⁷

3.3 The widened scope

During the Cold War, intelligence organisations knew exactly who their enemy was. Likewise, before globalisation, the environment of commercial enterprises was bound and certain. The new connected world poses extreme challenges to all role-players that practise intelligence. Not only do they have to cope with the “traditional” threats, but also with new and emerging threats as well as opportunities.

In Figure 8, Wolfberg's⁹⁸ timeline depicts how the focus of the US intelligence community has changed during the past few decades from being policy-centric (a political focus) to a multi-dimensional focus where threats pertaining to the economic sphere, law enforcement and terrorism vie for budgets and priority together with policy and military threats. In other countries, these focuses will be contextual, depending on what constitutes national security at certain stages. For the intelligence communities in South Africa, policy, military and counterterrorism threats have been replaced or joined by new threats in the human and food-security fields in the post-1994 era. In June 2009, the South African Minister for State Security listed these new threats as “poverty, underdevelopment; environmental degradation, food insecurity and increased competition for scarce natural resources; pandemics and disease; and human and natural disasters. They include intra and inter-state conflict; terrorism; nuclear, chemical and biological weapons proliferation; espionage; subversion; sabotage; transnational syndicated crime and corruption; smuggling and human trafficking; critical infrastructure (sic) and systems failure.”⁹⁹

in the US, as well as countries that opposed Bush's stance towards Iran, welcomed the NIE, while Israel, its supporters in the US and Bush supporters, attacked the DNI for “forsaking analysis and venturing into the policy domain.”

⁹⁷ See <http://www.interpol.int/Public/THB/vico/Default.asp> for the Interpol case and the New Zealand Police's use of Facebook <http://edition.cnn.com/2009/TECH/01/14/nz.facebook.arrest/index.html>.

⁹⁸ Wolfberg, Adrian. 2006. *Military Review*, 38

⁹⁹ Cwele, Siyabonga. 2009. *Why South African needs its spies*

Traditional security focuses on state actors that have histories, constraining laws, boundaries, cultures and definite structures. On the other hand, non-traditional threats are much more diverse, fluid, networked, hidden, mutable, mostly related to ideas and ideologies and not bound to laws, borders or structures like traditional threats. They can act quickly and in unexpected ways and the effects of their actions (or inaction) permeate society on all levels and across all domains.¹⁰⁰

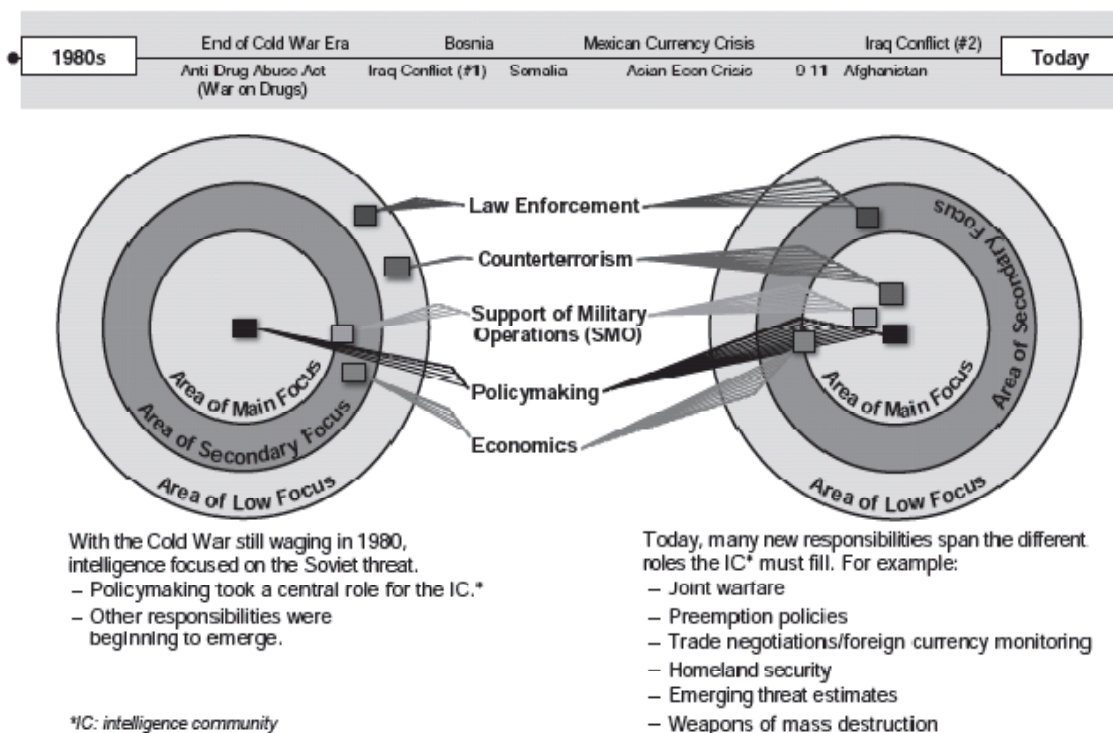


Figure 7: A convergence of focus for the US intelligence community¹⁰¹

The following threats constitute an intelligence organisation's "blind spots":

- The increasing number of non-state actors and stakeholders in the global political, economic, social, military and technological playing fields. Most worrisome is the growing number of non-governmental organisations, quasi-government organisations, multi-national corporations, transnational social movements and civil society organisations which function and network without any control.¹⁰²

¹⁰⁰ Fishbein, Warren and Treverton, Gregory F. 2004. *Sherman Kent School of Analysis Occasional papers*. 3(1), 8-10

¹⁰¹ Wolfberg, Adrian. 2006. *Military Review*. July-August 2006, 38

¹⁰² There are no reliable statistics on the number of different non-governmental organisations available. Most countries do not control or monitor such organisations, while most of them are also not members of international "oversight" bodies. In 2004 the United Nations estimated that there were a total of 61,000

These non-state actors not only include “structured” phenomena like criminal organisations, terrorist networks, proliferation networks, but also diseases, commodities, ideologies, religions and ideas.

- Failed and failing states – as many as 60 states with a population of 20 billion people are in danger of collapsing.¹⁰³
- In addition to states, disorderly spaces exist which are areas where governance is weak or where alternatives to state governance are in place. These include zones of social and economic exclusion (as well as mega- and feral cities) that are important incubators of crime, terrorism and disease.¹⁰⁴
- Continued and heightened ethnocentric, sectarian and religious conflict often spanning across whole regions, and crossing nation-state boundaries.
- Socio-economic threats like health risks, the spread of diseases, and high cost of medical aid and food security.
- The geo-political implications of climate change.
- Global flows of illicit commodities and capital.
- Aging infrastructure, and depleting energy sources.
- Technological advances in all fields that might have a destabilising effect in various sectors.
- Emerging competitors, new processes, scarce natural resources, market shifts and global recessive trends in the business intelligence field.

3.4 Complexity principles applied to intelligence

In the traditional intelligence paradigm, Intelligence Analysis is quite straightforward. The analysts look at their topics or issues and apply linear, cause-and-effect and inward-looking

transnational *corporations* with as many as 900,000 foreign affiliates around the world. These statistics only reflect business entities, and not those active in the social, political or environmental sphere. See Russel, James A. 2006. *Nonproliferation Review*, 13(3), 647-648

¹⁰³ Failed or failing states are characterised by a government that has or is losing physical control of its territory or lacks the monopoly on the legitimate use of force, the erosion of authority to make collective decisions, an inability to provide reasonable public services, and the loss of the capacity to interact in formal relations with other states as a full member of the international community – see Russel, James A. 2006. *Nonproliferation Review*, 13(3), 651-653

¹⁰⁴ Williams, Phil. 2006. *Emerging Threats in the 21st Century: Strategic Foresight and Warning Seminar Series*, 10

reductionist analysis. They break the problems into constituent pieces, solve each separately, and then value the results from the pieces to obtain the overall solution to the problem. The body of information is a closed system, and products are written with a significant degree of outcome certainties.¹⁰⁵

As discussed in Chapter 2, complexity¹⁰⁶ provides a *framework* for understanding the nonlinear dynamics of the world and is interrelated with the speed of change, connectedness and the broadening of the intelligence threat. The value of complexity as a framework is increasingly realised and applied in organisations, society and the military.¹⁰⁷ It should be even more vigorously applied in the intelligence arena but, unfortunately, that is not the case. Intelligence organisations, already not open to discourse on theoretical developments in other fields of study as they label themselves as ‘unique’, do not understand the concept of complexity and seem to be grappling with the new threat environment by applying outdated frames.

The intelligence literature also reflects the scant attention given to the application of the complexity in intelligence as only three scholars refer to it briefly:

- Cooper¹⁰⁸ makes a cursory attempt to describe the US Intelligence community as a complex adaptive system (CAS), without expanding on what the properties/characteristics of CAS are, and how they impact on the practice and organisations of intelligence;
- Andrus¹⁰⁹ discusses the history of the systems theory and the characteristics of CAS to argue the benefits of the Wiki and Blog as self-organising, networked tools for the evolution of the intelligence community to become a CAS.
- The best linkage between the complexity theory and the implications thereof for intelligence is derived from Williams¹¹⁰ who focused on how analysts should

¹⁰⁵ Rinaldi, Steven.1997. *Complexity, Global Politics, and National Security*. Symposium proceedings, 114

¹⁰⁶ Complexity arises from the inter-relationship, inter-action and inter-connectivity of elements within a system and between a system and its environment - See Mitleton-Kelly, Eve. 2003. *Complex systems and evolutionary perspectives of organisations: the application of complexity theory to organisations*, 4

¹⁰⁷ In the US military, the body of knowledge on complexity science and its application on doctrines like “netcentric warfare” is an excellent basis for similar studies in the intelligence field. See the work of Steven Rinaldi, Edward Smith, and Alberts and Czerwinski.

¹⁰⁸ Cooper, Jeffrey R. 2005. *Curing Analytic Pathologies: Pathways to Improved Intelligence Analysis*, 9

¹⁰⁹ Andrus, D. Calvin. 2005. *Studies in Intelligence*, 49(3), 63-70

¹¹⁰ Williams, Phil. 2004. *Conference Proceedings of “New Frontiers of Intelligence Analysis: Shared Threats, Diverse Perspectives, New Communities”*, Rome, Italy, 31 March – 2 April 2004. 35-61

understand it so that they can analyse the networks, the tipping points and the context of the new world. If intelligence analysts understand and distinguish between the associated patterns of complexity, they will be able to provide considerable insight into possible developments and manifestations of threats.

It is imperative for intelligence organisations to be familiar with aspects of the complexity science so that they are able to understand their targets and can try to influence interrelated issues and emerging situations.¹¹¹ A case in point is the threat of terrorism. Terrorist networks have evolved from locally-oriented political organisations into complex, adaptive, loosely structured groups that span international borders to promote larger regional and global goals through violent asymmetric attacks dependent on compartmentalisation and deception. The intelligence community should likewise evolve into a network, capable of collecting and sharing credible, reliable and corroborative information on an unprecedented scale, transcending geographic, agency and political boundaries.¹¹²

The aim of this thesis is not aimed at a detailed discussion of the application of complexity on intelligence; however, it refers to a few eclectic issues that impact on the way intelligence analysts view the changed world. Further study of the dynamic interplay between complexity and intelligence would be necessary if intelligence is serious about understanding the new threat.

3.4.1 Unpredictability and uncertainty

Characteristics of complexity include the fact that two or more entities interacting together create complex interrelationships, whose details cannot be predicted. They are capable of adaptation and evolution and can create new order and coherence.¹¹³ Linking complexity to military intelligence (and therefore applicable to other domains of intelligence as well) Smith describes the world as “fraught with uncertainties and ambiguities and beset by both unknowns and unknowables.” The reason is that the entities in this system adapt to changes in the environment, but also co-evolve with other complementary as well as competing systems, and in that process change the environment. The result is a world in perpetual flux, its rate changing unpredictably and often for reasons that cannot immediately be comprehended or

¹¹¹ In 2007, Irene Sanders, founder of the Washington Centre for Complexity and Public Policy and author of *Strategic Thinking in a Complex World*, started to present workshops on Strategic Intelligence Analysis in a Complex World to analysts in the US civilian intelligence community.

¹¹² Tindall, James A. 2006. *Applying Network Theory to Develop A Dedicated National Intelligence Network*, v

¹¹³ Mitleton-Kelly, Eve. 2003. *Complex systems and evolutionary perspectives of organisations: the application of complexity theory to organisations*, 4

that appear to defy logic and rationality as we – the products of our own complex culture and society – might view them. It is also a world in which competition between and among actors is the norm even though the formats this competition acquires are many, varied, and continually changing.¹¹⁴

What is the effect of the complexity principle of unpredictability on Intelligence Analysis? The intelligence analysts' main task is to forewarn and lessen the uncertainty for the decision-maker. But, it is impossible to predict accurately in an environment or system that is characterised by unknown variables, interdependent actors, outside influences, time lags and unintended consequences. The complexity theory makes it clear that there is no single perfect answer to complex challenges and we must accept “the degree of precision that the nature of the subject admits, and not seek exactness when only approximation is possible.”¹¹⁵

Williams¹¹⁶ states that “surprise is both endemic and inevitable. Perhaps the most that can be done, therefore, is to reduce the frequency of surprise and its strategic significance.” He presents four major sources of surprise in the complexity theory which should be kept in mind by the intelligence analyst to reduce uncertainty, in this case applied to nuclear proliferation:

- *Paradoxical outcomes*: The very act of restricting things that are in demand, such as nuclear weapons, increases their value and encourages new suppliers to enter the market. From both market and complexity perspectives the nuclear non-proliferation regime contains the seeds for its own destruction.
- *Discontinuity and tipping points*: In complexity, the outcome or downstream effects of small events are unpredictable. Events could have catastrophic consequences, in effect being the tipping point for unrelated and disproportionate outcomes.
- *Irreducibility of systems*: It is impossible to reduce systems because they represent more than their constituent parts. In intelligence and law enforcement, action against one subsystem rarely has any effect on the whole system, because the latter can adapt much faster than, in this case, intelligence agencies are able to.
- *Emergent behaviour and morphing networks*: Because the system has the capacity to learn and adapt, it can change whenever the circumstances require. For the

¹¹⁴ Smith, Edward A. 2006. *DoD Command and Control Research Program Publication Series*, 2-3

¹¹⁵ Smith, Edward A. 2006. *DoD Command and Control Research Program Publication Series*, 68-69

¹¹⁶ Williams, Phil. 2006. *Strategic Insights*, 5(6)

intelligence analyst, this would mean that the characteristics and capabilities of a threat or target are morphing continuously, which requires a possibility-driven mind.

The difficulty in creating usable intelligence leads to *analytical and conceptual tensions*¹¹⁷ between the need to provide bottom-line assessments that are usable in the real world, as opposed to analysis that is more nuanced, less straightforward, and thus less readily usable as a basis for practical action. In addition, intelligence clients are notorious for equating intelligence with facts and pressurising intelligence for “factual” or “evidential” intelligence – which is actually history and not forewarning!

To convey the uncertainty, Intelligence Analysis has over the years developed estimative language to describe the grade or level of certainty.¹¹⁸ Words like “possible”, “probably”, “likely”, “could” and “perhaps” are used in analyses, unfortunately many times indiscriminately and not specific to what exactly is uncertain. The consumer would then cast the analysis aside, deriding that intelligence does not convey anything. In the US specifically, where intelligence is increasingly exposed, and even manipulated in the political and public arena, it has become imperative for the client to be absolutely sure what is meant by these, and other similar words. Therefore, the intelligence community started with an education “campaign” where the estimative language used is explained to the client, and when shared with the media, the public at large is also educated on what the purpose and limits of intelligence are (see Figure 9). This campaign can potentially lead to a standardisation in the use of intelligence terminologies that might help the intelligence analyst to gauge the existing level of uncertainty and unpredictability.

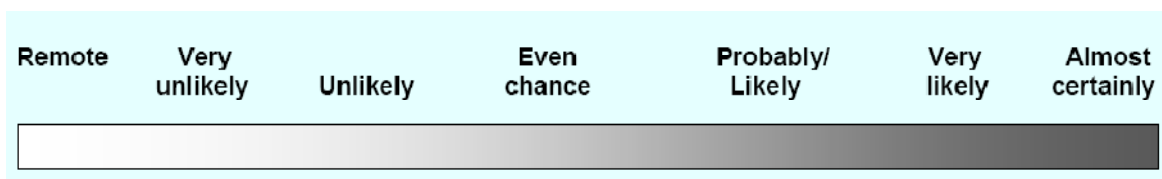


Figure 9: Continuum of Estimates of Likelihood

¹¹⁷ Canadian Association for Security and Intelligence Studies (CASIS). 2007. *Annual International Conference Report*. 4

¹¹⁸ In addition to information sources that are evaluated and graded according to reliability, the validity or accuracy of information is also graded when dealing with the raw information. Furthermore, finished intelligence reports would use the words *probably*, *likely*, *most likely*, etc to convey grades of certainty. Since the early days of Intelligence Analysis, there have been debates over what these probabilistic terms really meant. Attempts were made to put quantifiable percentages to the different terms using Bayesian tools. (see Kent, Sherman. 1962. *Studies in Intelligence*). It is doubtful whether these terms could be standardised, as languages, vocabularies and expressions differ not only between countries, but also between intelligence organisations in the same country.

The National Intelligence Estimates (NIE) explains the use of estimative language as follows: “In addition to conveying judgments rather than certainty, our estimative language also often conveys 1) our assessed likelihood or probability of an event; and 2) the level of confidence we ascribe to the judgment.” The confidence of judgements can be categorised as:

- *High confidence* generally indicates that judgments are based on high-quality information, and/or that the nature of the issue makes it possible to render a solid judgment. A “high confidence” judgment is not a fact or a certainty, however, and such judgments still carry a risk of being wrong.
- *Moderate confidence* generally means that the information is credibly sourced and plausible, but not of sufficient quality or corroborated sufficiently to warrant a higher level of confidence.
- *Low confidence* generally means that the credibility and/or plausibility of the information is questionable, or that it is too fragmented or poorly corroborated to make solid analytic inferences, or that there are significant concerns or problems with the sources.¹¹⁹

An even greater challenge to Intelligence Analysis is represented by those things “we don’t know that we don’t know” – the “unknown-unknowns” which are accommodated by the complex and chaotic domains of the Cynefin framework. When the nature of future threats is undetermined, intelligence analysts will not now know the questions they may be required to answer in the future.¹²⁰ Schmitt states the best that can be hoped for is to work out probabilities – or, as Hayek suggests, focus on the “prediction of the principle” – and even then the system will surprise. Dealing with complexity is not difficult provided that there is a realistic acceptance of what can be known and what cannot, and then build on what can be known to create a pragmatic understanding sufficient to deal with the challenge.¹²¹

3.4.2 **Connectivity, interdependence and co-evolution**

Mitleton-Kelly describes the complexity properties of connectivity and interdependence as those pertaining to a decision or action by any individual, group, organisation, institution or human system that will affect all other related individuals and systems. The effect will,

¹¹⁹ Office of the Director of National Intelligence. 2007. *National Intelligence Estimate*, 5

¹²⁰ Dahl, Erik. 2004. *Warning of Terror: Explaining the Failure of Intelligence against terrorism*, 80

¹²¹ Schmitt, John F. 1997. *Complexity, Global Politics, and National Security Symposium proceedings*, 107-109

however, not be of equal or uniform impact, and vary according to the ‘state’ of each related individual and system at the time. The ‘state’ of an individual and system will include its history and constitution, which in turn will include its organisation and structure. Connectivity applies to the interrelatedness of individuals within a system, as well as the relatedness between human social systems, which again include systems or artefacts such as information technology (IT) and intellectual systems of ideas. Co-evolution means that the evolution of one domain or entity is partially dependent on the evolution of other related domains or entities; or that one domain or entity changes in the context of the other(s).¹²²

The application of the complexity framework stands in direct opposition to the traditional, linear, reductionist method of analysing intelligence. In this new paradigm, analysts cannot claim that they are experts in their fields or topics when their analysis is one-dimensional, i.e. only focusing on the party-political dynamics in country X, while ignoring the linkages to and connections with the socio-economic, diplomatic, military, criminal, multilateral, business and financial as well as societal landscapes. They have to know what the effects of these linkages are, and how the development or transformation of different subsystems (or “landscapes” in this case) impact on one another.

It is imperative for analysts to be "big picture" thinkers who can instantly synthesise information from a variety of sources; spot subtle connections, emerging patterns, and discontinuities, and ask questions even before the "dots" are fully formed.¹²³ It is also impossible to expect of analysts to have a sound knowledge of *all* issues involved in the previously discussed threats. Therefore, analysis should be carried out in a networked manner, incorporating experts from different fields. Not only will it enhance sensemaking, but the typical cognitive dangers of mental biases and groupthink might be reduced. This will be further discussed in Chapters 4 and 5.

3.5 Conclusion

The new world with its speed of connectivity, widened scope and complexity poses pressing challenges for intelligence organisations, and specifically their intelligence analysts. It has changed the relationship with clients, interaction with threats and opened up collaborative avenues with analysts from other organisations and disciplines. It empowers the individual, whether it is the decision-maker, analyst or Joe Public, to access information, form an opinion

¹²² Mitleton-Kelly, Eve. 2003. *Complex systems and evolutionary perspectives of organisations: the application of complexity theory to organisations*, 4-5

¹²³ Sanders, T. Irene. 2004. *Christian Science Monitor*, June 17, 2004

about issues (previously only the domain of the government) and disseminate them worldwide in milliseconds. Too few intelligence organisations, in any domain, have adapted their structures, culture and capabilities to better understand this new world and deal with *both* traditional *and* transnational threats (see figure 10). “Radical changes have to be made in the way we do intelligence.”¹²⁴

	Traditional Targets	Transnational Targets
Focus	States, non-states secondary	Non-states, states as facilitators, willingly or not
Nature of Target	Hierarchical	Networked
Context	Intelligence and policy share basic “story” about states	Much less shared story about non-states, less bounded, more outcomes possible
Information	Too little information, pride of place to secrets, secrets regarded as reliable	Secrets matter, but torrents fragmented, unreliable
Pace and trajectory of events	Primary target slow moving, discontinuities rare	Target may move quickly, discontinuities all too possible
Interaction effects	Limited	“Your” actions and observations have more effect on target’s behaviour
Need for collaboration	Limited, analysis in “stovepipes”	Greater with both regional and functional intelligence specialists, plus different levels of government
Policy support	Consumers mostly politico-military officials of federal government	Wide range of consumers, intelligence often linked to action on a continuing basis

Figure 10: Summary of traditional vs. transnational targets¹²⁵

¹²⁴ Central Intelligence Agency. 2004. *Center for Intelligence Studies Conference Report*, 15

¹²⁵ Fishbein, Warren and Treverton, Gregory. 2004. *Sherman Kent Center for Intelligence Analysis, Occasional Papers*, 3(1),11

CHAPTER 4

Analysing intelligence

Here is Edward Bear, coming downstairs now, bump, bump, bump, on the back of his head, behind Christopher Robin. It is, as far as he knows, the only way of coming downstairs, but sometimes he thinks that there really is another way, if only he could stop bumping for a minute and think of it.

A. A. Milne, *The Complete Tales of Winnie the Pooh*¹²⁶

Although the world has changed dramatically, the centrality of the intelligence analyst in the intelligence/knowledge business remains undisputed.¹²⁷ The words of the father of Intelligence Analysis, Sherman Kent (1967) remain true, whether analysts find themselves in the knowable or complex domains: “Whatever the complexities of the puzzles we strive to solve and whatever the sophisticated techniques we may use to collect the pieces and store them, there can never be a time when the thoughtful man can be supplanted as the intelligence device supreme.”¹²⁸

The main problem with Intelligence Analysis in the Knowledge Age is that we continue to rely on the “analytic tools, methodologies, and processes that were appropriate to the static and hierarchical nature of the Soviet threat during the Cold War and were, in that environment, largely successful.”¹²⁹ Richards Heuer, the scholar who started the study and debate on Intelligence Analysis’ cognitive processes and challenges with his book *Psychology of Intelligence Analysis* (published in 1999), in 2004 again stated that “the intelligence community needs to develop a twenty-first century analytical culture that differs from the conventional intuitive analysis of the past.”¹³⁰

This thesis does not aim to investigate the extensive research done in thinking and analytical processes by the cognitive psychology discipline, but merely attempts to reflect the

¹²⁶ Milne, AA. 1996. *The Complete Tales of Winnie-the-Pooh*, 1

¹²⁷ The Armed Forces Communications and Electronics Association (AFCEA). 2005. *Defense Intelligence Journal* 14(1), 41

¹²⁸ Heuer, Richards J. 1999. *Psychology of Intelligence Analysis*, xiii

¹²⁹ Cooper, Jeffrey R. 2005. *Curing Analytic Pathologies: Pathways to Improved Intelligence Analysis*. 23

¹³⁰ Heuer, Richards J. 2004. *Orbis*, 94

intelligence analysis discipline's literature on this topic. This chapter addresses the functions and activities of the intelligence analyst as a knowledge worker who "thinks for a living".

4.1 Thinking pitfalls

Lefebvre stated that "the kernel of the problem with respect to Intelligence Analysis seems to reside in the analyst's mind – in his thought processes – and with his hierarchy."¹³¹

Mindsets, biases and other subjective, human cognitive errors may be more visible in the Intelligence Analysis process than in other similar knowledge worker activities. The reason for that is that what goes on in the mind has a direct impact on the analyst's identification and perception of the intelligence problem, the evaluation of the veracity and validity of the information and the methods and tools the analyst chooses to explain, estimate or predict.

The human being's mental capacity is limited and cannot deal with the complexities of the world around us. We construct a simplified mental model of reality and then work with this model, behaving rationally within the confines of our mental model – according to Herbert Simon's theory of bounded or limited rationality. The problem with our mental models is that they are not always well adapted to suit the requirements of the real world.¹³²

An analyst's mindset puts a situation or event into context – within a frame of reference. However, our mindset also causes us to apply unsuitable frames of references which limit our proper understanding of a situation. It is prudent for intelligence analysts to be mindful of their own psychological make-up to better understand the actors being analysed and to comprehend the potential pitfalls that can affect their sensemaking of data. Many scholars have written about cognitive pitfalls, biases and the like in psychology and other social sciences. This thesis does not attempt to discuss those issues that factor in on our problem-solving capacities, but will cursorily refer to some that impact on Intelligence Analysis.

Several scholars in the field of Intelligence Analysis have highlighted some of these issues within the discipline which are especially challenging. Richards Heuer, in his book *Psychology of Intelligence Analysis* paved the way for more scholars like Krizan, Thompson, Morgan and Davis to investigate the types of cognitive problems intelligence analysts face and made recommendations on how they can be avoided or minimised through more structured and reduced intuitive analysis.

¹³¹ Lefebvre, Stéphane. 2004. *International Journal of Intelligence and Counterintelligence*, 17(2), 240

¹³² Heuer, Richards J. 1999. *Psychology of Intelligence Analysis*, 3

In addition to one's mindset, which is already quite difficult to change, Thompson¹³³ defines three types of biases which influence the validity and objectivity of the analyst's judgement on issues and events. These are:

4.1.1 Cultural biases

These biases are constraints on one's thinking, acquired during maturation from widely held beliefs, practices or cognitive styles that characterise one's specific social environment while *personal biases* are constraints that arise from specific past experiences of the individual.

4.1.2 Organisational biases

These constraints on cognitive flexibility are imposed by local information, goals, mores, and traditions, which have evolved within the specific organisation in which the individual serves. Cognitive rigidity, or elsewhere called "organisational lock-in", has a devastating impact on the intelligence organisation and Intelligence Analysis in particular. Robson's words "it calcifies beliefs and assumptions and if left unchallenged, can create a collective myopia that endangers organizational effectiveness and ultimate survival"¹³⁴ ring true, not only for many intelligence organisations, but also for those outside the knowledge creation business.

4.1.3 Cognitive biases

In contrast to the previous two, cognitive biases are to a large extent inherent characteristics of the way humans think, both in the way they recall information from memory and in the way they process (perceive and understand) information from their environment. Cognitive biases are mental errors caused by the simplified information processing strategies used and are consistent and predictable. In general, cognitive biases tend to distort what is remembered, how it is remembered, as well as how information is evaluated. The trouble with biases, however, is that they impose artificial constraints and boundaries on what we think and we are not even aware that our thinking is restricted.

Intelligence analysts, in fact all knowledge workers and even those who do not "think for a living" are susceptible to cognitive biases, some of which are:

- *Selectivity bias*: Only information that is vivid, concrete and personal is recalled, the rest is ignored or not even noticed. In another sense, a source might report on an isolated event, or on the observations of one person, which leads one to lend

¹³³ Thompson J. R, Hopf-Weichel R., and Geiselman R. E. 1984. *The Cognitive bases for Intelligence Analysis*, 2.9-2.12

¹³⁴ Robson, David W. 2005. *Mitre International Conference on Intelligence Analysis*, 6

more weight to the personal anecdotes and histories. This results in incomplete and distorted perceptions of the reality.¹³⁵

- *Confirmation bias* is the tendency to perceive events in a way that confirms existing beliefs.¹³⁶ Analysts can either perceive events that fit within their existing conceptual model, or distort the meaning of what is seen to accord with their preconceived ideas. In effect, they perceive what they expect to perceive. In scenario building, information will then be interpreted in a way to confirm hypotheses that already exist, or ignore new information that does not support existing hypotheses.
- *Reliability bias*: Frequently analysts will deal with information without testing and validating the *specific* information. If a source usually provides reliable information, it is difficult to identify deception or misrepresentation of facts. First impressions do last, despite their being unreliable and having an emotional basis.
- *Anchoring bias* is the intuitive and unconscious tendency to simplify the task of mentally processing complex information. A starting point is often used when confronted with a new threat, a new working environment and the like. One would, for instance, take a predecessor's documents and use them as a starting point for understanding information, due to time and information constraints. This in itself is not bad, but it reduces the possibility of a "fresh-eyes" approach and fosters groupthink.

Krizan¹³⁷ identifies a few additional biases that impact on Intelligence Analysis:

- *Superficial lessons from history* are made when uncritical analyses are formulated of concepts or events by over-generalising causality or inappropriate extrapolation from past successes or failures.
- *Secrecy paranoia* or "fetishing"¹³⁸ secret intelligence bias is a problem in the need-to-know intelligence community. Some analysts, managers or clients might only

¹³⁵ Thompson J. R, Hopf-Weichel R., and Geiselman R. E. 1984. *The Cognitive bases for Intelligence Analysis*, 2.9 and Heuer, Richards J. 1999. *Psychology of Intelligence Analysis*, 166-199

¹³⁶ Thompson J. R, Hopf-Weichel R., and Geiselman R. E. 1984. *The Cognitive bases for Intelligence Analysis*, 2.10

¹³⁷ Krizan, Lisa, 1999. *Intelligence Essentials for Everyone*, 36-38

¹³⁸ Wesley, Michael. 2004. *Conference Proceedings of "New Frontiers of Intelligence Analysis: Shared Threats, Diverse Perspectives, New Communities"*, 102

believe secret information, and will not accept the possibility that open sources can deliver the same quality or even better intelligence. In other instances, one might believe that if there is no secret information on a subject or threat, it has ceased with activities or that it no longer exists.

- *Ethnocentrism and mirror-imaging* refers to a bias that allows for the projection of an own culture, ideological beliefs, doctrine or expectation on others that do not share the same orientations. A closed system, groupthink and wishful thinking lead to mirror-imaging.
- A related bias, that of *lack of empathy*, manifests when people cannot fathom that others have their own realities and perceptions of the world that differ radically. This bias leads to an insensitivity of other contexts, rules and cultures.
- *Rational actor bias* refers to the assumption that others will act in a rational manner, based on one's own (rational) referential framework. The first reaction to the 9/11 attacks or suicide bombers is that of disbelief, a "how-can-someone-do-that?" mindset because it is alien to the Western outlook on life.¹³⁹ The other possibility is *denial of rationality* where everyone that acts outside the limits of one's own standards is considered irrational.
- *Proportionality bias* is that expectation that the adversary will expend efforts proportionate to the ends he seeks. The analyst will make unsound inferences on the intentions of others and their measurement of what proportionality they may attach to realising and furthering their interests.
- *Wishful thinking* (Pollyanna Complex) is the bias that refers to analysts who are extremely naïve and whose excessive optimism is born out of smugness and overconfidence.
- *Risk avoidance* or *conservatism* represents the desire to avoid risk or estimate either extremely high or low probabilities. Usually this bias is accompanied by routine thinking as well as selectivity and confirmation biases.
- *Worst-Case Analysis* (Cassandra Complex) displays a bias where the analyst is excessively sceptic and pessimistic about events and intentions of people and other

¹³⁹ Rovner, Joshua, and Long, Austin. 2005. *International Journal of Intelligence and Counterintelligence*, 18(4), 623-624

actors. The analyst will consequently exhibit extreme caution, based on a mental frame of reference formed by past experiences.

Reminding analysts and their managers of these pitfalls might make them more conscious of and cautious in the production and with the evaluation of intelligence. Most biases and mindsets are resistant to change and can only be altered by repeated exposure to new information and alternative viewpoints.

4.2 Analytical and thinking approaches, methods and techniques

Although analysts might have profound specialist knowledge of a topic which is challenged and changes on a daily basis by incoming information from various sources, they at times, and under severe time constraints and other organisational hurdles, must make sense of this information – in nature often fragmentary, ambiguous, contradictory and subject to deception. Moreover, the information might be about matters that have already occurred; however, they must also look into the uncertain future. Analysts can perform four functions: describe, explain, evaluate, or forecast. For whatever type of analysis is undertaken, the analyst must possess an extensive toolkit of different analytical approaches in order to work effectively with the divergent kinds of data. At a minimum, a good analyst must be skilled in the use of logic, statistical inference, analysing cause and effect, probability and decision-making models.¹⁴⁰

A main organisational hurdle is the fact that intelligence clients still believe analysts should provide them with facts and evidence while the complexities of the Knowledge Age, at best, provide only weak signals, clues and indicators. A case in point is that of the former US Secretary of Defence and later Chairperson of the World Bank, Paul Wolfowitz¹⁴¹, who, in 1995, stated that the analysis process is not a mystery, and that analytical products should lay out the facts, the evidence and analysis. In contrast, recent authors, like Berkowitz and Goodman¹⁴² noted that in many instances the truth is simply unknowable and the future depends on the “unknown unknowns” and mysteries.

The analyst’s dilemma to marry objectivity with the “truth”, to best guess or rely on gut feeling while working against the clock, evaluating the reliability of the source of information as well as the validity of the information itself, continue to haunt both analyst and client alike.

¹⁴⁰ Garst, Ronald and Gross, Max. 1997. *Defense Intelligence Journal*, 6(2), 53

¹⁴¹ Wolfowitz, Paul. 1995. in Godson, Roy (ed). *US Intelligence at the Cross-roads: Agendas for reform*, 77

¹⁴² Berkowitz, Bruce D. and Goodman, Allan E. 2000. *Best Truth: Intelligence and Security in the Information Age*, xi.

Analysts just do not have the luxury of time to think about their thinking, or consider what other analytical tool might achieve better results. They often need to be brought to a standstill by an intelligence failure or similar radical event to review their subconscious craft and what can be done to improve it. Such an event proved to be the terrorist attacks on the Twin Towers and the Pentagon. The 9/11 Commission advised that the “lack of imagination” of the analytical community should be addressed. That comment provided the impetus for renewed research into how analysts think and what can be done to improve their thought processes.

Unfortunately the limited literature on analytical and thinking tools and techniques in intelligence makes it difficult to compare approaches to this topic. At the time of completing this thesis, Heuer and Pherson¹⁴³ were in the process of publishing a book in which they propose a taxonomy of analytical methods based on the four approaches followed in Intelligence Analysis. These approaches are distinguished by the nature of the analytic methods used, the type of quantification if any, and the type of data that is available. The approaches might flow into one another, creating a continuum that ranges from art to science. The book then describes the different methods and in which contexts they should be used. Heuer and Pherson’s practical book might go a long way in developing the analysis skills of intelligence professionals.

In this thesis, more emphasis will be placed on the qualitative analysis methods as quantitative methods are hardly ever applied in modern intelligence and the literature is negligible at this stage. The four approaches proposed by Heuer and Pherson are:

- *Unaided analytic judgment* which includes the traditional intuitive way most Intelligence Analysis is done. It also includes evidentiary reasoning, i.e. critical thinking, historical method, case study method, and reasoning by analogy. This method is usually presented by an *individual* effort in which the reasoning remains largely in the mind of the individual analyst until it is written down in a draft report.
- *Structured analysis* that uses structured, non-quantitative techniques that mitigate the adverse impact of known cognitive limitations and pitfalls. These structured techniques externalise the analyst’s thinking in a transparent manner which can

¹⁴³ I am indebted to Dick Heuer and Randy Pherson for sharing with me the draft publication of their book to be published in February 2010 and giving me permission to use it in the thesis. Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009. Page numbers of the draft might differ from those in the final publication. 17-18

then be critiqued by the individual and other knowledgeable analysts. It is therefore a *collaborative* effort which has the additional benefit of helping the analyst see the problem from diverse perspectives.

- *Quantitative methods using expert-generated data:* In most cases pertaining to Intelligence Analysis hard empirical data is not available. In the absence of empirical data, many quantitative methods are designed to use quantitative data generated by expert opinion, especially subjective probability judgements. Special procedures are used to elicit these judgements. This category includes methods such as Bayesian inference, dynamic modelling, and simulation. Already in 1978, Nicholas Schweitzer found that Bayesian analysis in intelligence is a useful analytical tool alongside that of traditional analysis. However, analysts still shy away from what is perceived to be a difficult method and rely mainly on traditional, qualitative methods.¹⁴⁴
- *Quantitative methods using empirical data:* Quantifiable empirical data is so different to expert-generated data that the methods and types of problems the data is used for to analyse are also quite different. Econometric modelling is one common example belonging to this method. Empirical data is collected by various types of sensors and used, for example, in the analysis of weapons systems.

4.2.1 The unaided analytical judgment/Intuitive approach

In ordinary circumstances, analysts will unwittingly and intuitively use one or more of the four main modes of reasoning, namely induction, deduction, abduction and the scientific method.

4.2.1.1 Inductive reasoning

When analysts make a generalisation or discover relationships among phenomena on the basis of observations or other evidence, they use inductive reasoning. This usually results from a learnt experience, or intuition where the analyst can postulate causal relationships.¹⁴⁵ Since the beginning of the Intelligence Analysis profession, analysts have used inductive reasoning (also called the historical method) because that is what they have been taught at university in the social sciences. Most analysts still use this method, mainly because that is what they are

¹⁴⁴ Wheaton, Kristan J., Lee, Jennifer and Deshmukh, Hemangini. 2009. *Journal of Strategic Security*, 2(1). 41. Students from the Intelligence Studies Programme at Mercyhurst College are conducting research on the use of Bayesian methods in Intelligence Analysis. Their research and findings are available at <http://advat.blogspot.com>.

¹⁴⁵ Krizan, Lisa, 1999. *Intelligence Essentials for Everyone*, 30

used to, and also because they have not been exposed to other methods and their associated tools and techniques.¹⁴⁶

Marrin¹⁴⁷ expands on the inductive approach by indicating that analysts have a two-step analytic approach. They use intuitive “pattern and trend analysis” – consisting of the identification of repeated behaviour over time and an increase or decrease in that behaviour – to uncover changes in some aspect of international behaviour that could have implications for national security. Once patterns are detected, they rely on *ad hoc* rules or mental models derived from the study in relevant theory – for example, economics, political science or psychology – to determine the significance of the pattern.

Collier¹⁴⁸ argues that the inductive method leaves too much room for conjecture, superstition and opinion. Most inductive analyses lack systematic procedures and thus provide little basis for establishing the reliability and validity of their research findings. Another problem might be the linearity of the inductive approach. Here the analyst does not mindfully extend his mental models to also include “what if?” scenarios and other non-linear techniques to ensure that the probability of surprises has been addressed. Of course, these will exclude strategic surprises, as previously discussed in the thesis because they are impossible to detect.

4.2.1.2 Deductive reasoning

Deduction is the process of reasoning from general rules to specific cases,¹⁴⁹ where the hypothesis is tested, contrary to inductive reasoning where the hypothesis is created. Krizan¹⁵⁰ cites Clauser and Weir who warn that deductive reasoning should be used carefully in the Intelligence Analysis domain, as Intelligence Analysis rarely deals with closed systems, so premises based on another set of facts, applied to a new problem and assumed to be true may in fact be false and lead to incorrect conclusions.

4.2.1.3 Abductive reasoning

Abduction is the informal or pragmatic mode of reasoning to describe how we “reason to the best explanation” in everyday life. Waltz states that abduction is the practical description of an interactive set of analysis and synthesis to arrive at a solution or explanation, creating and

¹⁴⁶ Collier, Michael, W. 2005. *Defense Intelligence Journal*. 14(2), 30 states that “Intelligence Analysis seems stuck in the 1950 to 1960’s inductive historical methods advanced by Sherman Kent, instead of adopting the latest in social science knowledge”.

¹⁴⁷ Marrin, Stephen P. 2003. *Intelligencer*, 13(2) Online version.

¹⁴⁸ Collier, Michael, W. 2005. *Defense Intelligence Journal*, 14(2), 17

¹⁴⁹ Krizan, Lisa, 1999. *Intelligence Essentials for Everyone*, 30

¹⁵⁰ Krizan, Lisa, 1999. *Intelligence Essentials for Everyone*, 31

evaluating multiple hypotheses.¹⁵¹ This process differs from induction in that it adds to the set of hypotheses available to the analyst. In inductive reasoning, the hypothesised relationship among pieces of evidence is considered to be already existing, needing only to be perceived and articulated by the analyst. In abduction, the analyst creatively generates a set of hypotheses and then sets about examining whether the available evidence unequivocally supports one or the other. The latter step, namely testing the evidence, is a deductive inference.¹⁵²

Abductive reasoning may also be called intuition or “gut feeling” when the analyst just knows something has or will happen, but has no evidence for the hypothesis. The analyst will then set out collecting information that might confirm or disprove the hypothesis. This reasoning is fallible as it is subject to cognitive errors but it has the ability to extend understanding the intelligence problem beyond the original premises.

4.2.1.4 Scientific method

In the scientific method induction is used to develop the hypothesis, and deduction is used to test it. The object is observed and the analyst might formulate a hypothesis to explain the conclusions suggested by the evidence. Experiments are concluded to test the validity of the hypothesis. If they do not validate the hypothesis, a new one must be formulated and new experiments done to validate this hypothesis.¹⁵³ In Intelligence Analysis, there are no experiments and direct observation of the subject, but the analyst can develop hypotheses or explanations from information obtained from various sources. The hypotheses can then be examined for plausibility and iteratively tested against new information. In the early years of Intelligence Analysis, scholars and practitioners alike relied solely on the scientific method. In fact, there are still some who say that “as Intelligence Analysis is a science” improvement should be based on the formulation of better hypotheses, better data and improved objectivity. However, this is not a reflection of the reality in current social science, least of all in an applied social science like Intelligence Analysis.

4.2.2 Alternative/structured analysis approach

Numerous articles have been written during the past few years on analytical tools and methods which can improve Intelligence Analysis. Initially these methods were called “alternative” analyses running counter to the traditional intuitive Intelligence Analysis that

¹⁵¹ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 173

¹⁵² Krizan, Lisa, 1999. *Intelligence Essentials for Everyone*, 30

¹⁵³ Krizan, Lisa, 1999. *Intelligence Essentials for Everyone*, 31

generates forecasts or explanations based on logical processing of available evidence. However, this term implied that it should only be used as an alternative or substitute method such as “Red Teaming”, and only under exceptional circumstances when an analysis is of such importance that a wrong conclusion cannot be afforded. This notion has been slowly changed by the recent renaming of such methods as “structured methods”, indicating that they represent tools *in addition* to traditional, intuitive, analysis methods, and are not merely *alternatives*.

The most difficult challenge facing the introduction of these new models, techniques and methods might be to convince analysts and their managers to learn about and apply them. In his ethnographical study of US analysts, Johnston¹⁵⁴ found that the fact that analysts view their work as “tradcrafft,” mystifies it and reinforces the belief that it is exclusive and unique compared to other disciplines. Tradecraft implies that good or best practices are learnt only by the initiated and handed down through “elaborate rituals of professional indoctrination.” By implication, it means that existing methods and practices are informal, unverifiable and inexplicable. He comes to the conclusion that viewing Intelligence Analysis as a craft is harmful to the profession and that the formalisation of methods would lead to the development of Intelligence Analysis as a scientific discipline.

In a research experiment providing two complex scenarios to analysts from different backgrounds, Folker¹⁵⁵ proved that the use of structured methods, in this case hypothesis testing from Morgan, can improve the results of an analysis significantly. He found that, in contrast to the control group, the test group that used the hypothesis-testing method was better able to identify relevant factors and assumptions, formulate and consider different outcomes, weigh diverse pieces of evidence and make decisions based on the information. The control group’s thinking was not as clear and they jumped to conclusions without having had access to the actual evidence to support their hypotheses. Folker suggests that analysts would need training in the different methods so that they will also be able to select that method most suited to a problem.

Despite the evidence that structured analytical tools and techniques might be useful in Intelligence Analysis, these tools and techniques have only been used on an *ad hoc* basis in the analysis process, have been regarded as nice-to-haves or bonuses to supplement traditional

¹⁵⁴ Johnston, Rob. 2005. *Analytic Culture in the US Intelligence Community: An Ethnographic Study*, 17-20

¹⁵⁵ Folker, Robert D. 2000. *Intelligence Analysis in theatre joined intelligence centers: An experiment in applying structured methods*, 31

methods and did not have any impact on decision-making as the clients were unconcerned about how the analysts arrived at an answer – they just wanted an answer.¹⁵⁶

The use of structured methods depends both on the individual knowledge worker/intelligence analyst's efforts to improve his/her cognitive abilities, and external factors – most of them of an organisational nature. The organisational culture might not be ready to implement alternative analyses as analysts are perceived to be persons who write reports, while those who use models and quantitative techniques are seen as “methodologists” and not real analysts. Time constraints and tight production schedules are also inhibiting factors. Efforts to introduce structured methods have been met by scepticism and hostility, although after the implementation, the analysts stated that it was interesting and worthwhile.¹⁵⁷

Johnston¹⁵⁸ argues that because the domain analysts/experts do not have the time to understand, learn and apply all the various different analytical tools in addition to their main tasks of monitoring and forewarning, methodologists or methodology experts should be introduced to assist the domain analysts in ensuring that analytical rigour is achieved. The danger of this viewpoint is that the use of structured methods is not inculcated in the mindsets and work processes of analysts, but seen as a peripheral, *ad hoc* activity.

Randolph Pherson, a former CIA analyst, published his *Handbook of Analytical Tools & Techniques* in 2008. In it he states that the application of these techniques in intelligence has “greatly reduced the chances of getting an analysis fundamentally wrong or of being surprised by a future outcome.”¹⁵⁹ Structured analysis seeks to help analysts and policy makers “stretch” their thinking through structured techniques that challenge underlying assumptions and broaden the range of possible outcomes. Properly applied, they serve as a hedge against cognitive biases and challenge assumptions or identify alternative outcomes, depending on the technique employed, with the results captured, implicitly or explicitly, in a written product delivered to relevant policy makers.¹⁶⁰

The main advantage of structured analytical methods might be found in the fact that they force analysts to make their reasoning processes transparent and verifiable. They specifically

¹⁵⁶ Fishbein, Warren and Treverton, Gregory. 2004. *Sherman Kent Center for Intelligence Analysis, Occasional Papers*, 3(1), 2

¹⁵⁷ Marrin, Stephen P. 2003. *The Intelligencer: Journal of U.S. Intelligence Studies*. Online version

¹⁵⁸ Johnston Rob. 2003. *Studies in Intelligence*, 47(1). 65

¹⁵⁹ Pherson, Randolph H. 2008. *Handbook of Analytic Tools & Techniques*.5

¹⁶⁰ Fishbein, Warren and Treverton, Gregory. 2004. *Sherman Kent Center for Intelligence Analysis, Occasional Papers*, 3(1), 1

ensure that assumptions, preconceptions and mindsets are not taken for granted but explicitly examined and tested. The use and the documentation of these techniques also help at a later stage to review the analysis and identify the cause of any error.¹⁶¹ Jones adds other benefits of structured analysis, e.g. that the method is aimed at being a separate exercise, systematic and sufficient for scrutiny, while instinctive/intuitive analysis only aims at satisfying. Usually the decision or solution in intuitive analysis is frequently flawed and less effective, while structured analysis tends to be more comprehensive and effective. (See Figure 11).

	Intuitive analysis	Structured analysis
Mind	Closed	Open
Method	Satisfice	Separate Systematic Sufficient
All alternatives	Not considered	Considered
Decision/solution	Frequently flawed Less effective	More comprehensive More effective

Figure 11: Difference between intuitive and structured analysis¹⁶²

The use of structured analysis methods might not only improve the quality of Intelligence Analysis, but can also strengthen the credibility of analysis that is often prone to criticism of real or perceived politicisation and other organisational pressures.

In their new book, Heuer and Pherson¹⁶³ categorise 50 structured analytic methods into eight categories which correlate with common cognitive pitfalls and indicate the functions the analysts need to perform to overcome these pitfalls. The methods are either intelligence specific, have been developed by the authors, other intelligence training institutions, or taken from other disciplines. Some of the methods, of which many are new in Intelligence Analysis, are discussed hereunder in an effort to underscore the importance of the breadth of cognitive

¹⁶¹ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009. 19

¹⁶² Jones, Morgan D. 1998. *The Thinker's Toolkit: 14 powerful techniques for problem solving*, 12

¹⁶³ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009. 1:19

skills those “thinking for a living” should develop to be able to function adequately in all domains of the Cynefin framework.

4.2.2.1 Decomposition and Visualisation

Techniques in this category are used to overcome the limitations of our working memory through: 1) breaking the problem or issue down into its component parts so that each part can be considered separately, and 2) jotting down all these elements in some organised manner to facilitate visualisation of how they interrelate as the problem is addressed. Techniques here include:

- *Checklists*, which can be used to remind the analyst about the steps to be followed, sources to be tasked or the preferences of the client/s.
- *Issue Definition*, which is particularly helpful in preventing “mission creep,” which results when analysts unwittingly take the direction of analysis away from the core intelligence question or issue at hand, often as a result of the complexity of the problem or a perceived lack of information.¹⁶⁴ Asking “why?” five times, broadening, narrowing and deepening the focus are all relevant in assisting to determine the actual focus of the intelligence problem.
- *Chronologies and Timelines*, which assist the analyst in visualising important events in chronological order that in turn assist in detecting patterns, information gaps and determining key events.
- *Sorting*. This allows for the use of categories in a spreadsheet to assist in determining common denominators, especially when analysing large data sets of bank accounts, telephone numbers, etc.
- *Ranking, Scoring and Prioritising*. This technique is used with any list according to the item’s importance, desirability, priority, value, probability, or any other criteria. It is usually applied in conjunction with other tools such as hypothesis generation or issue definition.
- *Matrices*, which are generic analytic tools for sorting and organising data in a manner that facilitates comparison and analysis and are used in conjunction with many other techniques.

¹⁶⁴ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009. 2:6

- *Network Analysis*, also called Association Analysis, Link Analysis, and Social Network Analysis (SNA). This maps and measures the frequency of contacts or flows of information, money, or goods between people, groups, organisations, computers, websites, and any other information/processing entities. The nodes in the network are the people and groups while the links show relationships or flows between the nodes.¹⁶⁵ In most cases, the sheer number of possible links between entities like telephones in figure 12 necessitates software applications. Despite the help of software tools like this, the analyst still needs to analyse the information, identify information gaps and make operational recommendations.

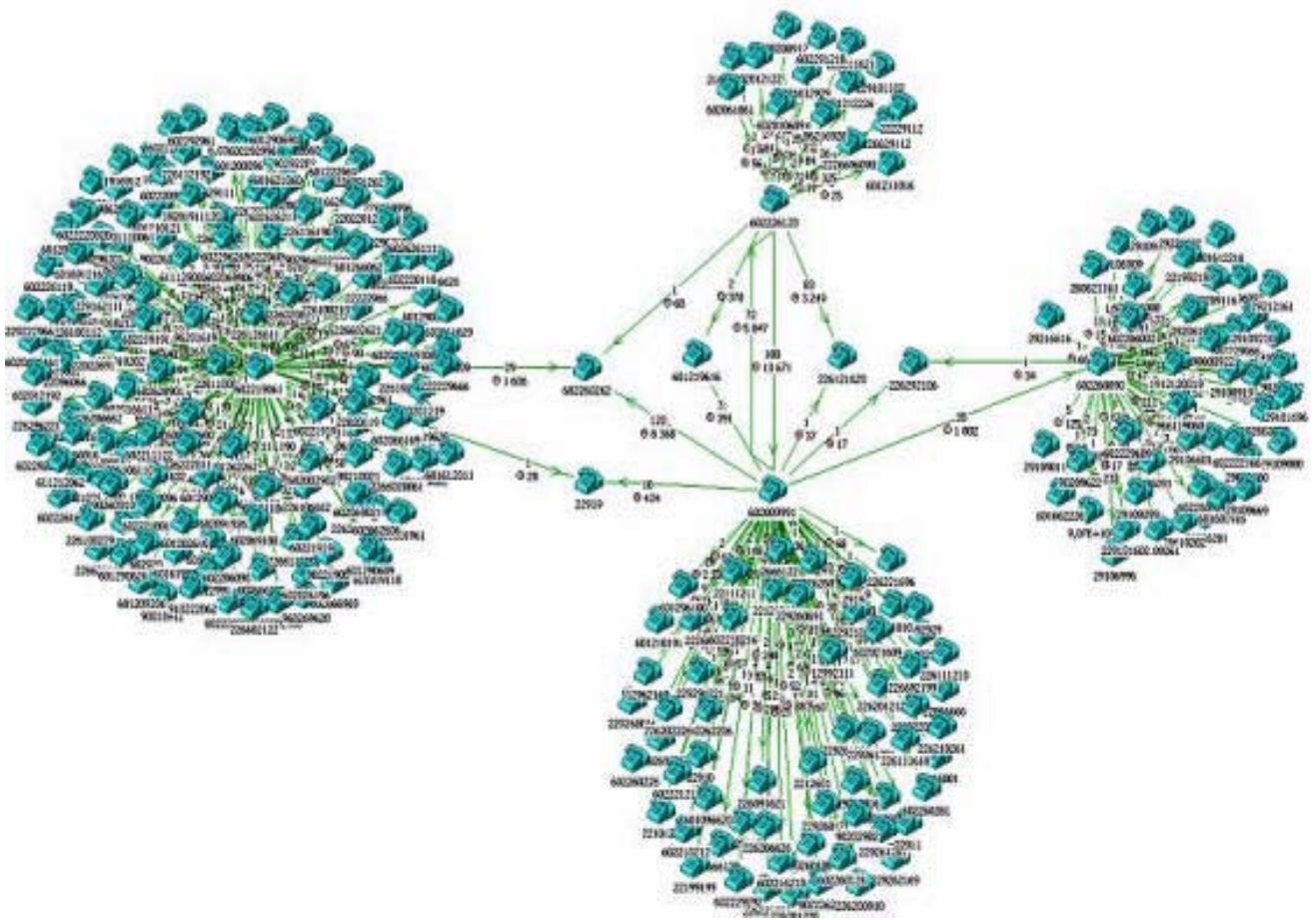


Figure 12: Telephone Link Analysis Chart¹⁶⁶

¹⁶⁵ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*, 2:19

¹⁶⁶ http://www.acsys.com.pl/grafika/ANB_Ang_Graphics/analyst06.jpg accessed 12 June 2009.

- *Process Maps and Gantt Charts* are useful for visualising complex processes or projects for, amongst others, drug manufacturing and distribution, weapons of mass destruction manufacturing and constitutional or legal processes.
- *Mind Maps* (figure 13) and *Concept Maps*, which are useful for providing analysts with simplified visual outlines of complex problems or issues, making the categorisation and logical flow in arguments and reports easier.

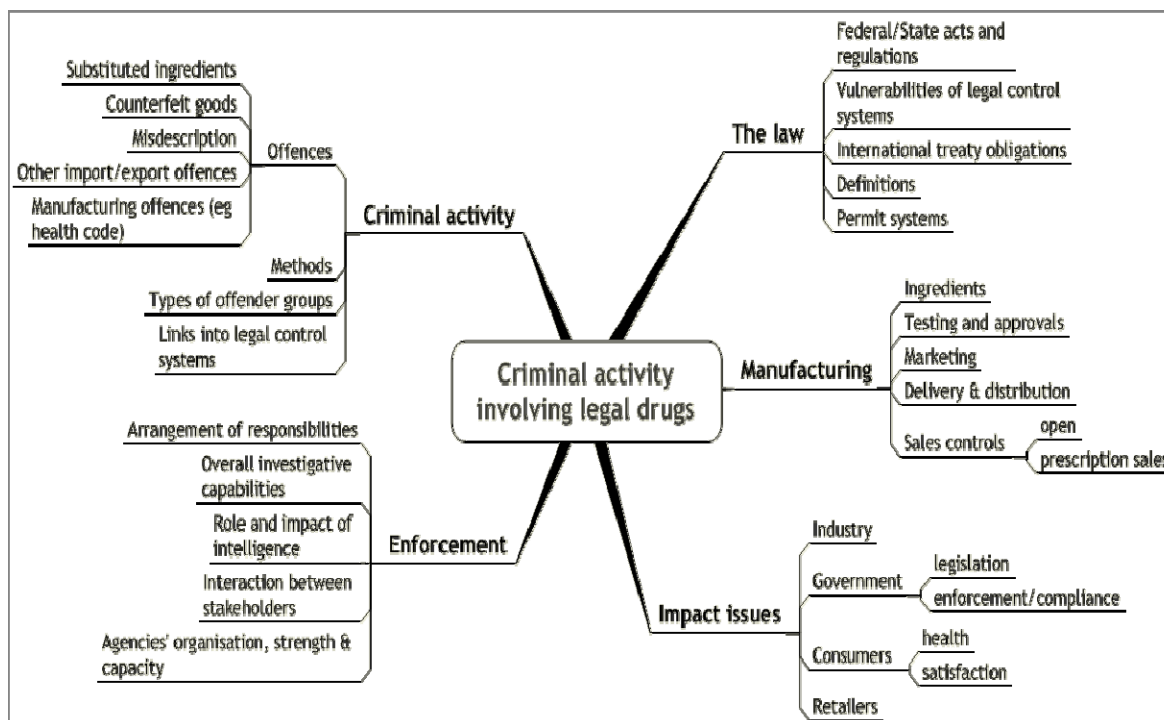


Figure 13: Mind map used in crime intelligence¹⁶⁷

4.2.2.2 Idea Generation Techniques¹⁶⁸

Techniques in this category aim at stimulating the analyst's mind with new possibilities to investigate and view an intelligence problem from different angles, for example:

- *Structured Brainstorming* is a valuable group technique used in all fields to obtain a better and broader perspective of an issue or problem. It is most useful when done in a group which opens up the possibilities of new perspectives.

¹⁶⁷ McDowell, Don. 2001. *Strategic Intelligence: a Handbook for Practitioners, Managers and Users*, 69

¹⁶⁸ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009. Chapter 4

- *Virtual Brainstorming* through wiki-type applications has the added benefit that analysts from various locations can add value to the discussion. Documents and other graphics can be uploaded on such a wiki, supplementing further dimensions to the brainstorming. The US Intelligence community's Intellipedia is a cross-functional, cross-agency collaborative tool based on the wikipedia software designed in 2006; the main differences being that all edits are attributable with various levels of security access. The US Intelligence community's Intellipedia (Figure 14) created a "Community of analysts"¹⁶⁹ where to analysts from various agencies in different global locations can contribute, discuss and argument intelligence issues. As from April 2009, the Intellipedia has about 900 000 pages, 100 000 user accounts and 5 000 page edits per day.¹⁷⁰



Figure 14: A screenshot from the US intelligence community's Intellipedia wiki¹⁷¹

¹⁶⁹ The Intellipedia was based on Calvin Andrus' thought provoking 2005 article on the possibilities the wiki and the blog can have on the Intelligence community as a Complex Adaptive System, taken further by the CIA's Don Burke and Sean Dennehy who created the Intellipedia in 2006. <http://www.e2conf.com/archive/videos/playvideo/index.php?id=641>.

¹⁷⁰ Calabresi, Massimo 2009. *Time*. 8 April 2009

¹⁷¹ <http://commons.wikimedia.org/wiki/File:Screenshot-Intellipedia.png> accessed 15 June 2009.

- *Nominal Group Technique* is a structured brainstorming technique where power relationships are neutralised by giving each participant a chance to contribute to the discussion in a round-robin setup.
- *Starbursting* is a process through which a multitude of questions based on who? what? where? when? why? and how? are generated through brainstorming. For the intelligence analyst, this technique is helpful when determining all the information gaps that need to be addressed in a collection plan.
- *Morphological Analysis* is most useful when analysts are confronted with complex, non-quantifiable problems for which little data is available and the chances for surprise are great. It can be used, for example, to identify all possible variations of a threat, all possible ways a crisis might occur between two countries, all possible ways a set of driving forces might interact, or the full range of all potential outcomes in any ambiguous situation.¹⁷² This two-step process includes brainstorming where different categories of a problem are identified, after which the analysts force associations between and among the different elements to come up with as many permutations of possibilities as possible. This technique also assists in scenario development.

4.2.2.3 Scenarios, Indicators, Signposts

When working with so many uncertainties, the best intelligence analysts can do is to determine the drivers that might change a situation and spell out the different possible futures/scenarios. Scenario analysis is a product of the management sciences¹⁷³, but is routinely used in the intelligence discipline, albeit sometimes in an eclectic manner. The value of the scenario technique is fivefold:¹⁷⁴

- It generates indicators to monitor for signs that a particular future is becoming more, or less likely.
- It helps analysts and decision-makers anticipate what would otherwise be surprising developments by forcing them to challenge assumptions and consider plausible “wild-card” scenarios or discontinuous events.

¹⁷² Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009. Chapter 4

¹⁷³ The best example here is Peter Schwartz’s (1991) book *The Art of the Long View* based on his scenario planning experiences in companies such as Shell.

¹⁷⁴ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009, 5:4

- It produces a broader analytic framework for calculating the costs, risks and opportunities represented by different outcomes.
- It provides an effective means of weighing multiple unknown or unknowable factors and presenting a set of plausible outcomes.
- It binds a problem by identifying plausible combinations of uncertain factors.

Heuer and Pherson propose three scenario techniques which increase in complexity:

- *Basic Scenario Analysis*, where the analyst would identify the drivers, forces and events that are likely to influence the future, group them together in at least four plausible scenarios, and list the implications of the scenario for the decision-maker. Indicators associated with each scenario can also be identified and monitored to establish which scenario is unfolding.
- *Alternative Futures Analysis* (Figure 15), is usually used with a larger group project where two drivers for critical events are identified, namely: 1) the effectiveness of government, and 2) the strength of civil society. At each end of the continuum, two ends are identified, creating a 2x2 matrix. A “story” is created for each scenario, indicators are developed and monitored.

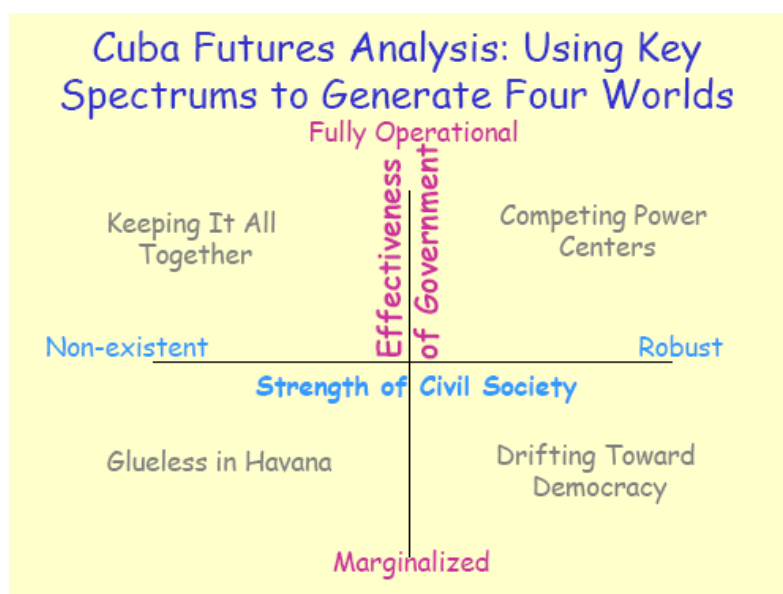


Figure 15: Alternative Futures Technique¹⁷⁵

¹⁷⁵ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*, 5:8

- *Multiple Scenario Generation* (Figure 16) is a more complex technique where more than four scenarios are developed according to a multitude of drivers. Analysts would go through several alternative scenario exercises with different drivers and then choose, according to set criteria, those scenarios most relevant to the brief of the client, including those likely to happen, as well as some “wild cards” and worst case scenarios.



Figure 16: Multiple Scenario Generation Technique – here only 1 driver in a worst case scenario¹⁷⁶

- *Indicators and Signposts* listing is an excellent way of preparing the mind to recognise early signs of change. More often than not, analysts do not see the gradual changes taking shape in a society, making it difficult for them to grasp new developments for what they really are. This reluctance to change a perception in response to new evidence is natural. Listing indicators or signposts for each hypothesis or scenario at the outset of the investigation of an intelligence problem opens the mind for all possibilities of permutations of scenarios.
- The *Indicators Validator* technique flows from the listing of indicators where the next step is to rate the indicators according their likelihood of happening. Those indicators with the fewest “highly unlikely” rating are eliminated, urging the analyst to develop new indicators or scenarios that might be more feasible.

4.2.2.4 Hypothesis Generation and Testing¹⁷⁷

Although subconsciously analysts hypothesise about each piece of information and validate the hypothesis intuitively, structured analytical tools assist in looking at a wider range of hypotheses, thereby opening their minds to different possibilities and explanations. It also

¹⁷⁶ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*, 5:10

¹⁷⁷ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009, Chapter 6

prevents them from “satisfying” or being satisfied with the first explanation that comes to mind or worse, only investigating the hypothesis that they agree with and ignoring any other option. In this technique, the focus is on refuting hypotheses, not confirming them. This makes that hypothesis which cannot be refuted, strong enough for further investigation.

Hypothesis generation is characterised by the following:

- *Multiple Hypothesis Generation* is useful when there are many factors involved in the analysis, and there is a high level of uncertainty about the outcome of the analysis or when analysts or decision-makers hold competing views. The process starts with the generation of as many hypotheses as possible through situational logic, application of different theories or historical comparison. The hypotheses are then rated according to credibility and listed for further enquiry.
- *Analysis of Competing Hypotheses* (ACH - Figure 17) is used when hypotheses should be generated about what might be the truth or what might happen. It is not a scenario development exercise. ACH involves identifying a complete set of alternative explanations or outcomes (presented as hypotheses), assessing the consistency or inconsistency of each item of evidence with each hypothesis, and the selection of the hypothesis that best fits the evidence. The analysis is preceded by trying to refute rather than confirm each of the hypotheses. The most likely hypothesis is the one with the least evidence against it, not the one with the most evidence for it. The full ACH process follows the following eight steps.¹⁷⁸

Participants should:

1. Identify the possible hypotheses to be considered. Use a group of analysts with different perspectives to brainstorm the possibilities.
2. Make a list of evidence and arguments (including assumptions and logical deductions) for and against each hypothesis.
3. Enter hypotheses and evidence into the matrix. Assess the consistency or inconsistency of each item of evidence for each hypothesis. There is an option also to assess the credibility and relevance of each item of evidence to determine how much weight it should have in the analysis.

¹⁷⁸ Information from ACH software available from <http://www2.parc.com/istl/projects/ach/ach.html>.

4. Refine the matrix, reconsider the hypotheses, identify gaps in the evidence that may need to be filled to refute hypotheses, check the consistency of the evidence ratings, solicit critical input from other analysts. Use the software functions to identify and compare different types of evidence with special focus on the most diagnostic evidence.
5. Compare own conclusions about the relative likelihood of the hypotheses with the Inconsistency or Weighted Inconsistency Scores generated by the software. If they are not similar, figure out why and what can be learned from that.
6. Do a sensitivity analysis. Consider how own conclusions would be affected if key evidence or arguments were wrong, misleading, or subject to a different interpretation. Double check the validity of key evidence and arguments that determine the outcome of own analysis.
7. Report conclusions. Include discussion of alternatives that were considered and why they were rejected.
8. Identify milestones for future observation that may indicate events are taking a different course than expected.

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Classification: UNCLASSIFIED		Project Title: DC Sniper		Available Matrices: Inconsistency Score		H. 7		H. 6		H. 5		H. 3		H. 2		H. 4		H. 1	
				Type		Two black killers		Two white killers		Serial Killer (lone, male, black)		Serial Killer (lone, male, white)		Foreign terrorists		Domestic terrorists (White Supremacists)		Disgruntled Michael's employee or customer	
				Inconsistency Score		-3		-10		-13		-20		-21		-22		-27	
Early Evidence (no co)		Enter Evidence																	
All Evidence		E10		No sniper seen but loud noise/gunshot heard/2people?		Absence of evidence		CC		CC		I		I		C		C	
Early Evidence (containing)		E8		White truck sped by Ramos with two men inside		Eyewitness		CC		CC		I		I		C		C	
Early Evidence (NC-5)		E17		4 Oct Seawell shot at Michaels in Spotsylvania VA		Police report		C		C		C		C		I		I	
Early Evidence (C-7H)		E9		3 Oct Rivera shot at Shell Station		Police report		C		C		C		C		I		I	
E37 Evidence Link:		E3		2 Oct Martin shot at Shoppers Warehouse		Police report		C		C		C		C		I		I	
E37 Evidence Notes:		E40		22 Oct Johnson shot on steps of Ride-on-Bus		Police report		C		C		C		C		C		I	
		E30		19 Oct Hopper shot at Ashland Ponderosa		Police report		C		C		C		C		C		I	

Figure 17: Screen shot from ACH software on the Washington DC sniper¹⁷⁹

¹⁷⁹ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009, 6:12

- *Argument mapping* is used for diagramming the structure of an argument to include any kind of argumentative activity such as reasoning, inference, debating, and cases. Typically, an argument map is a “box and arrow” diagram with boxes corresponding to propositions and arrows corresponding to relationships such as evidential support. Argument mapping is similar to other mapping activities such as mind mapping and concept mapping, but focuses on the logical, evidential or inferential relationships among propositions.

4.2.2.5 Cause and Effect Analysis¹⁸⁰

In addition to the normal thinking biases, intelligence analysts should be wary of making assumptions about the cause and effect of certain events or indicators. Deception, disinformation, ambiguous information, or the total lack of information makes untested assumptions and conclusions risky. Structured analytical techniques assist the analyst to refine and strengthen interpretation of the current and future situations. Two of the tools are:

- *Key Assumptions Check*, used when analysts use expert judgment, situational logic and understanding of similar situations to try and explain a new intelligence problem. The assumptions might not be applicable to the new situation; therefore, they need to interrogate their mindset so that they can critically evaluate its relevancy. Using this technique, an analyst and outsiders with little knowledge about the issue thrash out all the assumptions that they have. The outsiders bring in new thoughts and might expose fallacies in logic. First the group interrogates all possible assumptions by critically challenging statements like “would never”, “usually”, etc. After all the assumptions have been listed, questions are asked about each of them like: “When will this not be true?” “Is this still valid today?”, “If it is invalid, what will the impact on the analysis be?” The assumptions are then categorised into three categories: 1) Basically solid, 2) Correct with some caveats, and 3) Unsupported or questionable – these are the key uncertainties. The latter is then discarded and the rest refined to make sure the assumptions are still valid as the intelligence picture evolves.
- *Outside-In Thinking*, which is used to force the analyst to consider all related complex issues that might impact on a current or future situation. It assists in identifying all variables from a global, political, economic, social, legal,

¹⁸⁰ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009, Chapter 7.

environmental, military and technological perspective. By casting their net broadly at the beginning, analysts are more likely to see an important dynamic or include a relevant alternative hypothesis. The process can provide new insights and uncover relationships that were not evident from the start. These usually create new information gaps and hypotheses that need to be investigated further. This technique is similar to STEEP (i.e. Social, Technological, Economic, Environmental and Political) or PESTEL/PESTELO (i.e. Political, Economic, Social, Technological, Environmental, Legal and Organisational) analyses used in management sciences.

4.2.2.6 Reframing Techniques¹⁸¹

These techniques aim at assisting analysts to change their frames of reference/mindset about an analytic problem through changing the questions or the perspectives from which they ask them. Analysts can use reframing when they need to generate new ideas, or see old ideas from a new perspective, or any other time they sense a need for fresh thinking. The techniques include:

- *Pre-mortem Analysis* (also sometimes called crystalballing); a technique where the analysts put themselves in the future and pretend that their analysis on an intelligence issue was wrong. They then have to interrogate what could have gone wrong and what failure (analytical or organisational) might have led to the failure. This enables them to pre-empt and address inconsistencies and other variables, thereby reducing the risk of analytical failure.
- *What If? Analysis*, which serves a function similar to that of scenario analysis – it creates awareness that prepares the mind to recognise early signs of a significant change, and it may enable the decision-maker to plan ahead for that contingency. The analyst imagines that the event has occurred, then analyses how the event could have happened, what the indicators might have been, the stakeholders' actions, etc.
- *Red-Hat Analysis*; forecasting the behaviour of another individual or group by trying to replicate how that other person or group thinks by putting oneself “in their shoes” or putting on “their hat.” To do this effectively, without mirror imaging, requires a substantial area and cultural expertise.

¹⁸¹ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009, Chapter 8

- *Structured Self-Critique* (Figure 18), which is a systematic procedure that a small team or group can use to identify weaknesses in its own analysis which subsequently leads to the reframing of the intelligence problem, ensuring analytical rigour. This takes place *before* outsiders can critique an analysis, which also serves as a “dry-run” for the usual critical production process. From this converse perspective, they respond to a list of questions about sources of uncertainty, the analytic processes that were used, critical assumptions, diagnosis of evidence, anomalous evidence, information gaps, changes in the broad environment in which events happen, alternative decision models, availability of cultural expertise, and indicators of possible deception. Based on responses to these questions, the team reassesses its overall confidence in its own judgment, and if necessary, alters its analysis.



Figure 18: Structured self critique

4.2.2.7 Challenge Analysis Techniques

In the past, intelligence organisations aimed at delivering a consensus document to the decision-makers, which meant that the report had to be “weakened” to accommodate all differing viewpoints. Footnotes would have indicated a minority viewpoint, but more often

than not, these were deleted from important documents.¹⁸² Coordination of intelligence reports between different organisations is an arduous process fraught with different viewpoints, access to different types of intelligence and political turf wars. Challenge analysis techniques will assist in providing the best possible product to the client where major differences exist. These techniques differ from competition analysis where there is only a win-lose situation and analysts do not learn anything from their counterparts' position, but only entrench themselves in their own and those of the organisational stovepipes, thus preventing collaboration and communication.¹⁸³

Heuer and Pherson¹⁸⁴ group many of the already discussed techniques in this challenge analysis category, because they inherently dare the analysts to rethink their respective viewpoints. These techniques are also called *alternative analysis*, *contrarian* or *red team analysis*. Because of the uncertainty of future developments, they make sense in Intelligence Analysis as the decision-maker should have access to all divergent points of view. Personal challenge analysis techniques like the self-critique technique addressed above (in reframing), is not usually seen as part of challenge analysis, the latter being seen as a more formal, deliberate seeking of at least one other viewpoint of an intelligence problem. The techniques can be detailed as follows:

- *Adversarial Collaboration* is a technique developed by the Nobel Prize winner Daniel Kahneman, whereby differing parties agree to work together and publish a joint product which will also outline their disagreements on the empirical test results conducted by an arbitrator. Although empirical testing is not possible in Intelligence Analysis, this technique can be used when both parties are willing to consider each other's position and then agree to include both in an intelligence product if the differences cannot be resolved. Techniques to assist in the achievement of such collaboration will include: 1) key assumption checks, 2) analysis of competing hypotheses, 3) argument mapping, and 4) collaborative debates. In the latter, both sides exchange counterarguments resulting in one side

¹⁸² This was the writer's own experience when interdepartmental intelligence documents or contentious issues and events were analysed.

¹⁸³ Heuer and Pherson's valid argument for not using the term *competitive analysis* or Team A/Team B analysis, although that was the term used by the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction in 2005 when it instructed the US intelligence community to do more competitive analysis. Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009, Chapter 9:12

¹⁸⁴ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009, Chapter 9

prevailing with its stronger argument, or both sides' arguments are strong enough to be dealt with jointly in a report, or, there is too much uncertainty to make a judgment and no product is written, or the weaker side is invited to write a "second opinion" separate document. In most instances where there is no agreement between analysts of different units, all the analysts usually escalate the problem to their manager, most of the time not reflecting the arguments of the other analysts. Instead of having a balanced, multi-perspective overview of the problem, the managers will return with the same entrenched perspectives represented by their analysts, making the situation more confounding, and 5) in the joint escalation technique, the analysts prepare an integrated statement reflecting all the different viewpoints thereby creating a better understanding and opportunity for the managers to make a more informed decision.

- *Structured Debates* as a technique is used when none of the other techniques were successful in obtaining an outcome. Written arguments are read to the other, opposing side and the audience, after which the opposing side has to refute the arguments. This reflects the scientific method where the hypothesis with the least evidence against it is the most probable. If neither side's arguments can be effectively refuted, then arguments for and against both sides should be recognised in the report. Clients of Intelligence Analysis stand to gain greater benefit by weighing well-argued, conflicting views than by merely reading an assessment that masks substantive differences between analysts or drives the analysis toward the lowest common denominator.
- *Devil's Advocacy* is a process whereby an independent outsider is allowed to critique a proposed analytic judgment, plan, or decision, and to build the best possible case against it. This is *not* the same as self-critique and is usually initiated by the client or manager to find out what is wrong with an analysis conclusion arrived at unanimously, what can go wrong in future, and what the impact might be for decision-making.
- *The Delphi Method* is used for eliciting ideas, judgments or forecasts from a group of external experts who may be geographically dispersed. It differs from a survey in that there are two or more rounds of questioning. After the first round of questions, all the answers and explanations of the answers are distributed to all participants, often anonymously. The expert participants are then given an

opportunity to modify their previous responses, if so desired based on what they have learned from the responses of the other participants. The Delphi Method can be used quite effectively in Intelligence Analysis, especially since outside expert advice is thereby promoted by the major intelligence organisations. It is important to remember that the value of this technique lies in the variety of viewpoints, and that there should be no attempt to force the opinions into one shared opinion.

4.2.2.8 Decision Support Analysis¹⁸⁵

Heuer and Pherson also developed techniques, by modifying some used outside the intelligence environment, to enable analysts to see the problem from the decision-maker's perspective. Intelligence analysts can use these techniques as they structure all the relevant information in a format that makes it easier for the manager, commander, planner or other decision-maker, to make a choice. These techniques assist in describing the forces that are expected to shape the decision, then describe several potential outcomes, and subsequently identify indicators or signs to look for that could provide early warning of the direction in which events are headed. In addition to assisting own clients, these techniques can also help to analyse a target country, organisation or government. Three of these techniques are listed and described hereunder:

- *Complexity Manager* is a method designed by Heuer which is used to assess the chances of success or failure of a new or proposed policy, to identify opportunities for influencing the outcome of any situation, determine what would need to change in order to achieve a specified goal, or identify unintended consequences from the pursuit of a policy goal. In brief, it helps decision-makers ask better questions and anticipate problems. It also assists analysts in analysing target organisations, governments or syndicates and can be used for both operational and strategic purposes. Analysts are generally not able to factor in all the different permutations of interacting variables in a complex environment. This technique enables them to find the best possible answer by organising information in a systematic manner about many relevant variables. After defining the problem, the analyst conducts a structured brainstorming session to identify all the relevant variables, whether they are static or dynamic (predictably or unpredictably dynamic). These variables are then entered down the side and again across the top of the cross-impact matrix.

¹⁸⁵ Heuer, Richards J. and Pherson, Randolph H. 2009. *Structured Analytic Techniques For Intelligence Analysis*. Working Draft March 2009, Chapter 10

The analyst, preferably working in a small team, considers each pair of variables and asks the question: “What is the impact of this variable on the paired variable?” A rating of the direction and strength of the impact is entered in the appropriate cell and notes are kept of the discussion. The next step is to take one variable at a time and draft several paragraphs that summarise how other variables impact *on* this variable and how they are in turn impacted on *by* this variable. Using this information about the individual variables, the analyst then draws conclusions about the system as a whole in answer to questions such as: “What is the most likely outcome?” “What things could happen to cause a different outcome?” “What desirable or undesirable side effects should be anticipated?” “What opportunities are available to influence the outcome?”

- A *SWOT Analysis* (Figure 19) is commonly used by all kinds of organisations to evaluate the **Strengths**, **Weaknesses**, **Opportunities** and **Threats** involved in any project or plan of action. The strengths and weaknesses are internal to the organisation while the opportunities and threats are characteristics of the external environment. Because the technique considers an organisation’s strengths and weaknesses against the opportunities and threats in the environment in which it operates, the plans or action recommendations that develop from the use of this technique are often quite practical and useful in both strategic and operational realms. Again, in addition to own policies and decisions, a SWOT analysis is ideal to analyse an organised crime syndicate, terrorist group or government. In this technique, the analyst should start by stating the objective, after which the SWOT table is filled in by listing the respective strengths, weaknesses, opportunities and threats that are expected to facilitate or hinder the achievement of the objective. The significance of the impact of the attributes and condition on the achievement of the objective is far more important than the length of the list. It is often desirable to list the items in each quadrant in order of their significance or assign values to them on a scale of 1 to 5. For strategic purposes (figure 21), the analyst identifies possible strategies for achieving the objective. This is done by asking the following questions: 1) “How can we use each strength?” 2) “How can we improve each weakness?” 3) “How can we exploit each opportunity?” 4) “How can we mitigate each threat?”

SWOT analysis		Analysis of internal environment	
		Strenghts	Weaknesses
Analysis of external environment	Opportunities	<p>Strategy</p> <p>Maximization of Strenghts – Maximization of Opportunities</p>	<p>Strategy</p> <p>Maximization of Weakneses – Minimalization of Opportunities</p>
	Threats	<p>Strategy</p> <p>Maximization of Strenghts – Minimalization of Threats</p>	<p>Strategy</p> <p>Maximization of Weakneses – Minimalization of Threats</p>

Figure 19: Strategic SWOT Analysis Template¹⁸⁶

- *Pros-Cons-Fixes-and-Faults*. This represents an easy technique to make a quick appraisal of a new idea or a more systematic analysis of a choice between two options without having to jump to conclusions. It also organises the elements of the problem logically and objectively, helping the decision-maker to make a careful and emotionally detached, considered choice. First the analyst is required to list all the pros in favour of this decision or choice while thinking broadly and creatively. Then all the cons, or arguments against what is proposed are listed, reviewed and consolidated. At that point the analyst must make a choice. If the *goal is to challenge an initial judgment that the idea will not work*, the cons must be taken, one at a time, and see if they can be “fixed.” That means trying to arrive at a way to neutralise their adverse influence or even convert them into pros. This is intended to counter any unnecessary or biased negativity about the idea. There are at least four ways an argument listed as a con might be “fixed”: 1) propose a modification of the con that would significantly lower the risk of its being a problem, 2) identify a preventive measure that would significantly reduce the chances of the con being a problem, 3) do contingency planning that includes a

¹⁸⁶ http://www.ownway.eu/originaly/kategorie/57_39_original.jpg accessed 6 June 2009

change of course if certain indicators are observed, and 4) identify a need for further research or collect information to confirm or refute the assumption that the con is a problem. If the *goal is to challenge an initial optimistic assumption that the idea will work* and should be pursued, take the pros, one at a time, and see if they can be “faulted.” That means attempting to figure out how the pro might fail to materialise or have undesirable consequences. This is intended to counter any wishful thinking or unjustified optimism about the idea. There are at least three ways a pro might be “faulted”: 1) identify a reason why the pro will not work or the benefit will not be received, 2) identify an undesirable side effect that might accompany the benefit, 3) identify a need for further research or collect information to confirm or refute the assumption that the pro will work or be beneficial. *A third option is to combine both approaches; fault the pros and fix the cons.* Compare the pros, including any faults, against the cons by including the fixes. Weigh the balance of one against the other, and make a choice. The choice is based on the analyst’s professional judgment, not on any numerical calculation of the number or value of pros versus cons.

4.3 Conclusion

The value of understanding how Intelligence Analysis is done and the studies of the various scholars and practitioners should form the basis for deliberate thinking about thinking, or mindfulness. Analysts should be aware of their frames of reference, the intuitive methods they use, as well as of the other, more structured methods available to add value, especially where individual interpretation is insufficient. The various analytical tools and techniques described in the thesis will assist the analysts and the decision-makers in grasping, verbalising and communicating their thought processes regarding the complexities of any intelligence problem much more effectively as they move between the knowable to the complex or chaotic domain. This makes the argumentation phase of Intelligence Analysis more rigorous and open-ended, thereby further increasing the contributory value of the analyst to the intelligence domain. Analysts should ideally be trained in all the different tools and techniques, so that they will be able to apply the most appropriate tool, whether intuitive/unaided or structured, to a specific problem and for a stage of the intelligence process (see Figure 20).

The main constraints on the application of these new techniques might be tight deadlines and the prevailing organisational culture. Regarding time, it might be necessary for the respective organisations, management teams and analysts to ensure that there is sufficient time for the

application of more advanced and complex methods. The greatest challenge might lie in convincing analysts, their managers and clients of the benefits of the structured analytical methods. In some cases, analysts might already use some of these tools and techniques subconsciously, and with exposure to the explicit step-by-step approach might be able to improve and refine those tacit knowledge processes. A gradual and natural introduction to these methods in the ordinary flow of processes and intelligence products might be more effective than large-scale and forced realigning of thinking. The creation of training opportunities, as well as the education of clients to demand evidence of the application of the techniques might assist in this process. The more collaborative sensemaking will enable the building of trust between different units of analysts, especially in those organisations where individual outputs are the norm and group collaboration a novel idea.

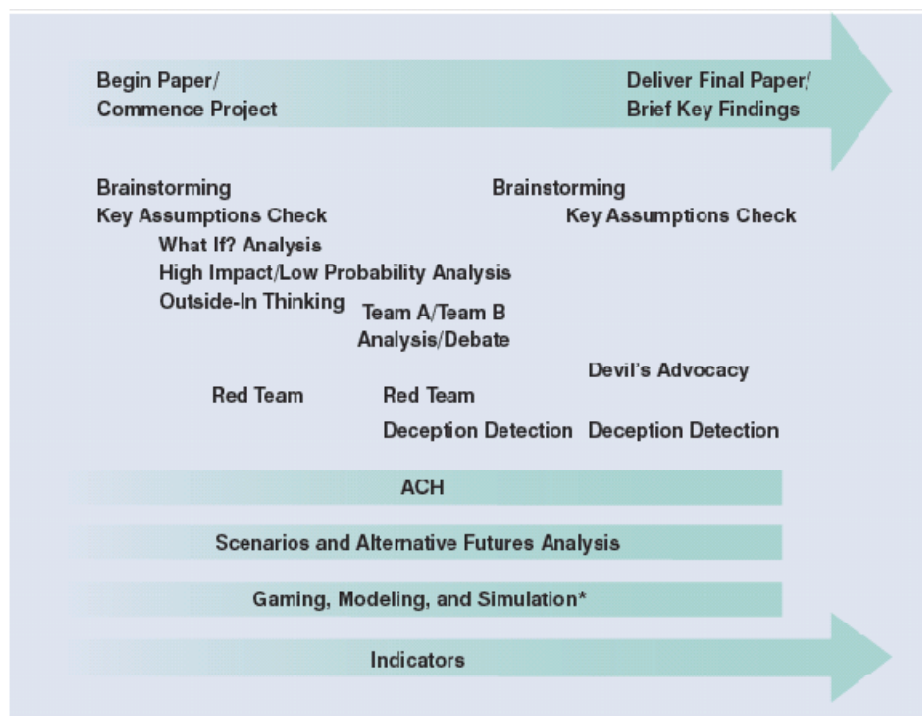


Figure 20: Timeline for using analytical techniques throughout analytical project¹⁸⁷

¹⁸⁷ United States Government. 2009. *A Tradecraft Primer: Structured Analytic Techniques for Improving Intelligence Analysis*, 38

CHAPTER 5

New Dimensions for Intelligence Analysis

The sign of a healthy professional discipline will be the intelligence community's willingness to experiment with theories of best practices and to lead change rather than be run over by it.

Carmen Medina¹⁸⁸

The wider application of structured analytical techniques in intelligence will have a profound impact on analysts and their expertise, but may not be sufficient to reduce uncertainty in complex situations. The value of Heuer and Pherson's new book lies in their attempt to transcend the boundaries between the knowable, individual expert domain to that where collaborative sensing is made in the complex domain. Unfortunately, the reality in the intelligence environment is that intelligence organisations throughout the world, also here in South Africa, *only* reflect the known and knowable domains with clearly defined threats, a product/output disposition, and entrained individual expert knowledge.

However, new actors are required to play out their roles on a new stage: that of the *complex domain*. As indicated earlier in the thesis, new intelligence problems and targets are forcing the intelligence organisation also to operate in the complex domain, something for which it is ill-prepared to adapt to. In this domain, there are just too many possibilities and hypotheses that even the most sophisticated structured analytical technique or analytical software find it impossible to narrow down to the most plausible scenario.

Structured analytical methods *alone* will not be able to bring about the "new" Intelligence Analysis. This chapter looks at that *new* individual and organisational behaviour, ideas, mental models and techniques from other disciplines that could solidify attempts to usher in a new era. These concepts and practices should *complement and not replace*¹⁸⁹ those already evident in the known and knowable domains.

¹⁸⁸ Medina, Carmen. 2008. in George, Roger Z and Bruce, James B. (eds). *Analyzing intelligence: origins, obstacles and innovations*. 247

¹⁸⁹ Burnett, Mark, Wooding, Pete and Prekop, Paul. 2005. *Sense Making in the Australian Defence Organisation (ADO) Intelligence Community*.

Applying research findings from different disciplines, such as psychology, decision-making and organisational theory in intelligence will undoubtedly broaden our understanding of the complexities that analysts, their organisations and clients face. This chapter also highlights the transdisciplinary nature of Intelligence Analysis, and strengthens efforts to professionalise and establish it as a separate discipline in the social sciences.

The purpose of this chapter is therefore not to deal with the original theories, but to look at those scholars and practitioners who have applied them in intelligence.

5.1 New cognitive models

The effective knowledge workers (or intelligence analysts) are capable of working “in multiple domains simultaneously, moving in and out of those domains as needed, combining the physical, mental, the intuitive, and the emotional to continuously expand their knowledge, capabilities, capacity, networks, and perceptions. They are convergent thinkers who have knowledge of systems, complexity and critical thinking and who can use different approaches and techniques to better understand complex issues.”¹⁹⁰ One would come across the concepts “powers of abstraction”, “conceptualisation” and “synthesis” skills, “out-of-the-box” and “heterogeneous thinking” quite often in knowledge-management literature.¹⁹¹ The research in cognitive and social abilities of the “global worker” informs which type of person intelligence agencies should recruit or co-opt; probably that kind of person who might not pass the outdated vetting procedures and psychological tests.

5.1.1 The prismatic reasoning / thinking paradigm

Systems theory scholar, Robert Flood, uses the metaphor prismatic thought to describe creative and transformational thinking. The metaphor uses the image of a prism splitting light into its component colours by double refraction, once on entering the prism and again on leaving it. This type of thought yields many different views of the same thing and the same view of many different things. The aim of prismatic thought is to challenge assumptions, provoke new thoughts and generate unexpected insights.¹⁹² Other theorists and scholars call this approach either multiple lenses or methodological pluralism which has been used in

¹⁹⁰ Bennet, Alex and David. 2004. *Organizational survival in the New World: The Intelligent Complex Adaptive System*. 214

¹⁹¹ Leeds, Carol 2003. *The Knowledge Worker. Rapid Assessment Process (RAP) Report*, 4(1), 8-9 and Bennet, Alex and David. 2004. *Organizational survival in the New World: The Intelligent Complex Adaptive System*, 214

¹⁹² Flood, Robert Louis, 1999. *Rethinking the Fifth Discipline: learning within the unknowable*. 123-124

various fields, including that of KM and public administration, which intelligence might be able to learn from.¹⁹³

The prismatic thinking concept, although not necessarily called that, has gained ground in Intelligence Analysis where scholars and practitioners alike move away from a mutually exclusive stance to that of promoting the application of multidimensional cognitive perspectives on intelligence issues. Jones states that, in addition to convergent thinking, we also need divergent thinking to ensure effective analysis and problem solving. Divergence opens the mind to creative alternatives, while convergence “winnows out the weak alternatives and focuses on, and chooses among, the strong.”¹⁹⁴ Divergence helps analysts to analyse a problem more creatively while convergence assists in attaining closure. Analysts should not only understand these differences, but also be conscious of which mode they find themselves in and shift back to the other as required by the information and context. This, however, does not come naturally, and analysts should be taught how to achieve it.

These are the kinds of cognitive skills analysts and knowledge workers should practise to hone the tools of their trade. In this sense, the intelligence analyst should use *both* intuitive and structured analytical techniques, and be mindful of which technique would be appropriate in which specific context, given the nature of the intelligence at hand. The debate on whether Intelligence Analysis is a science or an art is simply not relevant anymore. Moore and Krizan state that intuitive abilities, inherent aptitudes, rigorously applied skills, and acquired knowledge, all enable analysts to solve problems in a multidimensional manner, thereby avoiding the pitfalls of both scientism and adventurism. The former occurs when scientific methodology is excessively relied upon to reveal the “truth”; the latter manifests when “inspiration [is] unsupported by rigorous analysis.”¹⁹⁵

In the same vein, Kerbel proposes a new conceptual model that raises the level by which both artistic and scientific approaches can be applied simultaneously – blending them in a complementary “alloy”.¹⁹⁶ He agrees with Steven Marrin¹⁹⁷ – who has written extensively on

¹⁹³ Cairney, Paul. 2009. *PSA Conference Manchester*, April 2009

¹⁹⁴ Jones, Morgan D. 1998. *The Thinker's Toolkit: 14 powerful techniques for problem solving*, 49

¹⁹⁵ Moore, David T and Krizan, Lisa 2003. in Swenson, Russell G. (ed) 2003. *Bringing Intelligence About: Practitioners Reflect on Best Practices*, 100-101

¹⁹⁶ Kerbel, Josh. 2008. *Parameters*. 105

¹⁹⁷ Marrin, Stephen P. and Clemente, Jonathan D. 2006. *International Journal of Intelligence and Counterintelligence*, 18(4), 707-729. and Marrin, Stephen. 2007. *American Intelligence Journal*. 25(1), 11-13

the similarities between the Intelligence Analysis and medical professions – that the example of the medical profession should be followed where it is generally accepted that evidence *and* intuition dictate prognosis. Kerbel even proposes that the linear mechanical metaphor in intelligence should be changed to a biological, systemic one found in medicine where terms such as “susceptibility, symptomatic, ripeness, side effects, etc.” are used.¹⁹⁸

Linking this multidimensional thinking with intelligence in complexity, Wolfberg¹⁹⁹ proposes a *full-spectrum mindset* (Figure 21) in which the analyst applies both intuitive and structured methods, assuming from the outset that there are multiple, interrelated mysteries that must be solved simultaneously across a broad spectrum of intelligence requirements using many possible explanations or overlapping pieces of explanations. This mindset will assist analysts who are confronted with mysteries (and not puzzles) for which they cannot identify the problem, because they are too vague or there are too many.

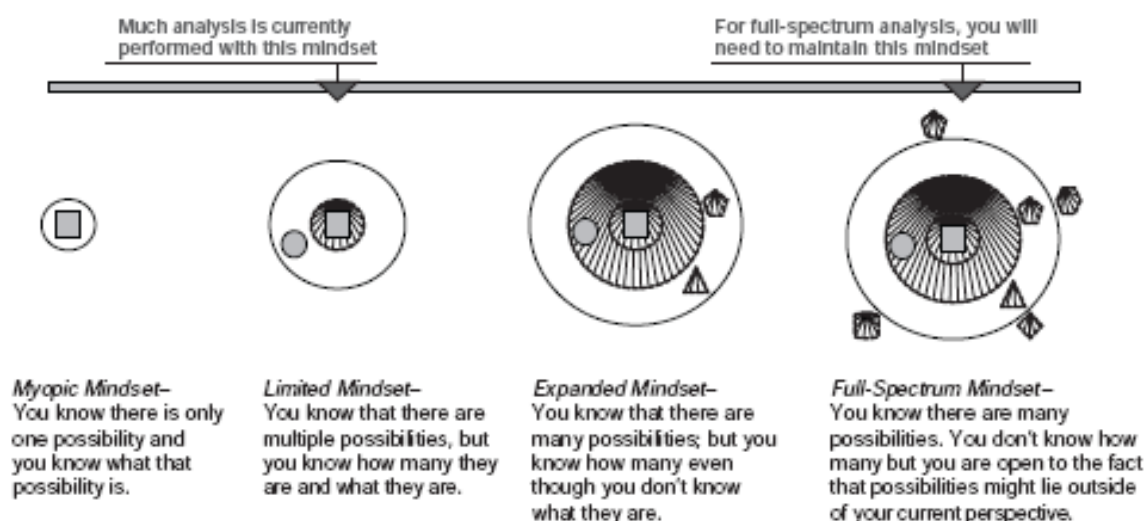


Figure 21: Wolfberg’s full-spectrum mindset model: Approaching the world as a mystery²⁰⁰

5.1.2 New Intelligence Analysis cognitive models

The reconsideration of analysts’ cognitive skills has also led to at least two new models or schema in an attempt to clarify what actually happens in the mind of the intelligence analyst. These models provide both a deeper understanding of and context to the intelligence process, and the role of the analyst in the process (as discussed in chapter 2), and contribute to the

¹⁹⁸ Kerbel, Josh. 2008. *Parameters*, 108

¹⁹⁹ Wolfberg, Adrian. 2006. *Military Review*. July-August 2006, 36

²⁰⁰ Wolfberg, Adrian. 2006. *Military Review*. July-August 2006, 39

realisation that *mindfulness* is crucial in the practice of thinking and knowledge work, so much more for those who “think for a living.”

5.1.2.1 Waltz’s Integrated Reasoning Process

Waltz designed the *Integrated Reasoning Process*²⁰¹ (Figure 22) in which he integrated the formal and informal methods of reasoning for practical analysis-synthesis in the intelligence problem-solving environment. The flow process proceeds from a pool of evidence as well as a question posed about the evidence – a query to explain the evidence. This process of proceeding from an evidentiary pool to detections, explanations or discovery:

- detects the presence of evidence that matches previously known premises, patterns or data
- explains underlying processes that gave rise to the evidence, and
- discovers new patterns in the evidence.

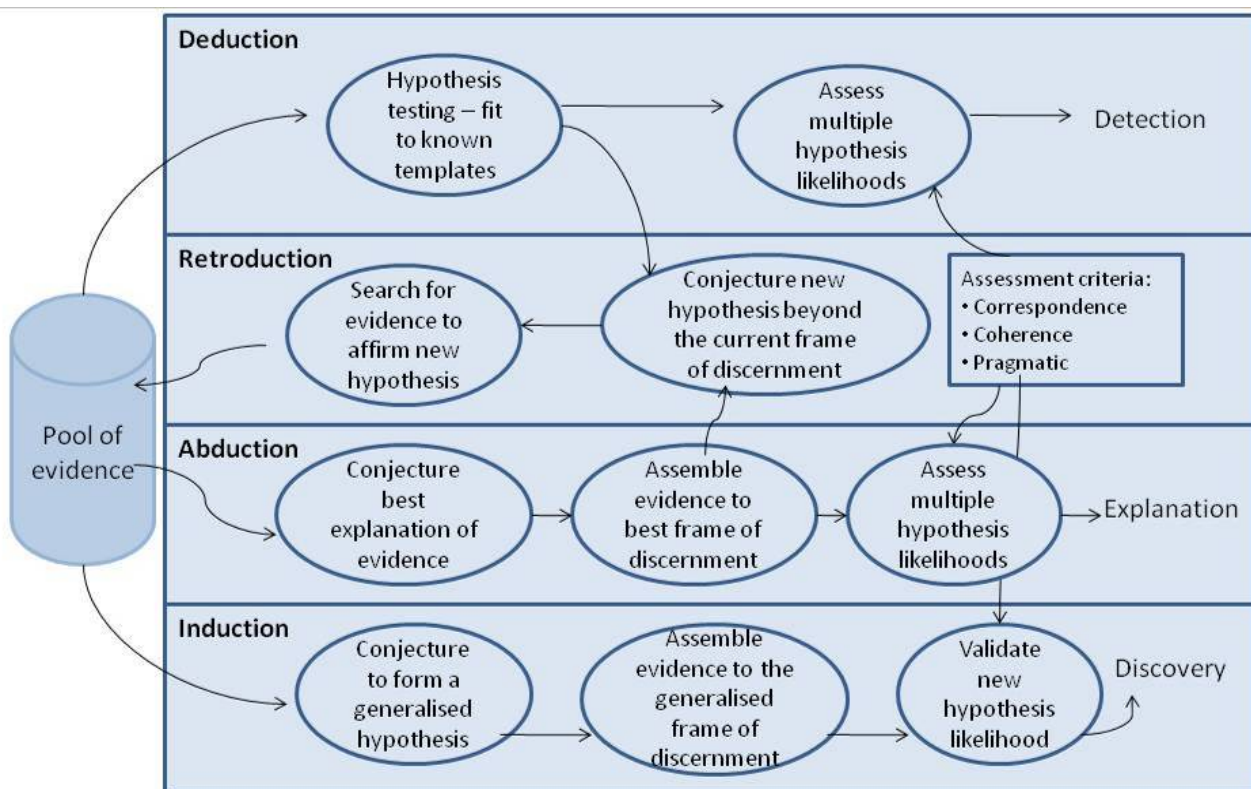


Figure 22: Waltz' Integration of reasoning flows²⁰²

²⁰¹ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 175-180

²⁰² Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 177

The model illustrates four basic paths that can proceed from the pool of evidence: three fundamental reasoning modes and a fourth, feedback path:

- *Deduction*: The evidence in the pool is tested against previously known patterns or templates that represent hypotheses of activities that we seek to detect. When the evidence fits the hypothesis template, we declare a *match*. When the evidence fits multiple hypotheses simultaneously, the likelihood of each hypothesis, determined by the strength of evidence for each, is assessed and reported.
- *Retroduction*: This feedback path, so-called by CS Peirce, as another process of reasoning, occurs when the analyst conjectures (synthesises) a new conceptual hypothesis that causes a return to the pool of evidence to seek evidence that matches or tests this new hypothesis.
- *Abduction*: The abduction process, like induction, creates explanatory hypotheses inspired by the pool of evidence and, like deduction, attempts to match items of evidence with each hypothesis to seek the best explanation. Here, the hypotheses are refined and new hypotheses conjectured. The process leads to comparison and ranking of the hypotheses, and ultimately, the best is chosen as the explanation. The analyst returns to the pool of evidence, as part of the abductive process, to seek support for these candidate explanations. The return path is again called retroduction.
- *Induction*: The path of induction considers the entire pool of evidence to seek general statements (hypotheses) about the evidence. This path does not seek matches with small sets of evidence, but rather attempts to find a new and generalised explanation for clusters with similar evidence. These generalisations are then tested across the evidence to determine the breadth of applicability before being declared as a new discovery.
- In an effort to explain the Intelligence Analysis process further, Waltz²⁰³ typifies the analysis-synthesis process as an evidence-decomposing and model-building process. The latter is used to “marshal evidence, evaluate logical argumentation and provide a tool for explanation of how the evidence best fits the analyst’s conclusion. The model also helps the analyst in identifying what information is missing, what strong evidence supports the model and where negative evidence

²⁰³ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 180-186

might be expected”. Such a model-building process assists the analyst in making knowledge, assumptions and hypotheses explicit and is a tool for collaborative and multi-dimensional analysis.

The model serves two functions:

- *Model as a hypothesis*: If the evidence is limited, a model is constructed which provides a framework around which data is assembled and against which feasibility and reliability are measured. Usually the mode here will be an abstract representation of an intelligence target such as an organisational structure, financial flow network, a military unit, a corporation, a trajectory of a submarine, or a design model of an adversary’s weapon or competitor’s product.
- *Model as an explanation*: As more evidence matches the hypothesis, different views of the model provide more robust explanations of that hypothesis. These explanations can be narratives, timelines, organisational relationships, resources and other views, all derived from a common model.

There are three phases/spaces in this process, defined by using the term “space” (Figure 23):

- *Data space*: The data is indexed and collated according to source, content, topic and other meta-data that allows for search functions.

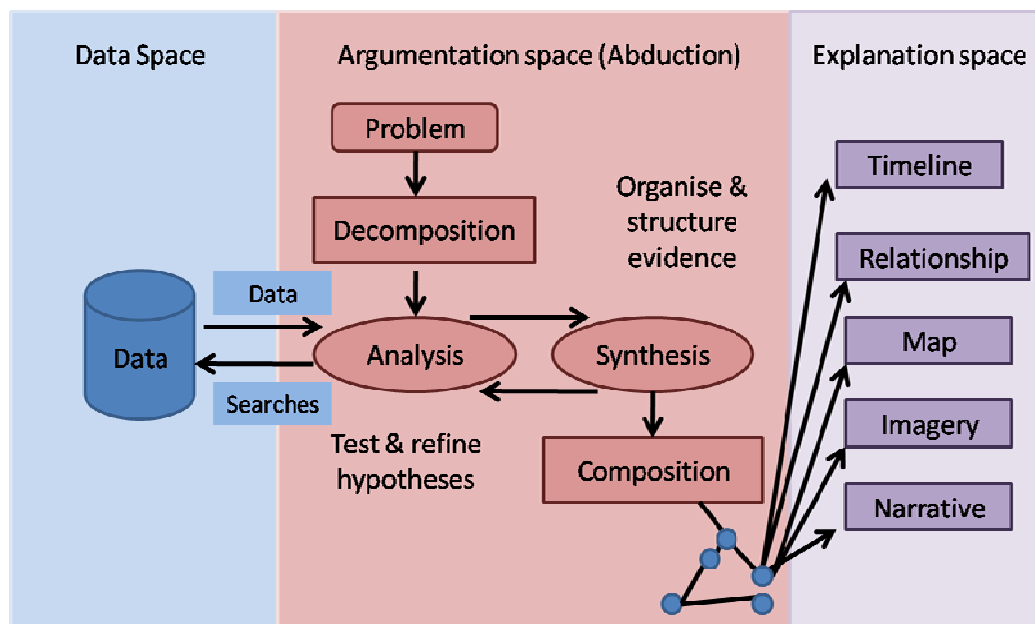


Figure 23: Waltz's Model construction process²⁰⁴

²⁰⁴ Waltz, Edward. 2003. *Knowledge Management in the Intelligence Enterprise*, 183

- *Argumentation space*: The data is reviewed, correlated and grouped into categories of explanations, forming a set of high-level hypotheses to explain the observed data. Continuous searches into the data are done, while patterns are discovered, albeit some of them without all the data. These patterns then lead to the creation of hypotheses, which in turn are examined to determine which data supports or refutes it, and the hypotheses are ranked in likelihood and additionally needed data. In this space, the case is argued for each hypothesis/model in terms of completeness, sufficiency and feasibility.
- *Explanation phase*: During synthesis, models are composed to serve as explanations or articulations of the hypothesis and the supporting evidence. Here structured analytical techniques are used.

5.1.2.2 A Cognitive Task Analysis (CTA) Model of Intelligence Analysis

Since 2005, various empirical research studies were conducted on the cognitive processes of intelligence analysts to determine where technological tools might assist in their tasks. Moon and Hoffman²⁰⁵ state that the intelligence community's persistent reliance on common assumptions about cognitive work – as opposed to a reliance on empirical research of how analysts *actually do work* – is the primary cause for none of the proposals for intelligence reform being implemented successfully. They propose in-depth research on the cognitive activities and competencies of Intelligence Analysis.

Hutchins, Pirolli and Card²⁰⁶ performed a pivotal study on a number of intelligence analysts, using the CTA²⁰⁷ methodology. They identified various tacit cognitive activities that had not been addressed in previous analysis process models. In this model (Figure 24), the data flow (rectangular boxes) shows how raw information is transformed to reports through the process flow (circles). The processes and data are arranged by the degree of effort and information structure. This is a process with various feedback loops and two interacting sets of activities that circle around: 1) finding information – the foraging loop (seeking information,

²⁰⁵ Moon, Brian M. and Hoffman, Robert R. 2006. *Proceedings of the Seventh International NDM Conference* (Ed. J.M.C Schraagen), Amsterdam, The Netherlands, June 2005.

²⁰⁶ Hutchins, Susan G, Pirolli, Peter L. and Card, Stuart K. 2007. in Pirolli, Peter L. 2007. *Assisting People to become Independent Learners in the Analysis of Intelligence Final Technical Report*, 7-48

²⁰⁷ CTA refers to a group of methods that are extensively used in naturalistic decision-making applications. Gary Klein's definition of a CTA is "a method for capturing expertise and making it accessible for training and system design." Klein delineates the following five steps: (1) identifying sources of expertise; (2) assaying the knowledge; (3) extracting the knowledge; (4) codifying the knowledge; and (5) applying the knowledge. Klein, G. A., 1999. *Sources of Power, How People Make Decisions*. 173

scrutinising and filtering it; and reading and extracting information possibly into some schema); and 2) making sense of the information – the sensemaking loop (iterative development of a mental model or conceptualisation from the schema that best suits the evidence). External data sources are the raw evidence, which is reduced to become a “shoebox” – the much smaller subset of that external data that is relevant for processing. The evidence file represents those snippets extracted from items in the shoebox. Schemas are the re-representation or organised marshalling of the information so that it can be used more readily to draw conclusions. Hypotheses are the tentative representations of those conclusions with supporting arguments. The last iteration of the data flow is a presentation or an intelligence product.

The cognitive-process flow is identified as:

- *Search and filter* (2): External data sources provide a repository through which the analyst searches (queries). Results of those searches are filtered (judged) for relevance. An analyst filters incoming information or does an active search, collecting relevant documents into some store (the “shoebox” in the diagram) for further processing.
- *Read and extract* (5): Information in the shoebox is read to extract nuggets of evidence that may be used to draw inferences, or support or disconfirm a theory. Relevant snippets from this store and the related low-level inferences are placed in evidence files. Evidence extracted at this stage may trigger new hypotheses and searches.
- *Schematise* (8): At this point the information may be re-represented in some schematic manner. If there are no tools available, this may be retained in the mind of the analyst, informally or with an elaborate computer-based method, for example, a time line visualisation to coordinate many events. Evidence may be organised into small-scale stories about typical topics or in answer to typical questions (eg. who? what? when? where? why? how?) that are used to organise raw evidence.
- *Build case* (11): A theory or case is built by the additional marshalling of evidence to support or disconfirm hypotheses.
- *Tell story* (14): A presentation or publication of a case is made to the client.

- *Re-evaluate* (15): Inquiries or feedback from clients of a presentation may generate re-evaluations of the current theory developed by an analyst requiring the marshalling of additional evidence to support or disconfirm the theory, or the generation and testing of alternative theories.
- *Search for support* (12): Analysis or re-evaluation of theories may require re-examination of the lower-level schematic organisation of basic facts.
- *Search for evidence* (9): Analysis or re-evaluation of theories may require the re-examination of collected evidence or lead to searches for new evidence.
- *Search for relations* (6): Nuggets of information in an evidence file may suggest new patterns (eg. people linked to other people) that generate hypotheses about plausible relations among entities and events. These hypotheses may generate new searches and data extraction from the shoebox and raw data.
- *Search for information* (3): New hypotheses generated from processes at higher levels may cause the analyst to dig deeper in the raw data.

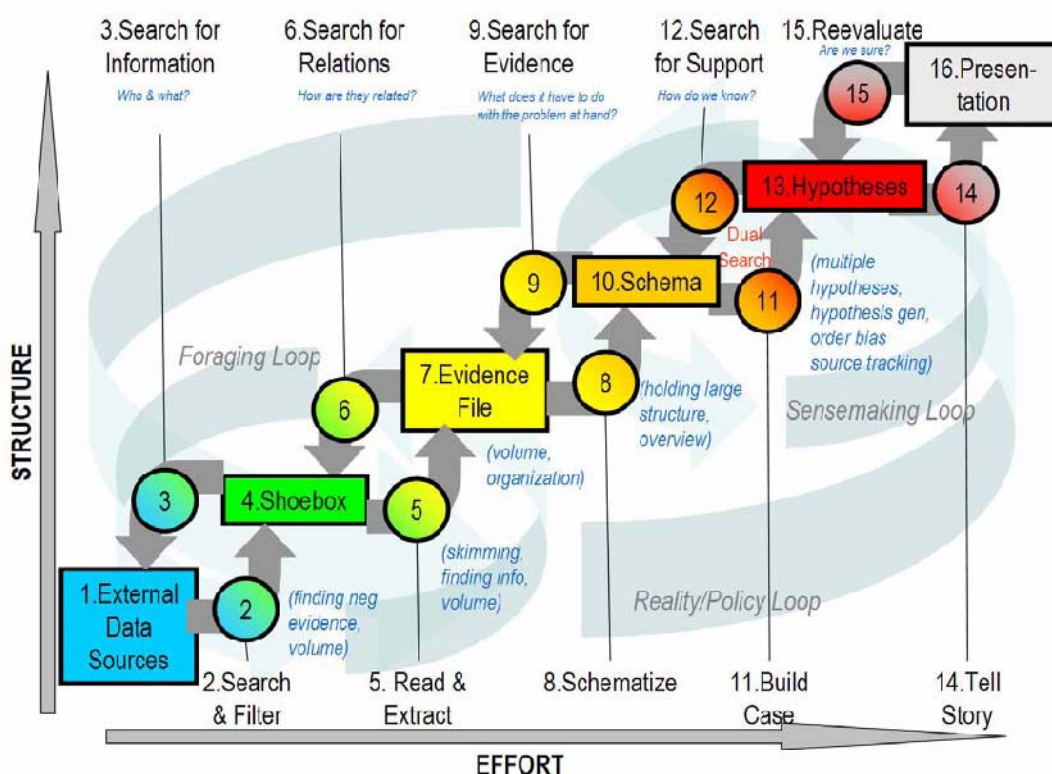


Figure 24: Pirolli's Notional Model of the Intelligence Analysis Process²⁰⁸

²⁰⁸ Pirolli, Peter L. 2007. *Assisting People to become Independent Learners in the Analysis of Intelligence*. Final Technical Report, 2

The value of Pirolli's model lies mainly in the fact that analysts will be able to test their own cognitive process and identify so-called leverage points or milestones in the process which can be improved upon, either through technical tools or mindfulness.

5.1.2.3 Analytical rigour matrix

Analysts are continually plagued by uncertainty whether they have enough information to validate their hypotheses. They are also concerned that if they wait for confirmation from other sources the intelligence might have become irrelevant. An Analytical Rigour Model that might assist analysts in being mindful of and reflective on the whole intelligence process was developed by Zelik, Patterson and Woods in 2007 (see Figure 25). This model enriches the *structured self critique* technique of Heuer and Pherson (discussed in Chapter 4). Zelik *et al* do not see rigour as the strict adherence to standardised routines and processes, but as “an assessment of degree of sufficiency, rather than the degree of adherence to an established analytic procedure”.²⁰⁹ In their study, their Analytical Rigour Model was found to be most useful in the production phase of the intelligence process where the actual product is measured collaboratively by determining the sufficiency of rigour in the analytical process.

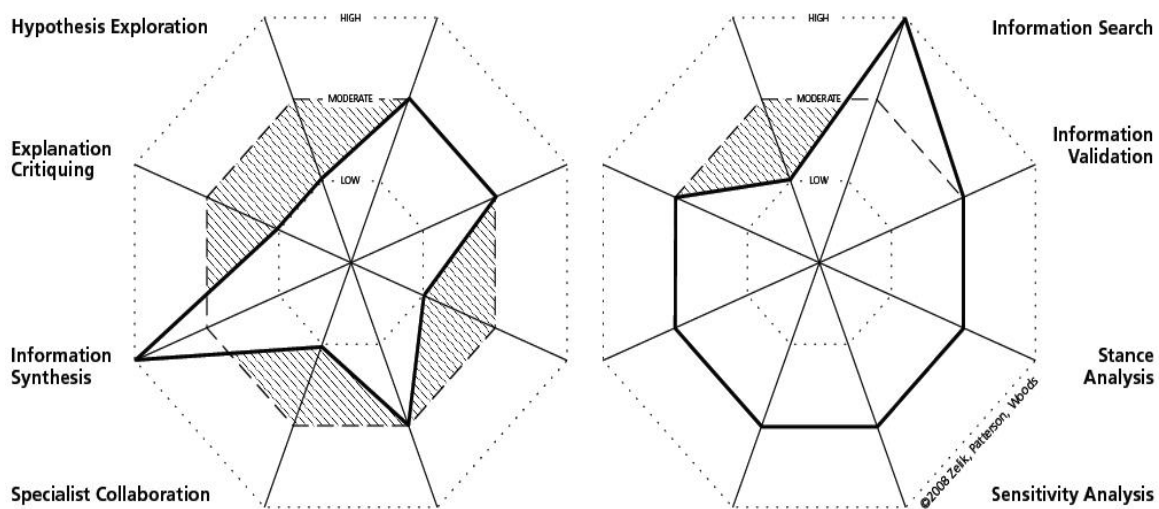


Figure 25: Analytical Rigour model of Zelik, Patterson and Woods²¹⁰

This model has eight indicators of rigour:

²⁰⁹ Zelik, Daniel, Patterson, Emily and Woods, David. 2007. *Proceedings of the Eighth International Conference on Naturalistic Decision Making*, 1-4

²¹⁰ Zelik, Daniel, Patterson, Emily and Woods, David. 2007. *Understanding Rigor in Information Analysis. Proceedings of the Eighth International Conference on Naturalistic Decision Making*.

- *Hypothesis Exploration* describes the extent to which multiple hypotheses are considered in explaining data. In a low-rigour process there is minimal weighing of alternatives. A high-rigour process, in contrast, involves the broadening of the hypothesis set beyond an initial framing and incorporating multiple perspectives to identify the best, most probable explanations.
- *Information Search* relates to the depth and breadth of the search process used in collecting data. A low-rigour analysis process does not go beyond routine and readily available data sources, whereas a high-rigour process attempts to explore all data potentially available in the relevant sample space exhaustively.
- *Information Validation* details the level at which information sources are corroborated and cross-validated. In a low-rigour process little effort is made to use converging evidence to verify source accuracy, while a high-rigour process includes a systematic approach for verifying information and, where possible, ensures the use of sources closest to the areas of interest.
- *Stance Analysis* is the evaluation of data with the goal of identifying the stance or perspective of the source and placing it into a broader context of understanding. At the low-rigour level analysts may notice a clear bias in a source, while a high-rigour process involves research into source backgrounds with the intent of gaining a more subtle understanding of how their perspectives might influence their respective stances toward analysis-relevant issues.
- *Sensitivity Analysis* considers the extent to which analysts consider and understand the assumptions and limitations of their analyses. In a low-rigour process, explanations seem appropriate and valid on a surface level. In a high-rigour process analysts employ strategies to consider the strength of explanations if individual supporting sources prove to be invalid.
- *Specialist Collaboration* describes the degree to which analysts incorporate the perspectives of domain experts into their assessments. In a low-rigour process little effort is made to seek out such expertise, while in a high-rigour process analysts have talked to, or may be leading experts themselves, in the key content areas of the analysis.
- *Information Synthesis* indicates how far beyond mere collecting and listing data analysts went in their processes. In the low rigour process analysts simply compile

the relevant information in a unified form, whereas a high-rigour process requires the extraction and integration of information with a thorough consideration of diverse interpretations of the relevant data.

- *Explanation Critique* is a different form of collaboration that encapsulates how many different perspectives were incorporated in examining the primary hypotheses. In a low-rigour process, there is little use for other analysts in providing input on explanation quality. In a high-rigour process peers and experts would have examined the chain of reasoning and explicitly identified which inferences are stronger and which weaker.

The value of Zelik *et al*'s Analytical Rigour Model is threefold: firstly, cognitive processes are made explicit in a manner that enhances mindfulness; secondly, it provides the first such metric to test intelligence products which will improve the quality of intelligence; and thirdly, it provides a framework against which collaborative learning, i.e. the popular After Action Reviews can take place.

5.2 Applying Sensemaking theories

It is generally agreed, in the third KM generation, that complexity forces one to apply different skills to cope with uncertainty and sometimes totally unexpected events in the intelligence context, such as 9/11. *Sensemaking*, a concept derived from cognitive and especially organisational theory²¹¹, is used in KM to investigate and describe how the individual, group and specifically the organisation deal with uncertainty and adapt to complexities. Sensemaking is receiving scholarly attention in the defence domain,²¹² but unfortunately very little of this research has filtered through to national security, law enforcement or the competitive intelligence domains.

Only a few authors have commented on the necessity and benefits of sensemaking in intelligence organisations, resulting in limited research on the actual application of the concept and its practices. The comment by Jeffrey Cooper, already in 2005, that “the primary

²¹¹ Sensemaking has been researched on an individual level by Brenda Dervin since the 1980s while Karl Weick is regarded as the scholar who developed sensemaking on the organisational level. Other scholars include Mika Aaltonen, Gary Klein, Karl Wiig and Dave Snowden. Sensemaking has been applied to various disciplines and research areas, ranging from governance, medical care, publishing, library science, the military and more recently technology such as artificial intelligence and strategic management. See Weick, Karl E. 1995. *Sensemaking in Organizations*.

²¹² The US Department of Defence has done research on sensemaking since their first symposium held in 2001 in Virginia. Several of their research programmes, such as the project of Pirolli et al, have culminated in technological tools that assist decision-making and analytical processes.

purpose of analytic effort is ‘sensemaking’ and understanding, not producing reports; the objective of analysis is to provide information in a meaningful context, not individual factoids”²¹³ might be the strongest indication that the intelligence organisation should move to a new Intelligence Analysis paradigm that involves one of sensemaking.

On an *individual level*, sensemaking entails the ability to perceive, analyse, represent, visualise and make sense of one's environment and situation in a contextually appropriate manner.²¹⁴ This situational and contextual aspect of sensemaking is known in Intelligence Analysis as *situational awareness* or *environmental scanning* which gives one a sense of what the past, present and future dynamics are of variables in an intelligence-relevant situation. Leedom²¹⁵ defines situational awareness as dynamic “situated” knowledge, or the capacity to act effectively in a given specific situation, and *sensemaking* as the process of creating situational awareness in situations of uncertainty.

The relevance of sensemaking in Intelligence Analysis becomes clear when Weick’s²¹⁶ seven properties of sensemaking are applied²¹⁷ to Heuer’s Psychology of Intelligence Analysis:

- *Social context*: Making sense takes place in a social context. It involves both shared meaning and shared experience. When individuals make sense they are "influenced by the actual, imagined, or implied presence of others." Intelligence analysts interact with team members, supervisors, and customers. They strive to make sense and communicate meaning within this social network. The benefit of group sensemaking methods in Intelligence Analysis is evident in Heuer’s statement that “optimal results come from alternating between individual thinking and team effort, using group interaction to generate ideas that supplement individual thought.”²¹⁸ In 2008, Heuer dedicated an entire paper on small groups in the application of structured analysis methods, wherein he offered guidelines on how to use social interaction for intelligence.²¹⁹ It may be wrong to deduct that *only* the structured methods enhance sensemaking as many of the traditional

²¹³ Cooper, Jeffrey R. 2005. *Curing Analytic Pathologies: Pathways to Improved Intelligence Analysis*. 42

²¹⁴ Cooper, Jeffrey R. 2005. *Curing Analytic Pathologies: Pathways to Improved Intelligence Analysis*. 47

²¹⁵ Leedom, Dennis K. 2001. *Sense making symposium Final Report*. 23-25 October 2001, 8

²¹⁶ Weick, Karl E. 2001. *Making sense of the organization*. 461- 463

²¹⁷ McBeth, Michael S. 2002. *Approaches to Enhance Sensemaking for Intelligence Analysis*. McBeth’s comparison gives a limited application value and does not relate it to intelligence sufficiently. The author expanded the concepts and the linkages with Heuer’s book.

²¹⁸ Heuer, Richards J. 1999. *Psychology of Intelligence Analysis*. 78

²¹⁹ Heuer, Richards J. 2008. *Small Group Processes for Intelligence Analysis*

intuitive methods also espouse the social aspect of sensemaking. Many of the new analytical techniques discussed in Chapter 4 use collaborative or social sensemaking deliberately, which is the difference.

- *Grounded in identity construction*: Weick states that a person's sense of who he is in a setting and anything that threatens or enhances that sense provides a centre from which judgements of relevance and sense fan out. Analysts have several roles as well as a self-image associated with each role which determines how they interpret and make sense of a situation. This relates to Heuer's notion that intelligence analysts must understand themselves before they can understand others. Further research on the "different identities" of the intelligence analyst will be useful to determine exactly how the identity construction dynamics influence the sensemaking process.²²⁰
- *Retrospective*: How we make sense in the present is determined by our previous perceptions, even if the delay is measured in microseconds, as we are always retrospectively attempting to establish cause and effect and derive meaning from each context. Heuer states that "we tend to perceive what we expect to perceive,"²²¹ based on what we have learned in the past. Also, "mind-sets tend to be quick to form but resistant to change" and "new information is assimilated to existing images" which both explain why analysts who have studied a specific intelligence problem for several years miss signals that a novice would pick up. Also, cognitive biases based on previous experiences affect the sensemaking of analysts significantly.
- *Driven by plausibility rather than accuracy*: People make sense on the basis of how coherent events are, the extent of sufficiency and certainty for present purposes, and credibility. Plausibility is grounded in the interlinking dynamics of the other characteristics, namely agreements with others, consistency with one's own stake in events, the recent past, visible cues, ongoing events, familiar scenarios and actions that have tangible effects. In Intelligence Analysis this is

²²⁰ Sara Taylor conducted some research on the different worlds of the intelligence analyst which she identified as: 1) customer, 2) discipline, 3) subject-environment, 4) sources, and 5) the self that opens various possibilities of sensemaking research in this field. See Taylor, Susan M. 2005. *The Several Worlds of the Intelligence Analyst*, paper presented at the 2005 International Conference on Intelligence Analysis, McClean, VA, May 3, 2005.

²²¹ Heuer, Richards J. 1999. *Psychology of Intelligence Analysis*. 8

evident when possible hypotheses are brainstormed and those with less plausibility discarded, especially in a group setup.

- *Ongoing*: Making sense takes place through perceptions carved out of a continuous stream of consciousness. Sensemaking is constrained not only by past events, but also by our inability to bind ongoing events or continuously update our actions or interpretations. Intelligence analysts who do not keep abreast of new developments on their desks as a continuous flow of interpretation, find it difficult to make sense when an event happens unexpectedly. Therefore, it remains crucial that analysts develop the skill of updating continuously and focusing on those factors that might create an interruption in the flow of events. Scenario development and similar techniques will assist in this effort.
- *Extracting from salient cues*: How we make sense involves noticing and extracting cues from our environment. Context and mental state affect how efficiently people pick up and use cues, usually to strengthen an initial hunch or hypothesis selectively. On the other hand, familiarity and experience allow people to notice when something unusual occurs or when something important is missing. Stress, overload or even “expert arrogance” makes it more difficult to notice cues that would otherwise easily be picked up. Heuer’s approach to this issue is to apply a multidimensional lens to a problem using the different techniques described in Chapter 4.
- *Enacting*: Our actions help determine how we make sense of our environment, i.e. asking questions, stating a viewpoint to see what the reactions are or probing to see how something/someone reacts. In the intelligence sphere, analysts would send out taskings to the collecting agencies on an issue and see what the sources’ responses are; present a briefing and request feedback and questions, or draft reports that articulate their viewpoints, thereby eliciting responses that would assist them in their sensemaking efforts.

Fishbein and Treverton cite Klein, Stewart and Claxton who state that empirical research showed that intuitive judgement underpins most organisational decisions and that it is superior to the analysis of problems marked by high ambiguity or uncertainty, because efforts to “reduce” such problems (to identify a handful of key variables) to fit into structured

analytic frameworks produce misleading results.²²² The sensemaking paradigm might balance the current drive for structured analysis as the latter is seen as less effective in the complex Knowledge Age. However, the application of sensemaking as seen through the lens of third generation KM needs to be explored further in the intelligence context to be really beneficial to analysts and decision-makers alike.

5.3 New organisational structures?

Peter Drucker states that the Knowledge Age and the productivity of knowledge workers such as intelligence analysts, demand fundamental changes in the structure of organisations – even “totally new organisations”.²²³ He proposes a flatter management hierarchy with knowledge workers networking and moving in-and-out of positions of authority, while moving from one assignment to the next. Numerous scholars similarly advocate a networked, flatter organisational structure that enhances collaboration and reduces the chain of command, thereby empowering decision-making to the lowest level in the organisation. Linking the sensemaking paradigm to the organisational structure, Weick²²⁴ states that if the organisational design maintains or strengthens the seven properties of sensemaking, people will be enabled to continue making sense of what they face. However, if the design undermines or weakens any of them, they will lose their grasp on what may be occurring. The organisational form/structure must be equipped to affirm the following questions:

- *Social context*: Does it encourage conversation?
- *Identity*: Does it give the people a distinct, stable sense of who they are and what they represent?
- *Retrospect*: Does it preserve elapsed data and legitimate the use of that data?
- *Salient cues*: Does it enhance the visibility of cues?
- *Ongoing*: Does it enable people to be resilient in the face of interruptions?
- *Plausibility*: Does it encourage people to accumulate and exchange plausible accounts?
- *Enactment*: Does it encourage interaction or hesitation?

²²² Fishbein, Warren and Treverton, Gregory. 2004. *Sherman Kent Centre for Intelligence Analysis Occasional Papers*, 3(2), 2

²²³ Drucker, Peter. 1994. *Post-capitalist society*. 93

²²⁴ Weick, Karl E. 2001. *Making sense of the organization*. 463-464

In a reality check, Berkowitz and Goodman state categorically that the intelligence organisation is “ill-suited” for the Information Age.²²⁵ It is a typically large Weberian bureaucracy²²⁶ with centralised planning, routine operations and a hierarchical chain of command. Not only do intelligence organisations operate in strict need-to-know stovepipes, but they also isolate themselves from the outside world as they work with “secrets obtained through secret means and methods.” The intelligence community may be “locked into outdated technologies, collection operations, and analytical methodologies, even when new and possibly better ideas come along.”²²⁷

In a damning book about the organisational origins of the US’ intelligence failures, Zegart²²⁸ discusses the intelligence community’s inability to adapt. In her research, she found that only 10% of the 340 intelligence reform recommendations made by various commissions were implemented between 1991 and 2001. A staggering 79% of the recommendations did not receive any attention. She identified three “organisational roots of failure”:

- *Structure*: Internal fragmentation according to regions and not cases/threats – which meant that there was gross duplication of intelligence efforts against the same targets but in different locations, while there was no coordination of regional structures on headquarter level to synergise intelligence processes. The fact that no accountability was seated in one organisation or position meant that there was a plethora of heads, all with different mandates and interests that needed to be advanced.
- *Culture*: A parochial culture that is averse to change where “need to know” trumps “need to share”. The organisations have a reactive attitude where there is little foresight and only narrow analysis is done. The irony of this should not go unnoticed: even though intelligence organisations’ main business is to be proactive and provide foreknowledge on issues critical to national decision-making, they cannot apply the same principles and processes to the management of the organisation.

²²⁵ Berkowitz, Bruce D. and Goodman, Allan E. 2000. *Best Truth: Intelligence and Security in the Information Age*, 67

²²⁶ Nomikos, John M. 2004. *The Journal of Intelligence History*. 4(2), 6

²²⁷ Berkowitz, Bruce D. and Goodman, Allan E. 2000. *Best Truth: Intelligence and Security in the Information Age*, 45

²²⁸ Zegart, Amy B. 2009. *Spying blind: The CIA, the FBI and the origins of 9/11*, 36 and Chapter 4 and 6.

- *Incentives*: The focus is on urgent and not important intelligence needs (the typical putting-out-fires syndrome), a prevailing attitude of “what gets measured gets done” that drives numbers of agents or numerous reports and not the quality, while analysts are seen as “second class citizens”. In addition, outdated information technology is used that makes it cumbersome and difficult to share intelligence.

Perpetual organisational restructuring,²²⁹ also in South Africa, has been more about political tampering and grandstanding than streamlining effectiveness and adapting to challenges set by the new world. The management structure has resultantly become heavier, with more layers of control and review than ever before. One would increasingly find “project teams” in an intelligence organisation and across agency boundaries. Although operationally effective, this results in a command nightmare for organisational structures that still adhere to hierarchical performance management systems. The author’s own experience is that analysts involved in such inter-agency project teams are penalised because their direct supervisor often does not understand and appreciate their contributions to the project team.

A report in April 2009 by the US’ Director of National Intelligence (DNI) Inspector General criticised the DNI (created in 2005 to coordinate all intelligence efforts in the US) by stating that the “bureaucratic bloat, financial mismanagement and a failure to end the turf battles among America’s spy agencies (that) led to disastrous intelligence failures in recent years”. It could not deliver on “its mandate to streamline Intelligence Analysis or to force collaboration between the different agencies”. Ironically, a few days after the report was made public, the new DNI replaced the IG with a new person.²³⁰

The criticism might be unrealistic as few organisations of that magnitude – both in and outside government – would have been able to correct the organisational structure, culture and related factors that have shaped a country’s intelligence apparatus in such a short time span – 4 years. Organisational change in intelligence will always be subject to political pandering, and as of yet, none of the critics could recommend feasible options other than those initiated by the ODNI. There has, for instance, been limited research on feasible organisational structures where the premium on timely decision-making, sometimes based on secret and deception-prone information, is as high. The fairness of the criticism is further questioned by

²²⁹ The intense debate over the restructuring of the US intelligence community continues unabatedly. The establishment of the Office of the Director of National Intelligence (ODNI), which supersedes all other intelligence agencies, as well the Department of Homeland Security has voiced unprecedented criticism.

²³⁰ Mazzetti, Mark. 2009. “Report Faults U.S. Spy Agencies”. *The New York Times*. 1 April 2009 and Benson, Pam. 2009. “Intelligence Chief replaces Inspector General”. *CNN* 4 April 2009.

the comment that organisations should have been “forced to collaborate” while it is a known fact that knowledge cannot be conscripted but only volunteered.²³¹ In fact, the DNI has achieved much with its analytical transformation initiative; most importantly, from the perspective of this thesis, is the start of the collaborative efforts discussed hereunder.

5.4 Collaboration and information sharing

Fishbein and Treverton²³² stress the need for collaboration in intelligence by stating that making sense of complex transnational issues requires an ongoing organisational, mindfulness process where intelligence organisations institutionalise sustained, collaborative efforts by analysts to question their judgments and underlying assumptions by employing both critical and creative modes of thought. For this approach to be effective, they warn that significant changes will be required in the cultures and business processes of analytic organisations.

In addition to internal collaboration, analysts would also benefit from wider, external networking and collaboration to keep tabs on what happens in other industries which will enrich their viewpoints on where the system is moving, expand their knowledgeable network and foster synergies from other industries that might enrich intelligence, especially in the technology field. However, the intelligence organisation’s secretive culture is deeply rooted and will be extremely difficult to change. Harris²³³ confirms this by stating that secretive stovepipes erect barriers to lateral collaboration by restricting communications and rewarding only bureaucratic loyalty within the organisation. Lahneman²³⁴ is a bit more cautious of grand-scale organisational changes and proposes that intelligence organisations be enabled to generate *ad hoc* collaborative networks with outside experts for various lengths of time to provide intelligence on issues demanding interdisciplinary analysis.

The fact remains that there should be an institutionalised effort by intelligence organisations to develop and nurture formal and informal collaborative ecologies. There are, however, two factors that inhibit collaboration, both inside organisations and also with outside experts:

- The first is the *counterintelligence* concern. The threats intelligence organisations face, both of a state and non-state nature, include efforts to deceive and frustrate, whether by human agents or technological means. To discard all caution in an

²³¹ See discussion of Dave Snowden’s heuristics for Knowledge Management in Chapter 2.

²³² Fishbein, Warren and Treverton, Gregory. 2004. *Sherman Kent Center for Intelligence Analysis Occasional Papers*, 3(2),10

²³³ Harris, James W. 2002. *Policy Analysis*, (439), 6

²³⁴ Lahneman, William J. (ed) 2006. *The Future of Intelligence Analysis*. Volume I. Final Report, 3

effort to collaborate would only lead to more problems. It will, however, be necessary to “recalibrate” the trade-off between security and collaboration.²³⁵ This recalibration will be extremely difficult as those responsible for the security and countering of intelligence efforts are outside the analytical sphere and have no or limited understanding of or empathy with the need to network and collaborate to improve sensemaking and decision-making.

- The other impeding factor is the *cultural and psychological characteristics* of the intelligence organisation, which would be very difficult to alter. Some of these include groupthink, competition to get the best intelligence and be rewarded for that, aversion to working in teams (both within and interdepartmental), lack of trust, sharing of information only on a peer-to-peer basis, fear of sharing bad news, office politics²³⁶ and the dictum that “if it’s not secret it has no value”.

Despite these drawbacks, there have been significant developments during the past five years in the US and other countries, where the “responsibility to share” has started to replace the outdated “need-to-know” intelligence principle. The use of social media has played a major role in crossing divides between different organisations and creating collaborative spaces and flows.

5.4.1 Collaboration across organisations and disciplines

A promising development in the intelligence domain is the increased cooperation between and among different intelligence agencies, law enforcement agencies, public safety agencies – such as fire, health, and transportation – and the private sector in the US’ Fusion Centres. The aim of the Fusion Centres is to provide a mechanism through which government, law enforcement, public safety and the private sector can come together with a common purpose of improving the ability to “safeguard our homeland and prevent criminal activity.”²³⁷

In a major policy shift in July 2008, the ODNI issued Directive 205 to all intelligence agencies stipulating that analysts should leverage expert knowledge both in and outside the US. All intelligence agencies had to appoint an Outreach Director who is responsible for this liaison to network with external experts and facilitate such networking within the

²³⁵ Harris, James W. 2002. *Policy Analysis*, (439), 6

²³⁶ Tindall, James A. 2006. *Applying Network Theory to Develop a Dedicated National Intelligence Network*, 105-120

²³⁷ United States Department of Justice. 2006. *Developing and Sharing Information and Intelligence in a New Era*, 2. It is not clear to what extent the implementation of the ideals of the Fusion Centres, started in 2004, have been realised and whether it is really successful in collaboration.

organisational and security constraints.²³⁸ Cross-organisational and multidisciplinary networking has already borne fruit in Singapore where that country's early warning system brought together multiple approaches and perspectives from a variety of partnership organisations. A multitude of horizon-scanning concepts and methods were implemented and a suite of technological tools used to operationalise it.²³⁹

The US has promoted the use of social tools for collaboration between analysts of different agencies as one of the ODNI's priorities. In their recent research among analysts of the Defence Intelligence Agency (DIA), Dixon and McNamara²⁴⁰ found that Intellipedia (discussed in Chapter 4) has the potential of changing the nature of intelligence analysts' work. Although Intellipedia functions mainly as information sharing rather than a joint production/collaboration platform, it creates the opportunity for analysts to identify experts in their fields or related ones for social networking and targeted communication. Intellipedia has also become a "Knowledge Marketplace" where users go to "buy" or find information they need, as well as "sell" the products they have produced to others. The significance of this is that knowledge, traditionally locked up in organisational silos, is now made accessible in one single site to all in the intelligence community who have the appropriate security and functional clearance. New work behaviours identified by Dixon and McNamara include that analysts incorporate more sources in their reporting than previously by using reports written by other agencies, display an eagerness to portray an increased professional presence, and present intelligence to a wider audience for consumption, regardless of whether it is rewarded or not.

Analyst Space or A-Space, with high-end security features, is a customised collaboration tool launched in September 2008 with about 10 000 US analysts in June 2009 and is another initiative of the ODNI.²⁴¹ It gives analysts access to shared and personal workspaces such as wikis, blogs, widgets, RSS feeds and other tools based on the popular My Space and Facebook. Its primary benefit is that A-Space brings to analytic work a platform for

²³⁸ Office of the Director of National Intelligence. 2008. *Intelligence Community Directive 205: Analytical Outreach*.

²³⁹ Nathan, Patrick. 2006. *Strategic Foresight and Warning Seminar Series*, 8. Also see the Risk Assessment and Horizon Scanning (RAHS) website at <http://www.rahs.org.sg>.

²⁴⁰ Dixon, Nancy M. and McNamara Laura A. 2008. *Our Experience with Intellipedia: An Ethnographic Study at the Defense Intelligence Agency*.

²⁴¹ Dixon, Nancy M. 2009. *How A-Space is Shaping Analysts' Work*. Dixon's study on how DIA analysts use A-Space gives an interesting KM perspective on the emerging networking and sensemaking culture of US intelligence analysts.

incorporating cognitive diversity seamlessly to address complex analytic issues. The peer-to-peer environment of A-Space provides a conversational format within which to engage in joint sensemaking through the building of networks across agency boundaries as well as the improvement of situational awareness. Although A-space has the functionality of co-authoring, it is not yet used in the normal production process, most probably due to the prevailing organisational culture and processes. In view of the necessity for cognitive diversity for intelligence analysts to grasp the complexity of an intelligence threat, A-Space provides the vehicle for cross-pollination of ideas and viewpoints without the associated time and money costs of building and maintaining traditional networks. As it is a new collaboration tool, it will be interesting to monitor the usage and uptake in the US intelligence community and the extent of impact it has on the ingrained organisational dynamics and relationships.

5.4.2 Collaboration with the private sector

The addition of the private sector to the intelligence equation is extremely important. It stands to reason that intelligence, or for that matter government, does not have the knowledge to assess and analyse energy, infrastructure, public health and environmental issues. The private sector and non-governmental organisations are often literally on the frontline, both in terms of bearing the first impact and having the knowledge and resources for good prediction and response.²⁴² Unfortunately, the perception persists that assistance to intelligence organisations might damage their impartiality and marketing value for private clients or other governments. Governments are furthermore not keen to approach these institutions for fear of possible counterintelligence attacks – the result of an outdated security approach to intelligence that overshadows other possible benefits that can be derived from such liaisons and cooperation.

In addition to valuable intelligence sharing, intelligence organisations can learn quite a few KM lessons from these institutions in terms of collaboration, products, source management and analytical tools and techniques they employ in their analyses of threats. The Centre for Strategic and International Studies formed an online collaborative interest group to discuss terrorism and radicalisation. Worthwhile knowledge was obtained in terms of building trust, crafting incentives to build and maintain membership, moderating the network to achieve its goal as well as measuring effectiveness.²⁴³

5.4.3 Collaboration across national borders

²⁴² Bailes, Alyson JK. 2006. *Strategic Foresight and Warning Seminar Series*, 7

²⁴³ Anderson, Thomas, Gordon, David, Ben-Ari, Guy. 2008. *Understanding International Collaborative Online Networks: Lessons identified from the Public, Private and non-Profit sectors*

In what may be a radical change towards a more inclusive paradigm, the CIA's Global Futures Partnership invited 120 experts from over 20 foreign governments, intelligence and law enforcement agencies and non-governmental think-tanks in November 2005 to participate in a conference, aimed at creating a global intelligence network. The Global Futures Forum (GFF) was subsequently established as an unclassified, multilateral and multi-sector, by-invitation-only community that works to identify and make sense of emerging transnational issues. Its primary goal is to foster the collaborative development of insight and foresight through the exchange of different perspectives. The GFF hopes to achieve the following:²⁴⁴

- Creating a culture of *collaboration* by bringing diverse perspectives together to work on a problem, harnessing the so-called wisdom of crowds to identify some nuances which are missing.
- Developing more common *vocabularies* for problems with fewer inter-cultural and international misunderstandings.
- Modernising *work practices* in a changed world, and
- Accelerating *information sharing* to eliminate outdated controls and streamline authorities to provide useful information to those that need it.

In 2008 the GFF detached from the CIA and has since grown substantially to include more than 1400 experts, thought leaders and practitioners from more than 40 countries. These experts collaborate in communities of interest such as radicalisation, the practice and organisation of intelligence, global disease, social networks, illicit trafficking, foresight and warning, genocide prevention, terrorism and counterterrorism studies, as well as proliferation. The GFF website is the repository of GFF production, which includes hundreds of readings and resources on relevant topics, member blogs, discussion forums, and wikis.

Unfortunately, little evidence of similar collaboration efforts can be found in the literature dealing with South Africa. The various regional and continental joint committees on security and intelligence are *ad hoc* political structures with no or little interaction, let alone collaboration between the functionaries of the different countries. Interaction mostly only takes place between senior politicians and the management of intelligence organisations that receive briefings from analysts beforehand. As such collaboration, to the extent and depth described above, is non-existent in the African context. Liaison between NGOs and other

²⁴⁴ George, Roger Z. 2007. *Studies in Intelligence* 51(3)

private organisations might be more prevalent, but has limited, if any application in the intelligence realm.

5.5 Outsourcing

Another new trend in organisations, even intelligence organisations world-wide, is *outsourcing*. In 1994 Drucker stated that only service work, i.e. manual and clerical work will be outsourced by government, and that the company or government department will focus only on its mission.²⁴⁵ However, in what has become a new “form of collaboration”²⁴⁶, companies worldwide are outsourcing aspects of their core business as well, either because it is more cost-effective, or they do not have the necessary skills to perform the work themselves. The same trend in intelligence organisations is discernible – in the US at least. Intelligence Analysis is increasingly outsourced to private companies because the intelligence organisation does not itself have the capacity to do analysis. The analyst community of the US has shrunk by 23 percent since the 1990s,²⁴⁷ while the scope and challenges for Intelligence Analysis has both expanded and intensified.

Recruiting new analysts is a cumbersome process – the recruitment and security clearance processes could take up to a year before an appointment is made, and up to three years before the analysts are knowledgeable enough to function independently. In the fast-changing, high-threat environment, the intelligence customer does not have time to wait until someone is ready to do an in-depth analysis. Many seasoned analysts have left the intelligence community since the 1990s, some of them due to the severe budget constraints at that time, but others more recently because of retirement or ethical and professional differences with the new leadership.²⁴⁸

Most of these analysts are now working for companies that receive contracts to do Intelligence Analysis in the US.²⁴⁹ A former CIA Deputy Director for Intelligence and now

²⁴⁵ Drucker, Peter. 1994. *Post-capitalist society*, 93-95

²⁴⁶ Friedman, Thomas L. 2006. *The world is flat: the globalized world in the twenty-first century*, 132

²⁴⁷ Lowenthal, Mark. M. 2004. *Intelligence Analysis*. Seminar on Intelligence, Harvard University, May 2004, 5

²⁴⁸ In the midst of the intensified challenges for intelligence, the CIA has had 3 different directors in as many years since 2004. Intelligence officers in the US maintain their security clearance after leaving government, which is not the case in South Africa.

²⁴⁹ The “War against Terror” has become the biggest income generator for businesses in the security and intelligence fields, while the establishment of duplicate structures in the US also increased the need for experienced intelligence officers. There are at least 7 such companies in the US, all having reported double figure growth since 2004. One company, SGIS won a contract in December 2007, worth up to \$1 billion as a subcontractor under SRA International to do Intelligence Analysis for defence agencies – see Killian, Erin. 2007. SGIS win contract worth up to \$1bn. *Washington Business Journal*. 28 December 2007.

head of the BAE Systems' Global Analysis Group, John Gannon's view is that any "kind of structure you set up to deal with the analytic challenges today has to recognize you are in a revolutionary new environment where information and expertise are distributed in ways that were not the case a generation ago."²⁵⁰

The downside of Intelligence Analysis outsourcing is that the government's own analytical corps is not nurtured and developed, while the reliance on government budgets, controlled by political parties put these companies in jeopardy, e.g. in the US, it is expected that Congress might overturn the previous administration's intelligence policies and reduce the number of contractors employed by the intelligence agencies.

A similar trend of outsourcing is not discernible in South Africa. Intelligence organisations might request research papers from academics and institutions in specific areas and on intelligence-related issues where there is a need, but these are limited. The hiring out of analysts to especially smaller companies that do not have the capacity themselves, has not yet taken root in South Africa, most probably because of the unawareness of the benefit analysts might bring to the decision-making of the organisation, but also because proprietary and security issues might pose a perceived problem with information security.

5.6 Analytical technological tools

As seen in Chapter 2, technological tools are only the enablers for better knowledge sharing or analysis and can never supplant the analyst's mind, situational awareness and sensemaking abilities. Too frequently technological tools, like link-network analysis suites, have been sold to intelligence organisations at large premiums, just to remain mere icons on one or two analysts' desktops. When there is no understanding of when to use which tool, for what purposes, and the sensemaking capabilities to interpret the picture are also lacking, technological tools are of little benefit to any organisation.

Technology has provided intelligence organisations with a large volume of data and information, but it has not provided any significant improvement regarding knowledge, interpretation and assessment. Technology alone can still not predict intentions, detect targets' capabilities, prioritise risks or forewarn. Unfortunately, intelligence organisations continue to spend disproportionate resources on the newest versions of information aggregation and

²⁵⁰ Abbott, Sebastian.2006. *The Outsourcing of U.S. Intelligence Analysis: Will it make us more or less safe?* July 28, 2006 (electronic version)

mining tools, while few, if any resources are used to improve the analysts' thinking skills and understanding of the new complex threat environment.

Technological tools that will continue to be useful, if applied in the correct context will be visualisation tools like those discussed in Chapter 4, and ones aiming at enhancing sensemaking and collaboration. In the last instance, intelligence stands to gain significantly from success and failure stories in the KM environment where it has become apparent that people will not just use tools because they are available, but need to see the benefits, and then also have the time and support to apply them. Organisational, information and computer-literacy factors also impact on the uptake of new technological tools, making the prognosis for their large-scale implementation throughout the intelligence community doubtful. In the African context where very few intelligence organisations have even the most basic information systems, coupled with poor Internet bandwidth access, technological tools similar to those found in the developed world's intelligence organisations, remain a fantasy.

In conclusion, it can be argued that the new Intelligence Analysis paradigm poses serious challenges to the way analysts and their organisations understand and apply their cognitive abilities. Incremental actions are necessary to make this a reality.

CHAPTER 6

Accepting the challenges

“It must be considered that there is nothing more difficult to carry out nor more doubtful of success nor more dangerous to handle than to initiate a new order of things; for the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order; this lukewarmness arising partly from the incredulity of mankind who does not truly believe in anything new until they actually have experience of it.”

Nicolo Machiavelli

The Prince

This thesis aimed at discussing challenges the intelligence community, and especially those analysts responsible for creating specific knowledge for decision-makers face in the Knowledge Age. While acknowledging that not all facets of these challenges could be dealt with conclusively within the scope of the thesis, it provides a more than peripheral glimpse of the frustrations as well as the ideals of intelligence officers who are trying to make sense of an ever-changing intelligence landscape.

Accepting the challenges will require brave and bold commitment combined with personal, group and organisational endeavours which have the potential to alter the nature of intelligence organisations as they have functioned since the 1940s. Introducing large-scale changes half-heartedly by merely re-dressing old paradigms, or introducing changes in a piece-meal, drawn-out manner, will only result in increased frustration and organisational entropy. Therefore, a multi-pronged approach is required to manage the change effectively, to assist intelligence organisations and their analysts to co-evolve apace with the current demands, especially those of the Knowledge Age.

6.1 Understanding post-modern intelligence

The first requirement of intelligence officers, their leaders and the decision-makers would be to understand how the world, the intelligence issues and social interactions have altered the general understanding and conduct of intelligence. Training in and debating the concepts, applications and implications of complexity, the complex adaptive systems, and the post-modern world are necessary to grasp the extent of the political, economic and social change globally. One of the concepts that need to be recalibrated is the actual role of intelligence

organisations in the complex, uncertain, and often messy, new world order. Intelligence will quite understandably not be able to reduce uncertainty by attempting to anticipate *all* the threats, due to the unpredictability of the complex system. Technologies, cognition techniques and even collaboration might improve the intelligence system to a certain extent, but will not reduce the inevitability of random acts of connected, heterogeneous actors operating on different system levels simultaneously. There is also no guarantee that clients will be willing or able to use intelligence for their decision-making. Intelligence organisations should realise that they are not only spectators analysing the actions and intentions of actors in the complex adaptive system, but that they can also react to, sense, prod and, to a certain extent, manage the interactions and dynamics in that system. This perspective could offer new options in policy drafting and decision-making, which have been unexplored by intelligence organisations.

One outcome of such rigorous debate might be the realisation that in the Knowledge Age, traditional intelligence organisations have been disenfranchised from holding the monopoly over their core intelligence functions - forewarning. In fact, the intelligence “space” has expanded with stakeholders and role-players like governments, NGOs, transnational organisations and companies, private knowledge broker firms, as well as interest and pressure groups representing communities, concepts and ideologies. As with most other information and knowledge products and services, just-in-time forewarning has become crucial in any decision-making context. In turn, decision-making has become dispersed and granular, mostly only requiring a generic ability to make sense of information and generate knowledge and foreknowledge on possible events, phenomena or behaviour.

This “democratisation” of intelligence will have an impact on the way intelligence is conducted, prompting state intelligence organisations to become open to scrutiny and public debates on the value it brings to the safety and security communities. This will most probably *not* be the case in undemocratic countries, although non-governmental role players will continue and even increase their intelligence/forewarning activities to protect and further their interests parallel to those of the state organs.

This debate on post-modern intelligence will first and foremost force intelligence organisations to explain and justify their *raison d'être*, re-focusing more on the supposed unique value it brings to the decision-maker's table – whether it be specialised knowledge or technological tools, human intelligence access or any other value. Secondly, the debate will enhance current understanding of both known and new threats by applying various viewpoints

and methods from other disciplines like complexity and the complex adaptive systems theory. The intelligence professional has to understand the multi-dimensionality and interrelatedness of threats and opportunities. This will optimise decision-making options by probing, managing and influencing emerging trends. Thirdly, this debate will force intelligence organisations to fundamentally change the way they collect, analyse and distribute intelligence: they will need to make use of collaborative and distributed networks to achieve that unique value intelligence can bring to the decision-maker in a just-in-time manner.

One such fundamental change might be the “secrecy” mindset of intelligence organisations. They need to understand that collaboration across disciplines, organisations and national borders is necessary and does not present an outright security risk. Also, considering what secrecy means in the Knowledge Age, intelligence professionals will realise that the vagueness of “national security” is open for abuse and has created a corporate culture that does not fit in the new mindset of a responsibility to share. Ideally, one might find more analysts as well as their managers being at the forefront of such efforts to redefine not only what the new threat paradigm means for intelligence overall, but also how the latter responds and adapts to these new challenges.

There should also be more emphasis on actively applying emergent management practices in intelligence organisations with fragmented ownership over cognitive and collaborative processes, giving small groups more autonomy over intelligence production and dissemination. Intelligence organisations should also embrace technologies belonging to the Knowledge Age not only to enhance intelligence collection and collaboration, but also to create real-time intelligence by bringing the client and analyst closer to each other.

6.2 Promoting the value of the intelligence analyst as a knowledge worker

In many organisations and countries the value intelligence analysts bring to the intelligence process, is not yet realised. Law enforcement and intelligence organisations in both developing and developed countries rarely have proper information systems in place; they only employ investigators and do not realise the value that a dedicated intelligence analyst could bring to such an organisation on an operational and strategic level. Quiggin²⁵¹ paints an equally discouraging picture by stating that less than 1% of countries’ intelligence budgets are spent on analysis while 99% is spent on technology, secrecy, infrastructure and other items.

²⁵¹ Quiggin, Thomas, 2007. *Seeing the Invincible: National Security Intelligence in an Uncertain Age*, 107-108

The 1% analysis would entail that intelligence analysts spend most of their time receiving, reading, manipulating and handling the data, and not thinking, writing and liaising with their clients. Bringing this closer to home, a recent study found that African governments give least attention to skilled Intelligence Analysis which, together with open sources, is regarded, as being a key factor for good intelligence.²⁵²

Reading these figures in context with the impact of post-modern intelligence on the conduct and activities of intelligence organisations, it is evident that intelligence analysts might find it harder to convince decision-makers that they offer a good value proposition to decision support that cannot be met by other specialists or a good information-management system. It will remain a challenge to explain the benefits of Intelligence Analysis to uninterested and uninformed managers as well as political leaders who think they can make sense of the information tsunami on their own.

To stay relevant, a synergetic partnership between and among intelligence organisations, intelligence analysts and academia should be established. Analysts need to be encouraged to enhance their knowledge-worker capabilities and expert knowledge on those issues relevant to clients while they should also be allowed to have closer contact with the relevant decision-maker(s). Educational opportunities should also be created to promote the establishment of Intelligence Analysis as a profession on a par with others like engineering and medicine. The trend in the US to offer intelligence-related undergraduate and postgraduate programmes has sparked professionalism in intelligence, but much still needs to be done, specifically in South Africa and other developing countries, where there is little emphasis on and resources available for life-long learning opportunities for intelligence professionals, let alone intelligence academic programmes. Professionalism will create a better cadre of intelligence analysts which might minimise the impact of political manipulation on the overall intelligence process.

Seeing intelligence analysts as knowledge workers has far-reaching implications for human resources, recruitment and security policies and practices of intelligence organisations. Knowledge workers thrive on networking, exploring new frontiers and are not comfortable with restricting structures and norms. Many of the new generation have lived in or visited countries or were involved in activities that might pose security problems, but which might also add to an intelligence organisation's understanding of a foreign culture or intelligence

²⁵² Africa, Sandy (ed). 2009. *Changing Intelligence Dynamics in Africa*, 7

problem. Furthermore, knowledge workers are known to be more loyal to their profession than to the organisation they work for, which bodes well for the analysis profession, but not for intelligence organisations which already struggle to retain analysts.

The mushrooming private research institutions and intelligence organisations are ostensibly more open to the networking and collaboration needs of knowledge workers. If intelligence organisations are not willing to adapt to the challenges posed by the Knowledge Age, they could resultantly lose more qualified and younger generation intelligence analysts to private intelligence domains. Worse still, they could also lose their credibility in the long run because their analysts might not be part of the collective intelligence effort. This could in turn lead to more outsourcing, making intelligence organisations nothing more than specialised collecting agencies without the capacity to evaluate, integrate and contextualise raw intelligence.

Labelling intelligence analysts as knowledge workers might assist in understanding their cognitive processes, but it also challenges analysts to fulfil the role of such knowledge workers: managing knowledge to create ideas and solve problems, having foresight to sense future knowledge needs, being lifelong multidisciplinary learners, being convergent thinkers who can use different approaches to understand complex issues yet collaborating across disciplines. Even if the current restricting organisational culture or hierarchical structure were to change, it is axiomatic that not all intelligence analysts possess these qualities. Not only does this compel recruitment divisions to recruit the right type of person, but more importantly, it forces analysts to be honest in their self-critique and understand the responsibilities and challenges required for a knowledge worker.

6.3 Learning from Knowledge Management theories and practices

Improving Intelligence Analysis will not be an easy endeavour, but incorporating or applying theories from other disciplines might mean that the wheel does not need to be re-invented or that the same mistakes made. Some of the referred to disciplines include psychology, decision-making and organisational theory which will undoubtedly broaden our understanding of the complexities analysts, their organisations as well as their clients face. It can also highlight the trans-disciplinary nature of Intelligence Analysis, and strengthen efforts to professionalise and establish it as a separate discipline in the social sciences.

One domain from which Intelligence Analysis can benefit is that of Knowledge Management, which, like the former, is also involved in a rigorous debate on concepts, theories and approaches to knowledge and their uses. If KM theorists like Firestone and McElroy urge

intelligence organisations to consider the benefits KM might have for intelligence²⁵³, it might be organisations to consider the benefits KM might have for intelligence; it might be worthwhile to look at Intelligence Analysis through the lens of KM. Not only could it assist in understanding and appreciating the intelligence analyst as a knowledge worker, but it can also enhance the knowledge-creation process as well as the knowledge-sharing and collaboration aspects of the intelligence process. The organisational theories based on KM concepts and practices could assist intelligence organisations to achieve their goals and objectives more effectively.

Several lessons can be learnt by the nexus between Intelligence Analysis and Knowledge Management. The first is that the third KM generation's contention that *knowledge is both a "thing" and a "flow" creates a framework from which visionary intelligence scholars and practitioners can propose changes in mindset and applications*. However, to a large extent, intelligence organisations still regard knowledge only as codified artefacts like intelligence products and information systems and suffer the same hardships as companies caught in the first and second KM generations.

Secondly, *complexity theory frames the understanding of our new reality*, explaining to a certain degree why we find it so difficult to understand threats and intelligence problems and are able to predict intelligence surprises. It also provides a framework for understanding intelligence analysts' continuous movement between relatively simple tasks and those of immense complexity for which we have few answers or methodologies. Our vocabulary is also transformed to emphasise that we can only estimate, as it is impossible to have *all* the facts or interpretations due to differences in contextualisation.

Thirdly, the *cognitive and collaborative knowledge-creation processes of individuals and group analysts should be researched* so that we are clear on what we do, how we do it as well as how we can improve our sensemaking abilities.

Also, if it's true that "we never know what we know until we need to know it" and that "we will always tell more than we can write down", then *new methods of augmenting the intelligence product (the knowledge thing) with a "shared understanding" (the knowledge flow during conversations) are necessary*. The format and manner in which intelligence is disseminated needs to be reconsidered. A collaborative, meaningful conversation on an intelligence problem with the client, either through face-to-face contact or via technology is

²⁵³ Firestone, Joseph M and McElroy, Mark W. 2003. *Key issues in the New Knowledge Management*, 327

bound to provide more trust and dividends than the current impersonal, minimalistic intelligence product. This might, however, prove to be too idealistic; leaving intelligence analysts with no other choice but to feed fragmented strategic insights to the client who already has a limited attention span, thereby assisting or supporting the decision-maker in his/her *own* sensemaking processes. It might be prudent to provide the client with the choice of either receiving fragmented, unstructured intelligence as-it-happens and/or reading a longer, integrative document.

The fifth lesson to be learnt from Knowledge Management theory and practices is that the *Cynefin framework provides a dynamic roadmap for analysts* to identify and deal with intelligence problems on the whole continuum of complexity. For knowable issues they not only have to learn new analytical techniques, but also need to be aware of the shifting dynamics which might require moving to more collaborative sensemaking to deal with complexity and chaos.

Lastly, the collaborative nature of many of the newly structured analytical methods in the knowable domain actually creates a *cognitive bridge to sensemaking* in the complex domain, which should make it easier for analysts to be move readily between the different domains. However, at this stage analysts and their organisations are ill-prepared for the cognitive and collaborative challenges required by many of the structured analytical techniques proposed by Heuer and Pherson. Furthermore, if they are unable to learn and apply new analytical techniques in the knowable domain, will they be able to deal with a new concept like sensemaking which belongs in the complex domain?

6.4 Adopting a mindset of resilience, mindfulness and double-loop learning

Other concepts found in KM and its related disciplines that might prove to be useful for application in Intelligence Analysis include *resilience and agility* of organisations and individuals to survive in situations of high complexity and uncertainty. To deal with the unexpected, people tend to improve their capacity for resilience by refining self-knowledge, relational knowledge, content knowledge and their abilities to act “thinkingly.”²⁵⁴

None of the other proposals would have an impact on intelligence organisations unless they build their capacity for *resilience* in the event of strategic surprises and incorrect analyses.

²⁵⁴ See Weick, Karl E and Sutcliffe, Kathleen M. 2001. *Managing the Unexpected: Assuring High Performance in an Age of Complexity*, 178

This can be brought about by firstly interrogating cognitive abilities and processes and looking at improved methods and techniques to externalise or formalise thinking processes. Also, the process of being able to dissect intelligence “failures” in such a contextualised manner that individuals and organisations truly learn from their mistakes helps build the capacity to understand systems and cope with errors, even though the same ones might not be repeated. Thirdly, in the fast moving complex world, resilience forces one to act while thinking, making the learning process much quicker, even though errors (and corrections) might be done during the process. Another aspect guiding resilience in organisations is the fact that everyone knows and understands the system, which means that more people are aware of the possible weaknesses and therefore ready to manage problems stemming from them. The secrecy, frequent blame games and political manoeuvring in intelligence is a far cry from this requirement. Also, the current management style in intelligence organisations lacks the kind of leadership found in resilient organisations, which is based on expertise and not on rank or position. Those with the best knowledge of a problem deal with it, thereby shifting decision-making to the most appropriate person.

Mindfulness would best be achieved if analysts, as stated previously, are made aware of their thinking processes and introduced to other methods and techniques to enhance their cognitive abilities. Those analysts or knowledge workers with the widest range of cognitive skills are able to choose the “right” methods and approaches intuitively from their improved and expanded arsenal if they are aware or mindful of what, how and why they do it. It is alarming that most intelligence analysts are still fixated on the traditional intelligence cycle, unaware of the available alternative models and techniques and exercise very little intellectual rigour in their estimates. A deliberate change process must occur in intelligence organisations through training, coaching and review processes to introduce and embed mindful, analytical processes, techniques and methods.

Double-loop learning is closely related to mindfulness where analysts not only correct their ineffective thinking and other working behaviours, but also identify and address the internal and external causes of that ineffective behaviour. This requires self-observation and reflection on the one hand, but also a critical look at what the root causes of ineffective behaviour or thinking might be, as well as looking for possible solutions. It also necessitates a commitment to learning and self-improvement. Of course, individuals as well as organisations practising double-loop learning become more conscious of both internal and external stressors and risks

(they practise situational awareness), making them much more effective in proactively engaging systemic leverages to their advantage.

6.5 Conclusion

The transformation of Intelligence Analysis in the US by instituting alternative analysis methods and specifically facilitating and enabling cross-organisational collaboration through Web 2.0 social tools in a matter of only three years, makes one excited that real change is possible. However, this paradigm shift has not yet filtered through to other countries, among them South Africa.

It would be difficult to introduce the new paradigm on a large-scale in the intelligence community. Calls that intelligence organisations should flatten their organisational structures, change reward systems to recognise the group rather than the individual contribution, and the training of all intelligence professionals to understand and embrace new concepts and technologies, are met with ongoing resistance. More importantly, funds to acquire technological collaboration and other sensemaking tools are limited, or absent in the case of organisations in South Africa and other developing or third world countries.

Half-hearted, uncoordinated change efforts without the buy-in and continued support of political and professional leaders will only lead to further frustration and entropy in the intelligence community. It is therefore crucial, as with various other successful KM implementations, that a multi-pronged approach be followed with several small-scale and fail-safe projects focusing on solving intractable problems that conventional methods have failed to resolve.

Hopefully, there will be enough enthused intelligence professionals and leaders in South Africa and elsewhere to take on these challenges and overcome personal and organisational inertia so that Intelligence Analysis will thrive in the Knowledge Age.

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