Article received in November 2017 and accepted for publication in April 2018

INTELLIGENCE IN NATO – CONTEXTUALISING A DOCTRINAL AND STRUCTURAL CLASH

AS INFORMAÇÕES NA NATO – CONTEXTUALIZAÇÃO DE UM CHOQUE DOUTRINÁRIO E ESTRUTURAL

Nelson José Mendes Rêgo
Lieutenant Colonel (Artillery)
Master in Military Science at the Military Academy
Lecturer of the Military Operations Educational Area at the Military University Institute (IUM)
Integrated Researcher at the Research and Development (CIDIUM)
1449-027 Lisbon, Portugal
rego.njm@ium.pt

Abstract

The difficulties in identifying and characterising the operational problem in Afghanistan led the North Atlantic Treaty Organization to rethink its analysis and understanding of the operational environment through a comprehensive and holistic view of all its dimensions by developing and implementing a Knowledge Development concept to support the planning, execution, and assessment of operations. The doctrinal and structural outline of the concept was presented in 2011, and since then the Knowledge Development concept has been interpreted as a separate function or even a replacement for the role of Intelligence. This paper aims to demonstrate that, at the doctrinal level, Knowledge Development enhances the comprehensiveness and effectiveness of Intelligence, and that it is not structurally independent from the Intelligence Joint Function. We concluded that the Knowledge Development concept has enhanced NATO's Intelligence capabilities in the face of the new dynamics and complexity of the operational environment.

Keywords: Information, Intelligence, Knowledge Development, Comprehensive Approach, Doctrine, NATO Command Structure.

Resumo

As dificuldades que a Organização do Tratado do Atlântico Norte enfrentou no Afeganistão, relativamente à identificação e caraterização do problema operacional, levou a instituição a repensar a forma de analisar e compreender o ambiente operacional. Desde então passou a faze-lo através de uma visão abrangente e holística de todos os seus domínios, razão pelo

How to cite this paper: Rêgo, N., 2018. Intelligence in NATO – Contextualising a Doctrinal and Structural Clash. *Revista de Ciências Militares,* May, VI(1), pp. 135-161.
Available at: https://www.ium.pt/cisdi/index.php/en/publications/journal-of-military-sciences/editions.

qual viria a desenvolver e implementar o conceito de Knowledge Development em apoio do planeamento, execução e avaliação das operações. Este conceito foi apresentado em 2011, com a finalidade de proporcionar uma visão para a sua futura integração, tanto a nível doutrinário, como estrutural, daí resultando uma perceção, de algum modo ainda residual, de que o Knowledge Development é uma função independente ou até substituta das Informações. Este artigo pretende demonstrar que o Knowledge Development ao nível doutrinário veio reforçar a abrangência e eficácia das Informações, e que em termos estruturais não foi implementado de forma independente da Função Conjunta Informações. Conclui-se que o Knowledge Development é, acima de tudo, um conceito que veio reforçar a capacidade das Informações face às novas dinâmicas e complexidade do ambiente operacional.

Palavras-chave: *Informação, Informações, Knowledge Development, Comprehensive Approach, Doutrina, NATO Command Structure.*

Introduction

It is not the strongest species that survive, nor the most intelligent, but the ones most responsive to change.

Charles Darwin

Over the last few years, the Intelligence Joint Function[1] of the North Atlantic Treaty Organization (NATO), as well as the Alliance's other Functions and Operations Planning Process (OPP) have been dominated by the Comprehensive Approach (CA) framework. This trend resulted from the experience gained in the operations conducted in the Balkans and Afghanistan, which showed the Alliance that the military alone was not sufficient to prevent or resolve crises, highlighting the need for greater collaboration between the various stakeholders involved in a conflict. This new paradigm acknowledges that, to deal with the complexity of the current security issues, it has become increasingly critical to harmonise the political, economic, and civil instruments of power with the military instrument.

However, in terms of planning and execution of operations, for a long time NATO Intelligence was perceived as a military function that served exclusively to assess a specific enemy, the terrain, and the weather, a perception that has roots in the Cold War (Menzel, 2016, p. 38). This 'heavy legacy' largely contributed to enforce and prolong a limited interpretation of what Intelligence truly is about. Actually, this perception only lasted this long, despite the fact that the Cold War theoretically ended with the fall of the Berlin Wall in the far-off year of 1989, because NATO only effectively engaged in combat in 2003 in Afghanistan.

[1] NATO has the following Joint Functions: Manoeuvre, Fires, Command and Control, Intelligence, Information Operations, Sustainability, Force Protection, and Civil-Military Cooperation (CIMIC) (AJP-01, 2017, p. 4_2).

Unlike what had happened in previous NATO-led operations, the difficulty in solving the "operational problem"[2] in this Theatre of Operations led the Alliance to rethink its analysis and understanding of the operational environment through a comprehensive view and a holistic approach to all its dimensions. To that end, NATO developed and implemented a Knowledge Development (KD) concept to support the planning, implementation, and assessment of operations, which provides a broad overview of all operational dimensions. Subsequently, in 2011, NATO published the Bi-SC *Pre-doctrinal Knowledge Development Handbook*, which outlined the future implementation of the concept, both doctrinally and structurally.

The KD *Handbook* proposes a strategic and operational structure conceived specifically for the NATO Command Structure (NCS), separate from the existing Intelligence structure, as well as a new conceptual approach. The *Handbook* states that, contrary to Intelligence, the KD process does not focus solely on the adversary, but considers that acting effectively, especially under the CA, implies knowing the capabilities of the main actors and how they interact with and influence each other, using not only military but also non-military experts and sources to analyse the different actors and systems operating across all relevant domains: Political, Military, Economic, Social, Infrastructural, and Informational (PMESII) (Bi-SC KD, 2011, p. vi).

Against this background, the question that must be asked is: *What is the evidence for KD as a separate function and structure from Intelligence?* We argue that, in terms of structural implementation, KD is not separate from Intelligence, as evidenced by the NCS that was subsequently implemented. The same can be said at the doctrinal level, where the KD concept enhances the comprehensiveness and effectiveness of Intelligence.

This article is divided into two parts: a conceptual part that addresses the development of KD; and an analytical part that provides evidence to validate our argument. It was concluded that KD is essentially a concept created to adapt Intelligence, both doctrinally and structurally, to the new dynamics and complexity of the operational environment.

To carry out this study, it is essential to distinguish the concept of Information from that of Intelligence, which are often confused in Portugal, where the terms *information* and *intelligence* are sometimes used interchangeably even though they represent different concepts.

According to NATO doctrine, Information consists of "unprocessed data which may be used in the production of intelligence" (AAP-06, 2016, p. 71). To clarify, in the Portuguese language, *informação* is used to refer to information and *informações*, to *intelligence*. The same doctrine refers to Intelligence as "the product resulting from the directed collection and processing of information regarding the environment and the capabilities and intentions of actors, in order to identify threats and provide opportunities for exploitation by decision-makers" (AAP-06, 2016, p. 73). That is, Intelligence represents the knowledge that results from the integration and prospective analysis of "information" (i.e. *informação*). The above shows that the reasoning behind the Portuguese translation was based on the fact that

[2] The "Operational Problem" involves identifying the nature, scale, scope, and pace of a crisis; the main actors involved (including international actors) and their interests; the legal aspects and the information environment (COPD, 2013, p. 3_13). This characterisation is essential to identify any unacceptable conditions that may be preventing the Desired End State, which are in turn characterised by a set of acceptable conditions that coincide with NATO's interests.

intelligence derives from the combination of several pieces of *information*, resulting in the term *informações* (plural), which combines multiple pieces of *information*. This translation has led to the confusion between *informação*[3] and *informações*, or to the use of *informações* simply as the plural of *informação*. In Spain and Brazil, the terms *inteligenzia* and *inteligência* are used to avoid misinterpretations. Although we agree with this approach, the Portuguese version of this article uses the term *informações* to refer to intelligence, as this is the term that is better understood and more commonly used in the Portuguese Armed Forces. Figure 1 illustrates the relationship between Information and Intelligence.

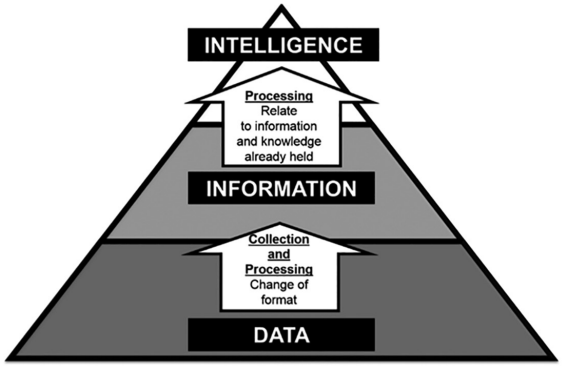

Figure 1 – Intelligence Pyramid (relationship between Information and Intelligence)
Source: Adapted from AJP-2 (2003, p. 1_2_1) and PDE 2-00 (2009, p. 1_5).

1. Emergence of the Knowledge Development concept in NATO

In this section, we provide a background for the emergence of the KD concept in NATO, from its origins to the present day. As stated above, the perception of Intelligence inherited from the period of the Cold War is that of a military function that deals with the assessment of a specific enemy, terrain, and weather. This perception strongly contributed to maintain a limited view of what intelligence is truly about.

In the Afghanistan TO, unlike what had happened in other Alliance-led operations such as Bosnia and Kosovo, the difficulty in understanding the "problem" led NATO to rethink its analysis and understanding of the operational environment. In an article published in 2010, several authors, including Major General Michael T. Flynn, said that this residual paradigm had a negative impact on the operations of the International Security Assistance Force (ISAF)[4] in Afghanistan. The authors conclude that, in 2010 – almost eight years after

[3] In the only existing Portuguese doctrinal publication on Intelligence, the Portuguese Army attempted to avoid the linguistic confusion between *informação* and *informações* by referring to the first as *notícias* [news], i.e. "any unprocessed data of any nature (fact, document, or material) that can be used in the production of intelligence" (PDE 2-00, 2009, p. 1_4).

[4] The ISAF was established in the agreement signed in Bonn on 5 December 2001, which called for the support of the international community to establish and train the new armed and security forces and a United Nations-mandated Force to support security in the Kabul region. The multinational force was deployed in December 2001 but was only led by NATO as of 11 August 2003 (NATO, 2015b).

military operations were initiated the country – the U.S. Intelligence community had only been marginally relevant to NATO's overall strategy in that TO. Having focused most of its research efforts on collecting information on insurgent groups, the Intelligence apparatus had proved incapable of answering questions about the operational environment in which its forces operated or about which actors they should seek to influence (Flynn, et al., 2010).

Also according to Flynn, the Intelligence community was ignorant about the local economy and landowners, was uncertain of who the powerbrokers were and how they could be influenced, neglected the various development projects carried out by several organizations, disengaged from the population, and could do little to provide decision makers with the information they needed to conduct operations successfully. Knowing the enemy is essential to defeat him. However, that knowledge cannot be exclusively self-referential. The same problems that occurred with the Taliban and Al-Qaeda in Afghanistan are happening again with the self-proclaimed Islamic State because knowing the operational environment goes far beyond focusing solely or even mainly on insurgent groups. It is critical that all the actors and dimensions of the operational environment are analysed in order to identify the factors that can be used to exploit the vulnerabilities of these groups (2016, p. 33).

This complexity shows that military means, while essential, are not enough to address these multiple complex security challenges, therefore, NATO must work with other actors on a comprehensive approach that effectively combines the political, military, economic, and civil instruments of power (Hodermarsky, 2015, p. 13).

These difficulties and challenges are compounded by the need to coordinate actions with other governmental organizations (GOs), non-governmental organizations (NGOs) and international organizations (e.g. the United Nations or the European Union), which are also involved and are able to influence current crises or conflicts. Therefore, analysts (with input from civilian experts), military planners, and decision makers must elaborate and develop their plans and operations from a more comprehensive perspective, in order to identify the intended outcome of military actions and how they influence or are influenced by other domains. According to Bartolomeu, "this coordinated approximation of all instruments of power is based on the effects that must be produced (what is the goal to be achieved or what is the desired response?), and does not focus on activities (how to achieve the goal / what is the intended aim?" This approach implies "[...] that military problems should be addressed from a multidisciplinary, comprehensive perspective" (2012, p. 717).

However, knowing one's adversary was and will always remain a key aspect of the planning of military operations, one which spans the history of warfare and military art and which Sun Tzu's ancestral knowledge refers to as knowing either one's enemy or oneself:

> If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself but not the enemy, for every victory gained you will also suffer a defeat. If you know neither the enemy nor yourself, you will succumb in every battle.
>
> Sun Tzu (2013, p. 24)

However, the operational environment has become significantly more complex and dynamic, involving a variety of actors with different goals, which are sometimes contrary to NATO's. This diversity led to the creation the Effects Based Approach to Operations (EBAO) and the CA, which provide a holistic analysis of the main actors, not only the adversary, by assessing their PMESII systems. Hence, these actors are conceptualised as a system formed by the various elements or subsystems that one wishes to influence.

In our opinion, NATO has in fact been influenced by the concept of a holistic view of the operational environment, which the U.S. Armed Forces have begun to develop, referring to the holistic view concept in several of its publications on Intelligence:

> The operational environment is a composite of the conditions, circumstance, and influences that affect the employment of capabilities and bear on the decisions of the commander. Understanding this environment requires a perspective broader than the adversary's military forces […] The planning, execution, and assessment of joint operations require a holistic view of all relevant systems that comprise the operational environment.
>
> JP-02 (2007, p. IV_I)

> A holistic view of the operational environment encompasses physical areas and factors (of the air, land, maritime, and space domains) and the information environment (which includes cyberspace). Included within these are the adversary, friendly, and neutral PMESII systems and subsystems that are relevant to a specific joint operation.
>
> JP 2-01.3 (2009, p. I_2)

It should be noted that these publications view this new paradigm of operational environment analysis as part of Intelligence, rather than an independent process. Figure 2 represents the holistic view of the operational environment.

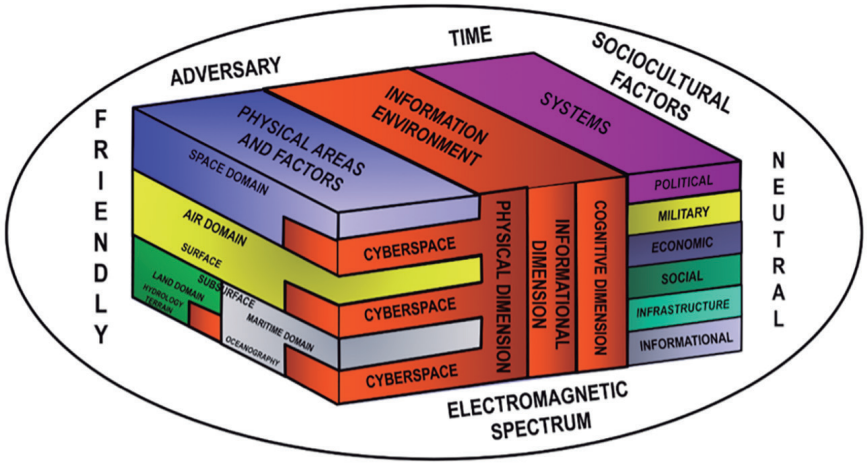

Figure 2 – Holistic view of the operational environment

Source: Adapted from JP 2-03 (2009, p. I_3).

The KD concept has since been developed by NATO to support the planning, execution, and assessment of operations and to provide a holistic view of the operational environment by integrating isolated data into a usable set of information and relationships. Simply put, it is the process of acquiring, analysing and distributing news (i.e. information) that support a common, shared understanding of the operational environment. The key idea is to describe the operational environment in terms of a system of systems, analysing the relevant relationships between the identified actors and assessing probable mechanisms of influence between the elements within the system.

NATO later began to develop this scientific approach to KD for military purposes during the Multinational Experimentation series[5], which included a live field experiment at Kosovo Force Headquarters (KFOR) in 2007 (Menzel, 2016, pp. 40). The two Strategic Commands jointly developed an initial version and later published several updates of the Bi-SC *Pre-doctrinal KD Handbook* (from 2007 to the latest update in 2011), which was conceived to help NATO understand and integrate KD into its approach to operations.

2. The Doctrinal Domain

We will now describe the influence of KD on NATO by analysing its main doctrinal repercussions, as this is a key aspect of why we consider KD to be a conceptual evolution within the framework of Intelligence rather than a separate function or a replacement for the role of Intelligence.

After the adoption of the current strategic concept at the Lisbon Summit in 2010, there were clear signs that the CA was being implemented, leading NATO to make some military strategy changes in terms of its operational strategy, which were reflected in the doctrine. Referring to this specific strategy, Couto states that it "[...] deals with the design and execution of strategic manoeuvre, seeking not only to align the objectives to be achieved with the possibilities offered by the tactics and techniques of the domain in question, but also to steer their evolution and adapt them to the strategic needs" (1988, p. 231), that is, the process by which a given doctrinal framework is developed.

NATO's primary goal is to safeguard the freedom and security of all its members by political and military means, and, to that end, the 2010 Strategic Concept defines its core tasks: collective defence, crisis management, and cooperative security (2010, pp. 68). Bearing in mind the joint and combined nature of NATO's military operations, it has developed processes to integrate its member forces under a common doctrinal structure to ensure interoperability and operational effectiveness. That is, we look at how the means should be employed according to a doctrine, which NATO defines as a set of "fundamental principles by which the military forces guide their actions in support of objectives" (AAP-06, 2016, p. 2_D_9).

[5] The Multinational Experiment series is designed to develop and introduce new capabilities to increase the operational effectiveness of NATO forces in joint, multinational, and interagency operations. Initiated by the United States Joint Forces Command in 2001, it has been, since then, joined and supported by many Alliance nations.

The KD concept draws on a holistic view of the adversary as a complex system, looking at the actors in the operational environment as an interactive networked system, which can be analysed to obtain a comprehensive understanding of the operational environment, considering PMESII domains and how they interact as a system of systems. This understanding makes it possible to identify the instruments of power that should be employed and the most effective way of employing them. As Vicente pointed out, "[...] in conventional operations there was a tendency to use the military instrument against the military subsystem and thereby attempting to destroy it [...] those efforts are now directed against all subsystems and all instruments of power" (2008, p. 127).

One of the advantages of this holistic approach is that it allows us to obtain knowledge on all actors (adversary / friendly / neutral) to anticipate their behaviour by creating interferences, while keeping our actions to the minimum necessary to prevent possible unwanted effects (e.g. collateral damage).

Thus, the aim of Systems Analysis[6] is to understand the system represented in Figure 3 and to change it in a way that is beneficial by identifying the actions to be performed on the specific elements that will produce the desired effects, which may be of a physical or psychological nature (Bi-SC KD, 2011, p. 13).

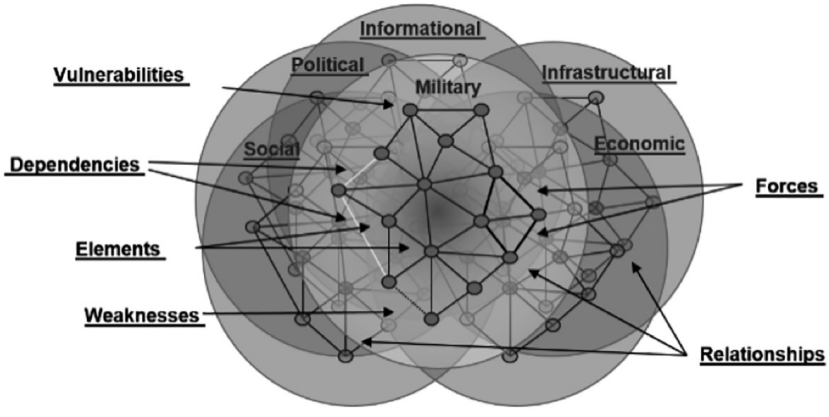

Figure 3 – System Overview

Source: Adapted from Bi-SC KD (2011, pp. 2-7).

[6] The aim of systems analysis is to obtain a comprehensive knowledge of the dynamics, capabilities, behaviours, and interactions of the various elements in the operational environment (Bi-SC KD, 2011, p. 13).

To assist with the understanding of the interactions in a given system, Systems Analysis often uses Influence Diagrams[7] that depict how key actors (individuals, groups, and organizations) interact with each other, as well as particularly important relationships among them. These diagrams can be used to identify critical capabilities, requirements, or vulnerabilities, which are essential to analyse the centres of gravity[8] of all actors and to ascertain how the behaviour of the elements in the system can be influenced or affected positively or negatively (COPD, 2013, p. 29). Figure 4 shows an example of a diagram.

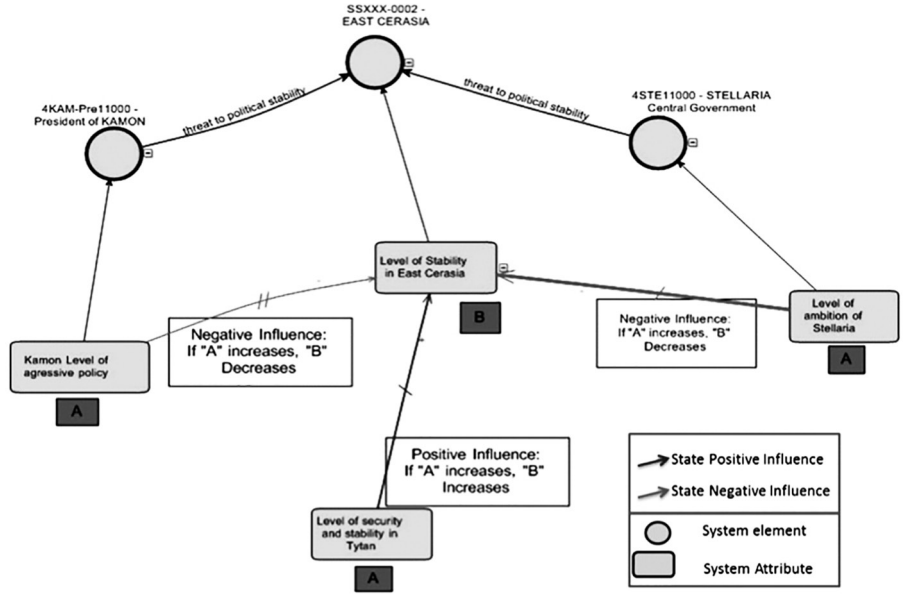

Figure 4 – Example of an Influence Diagram

Source: COPD (2013, p. 2_9).

At the doctrinal level, following the publication of the Bi-SC *Pre-doctrinal KD Handbook*, the KD concept was clearly mentioned in the Comprehensive Operational Planning Directive

[7] An influence diagram is a fundamental tool of systems analysis methodology. It is a model that simplifies reality by representing highly complex and unstructured problems in a single scheme, showing the variables that interfere in the system's relationships, as well as how the intervention mechanisms (instruments of power) interact. An influence diagram should contain all relevant actors in the operational environment and the main relationships and influences (positive or negative) they exert on each other across all PMESII domains. This will enable the representation of the dynamics of the environment and provide important conclusions about the specific point at which the military instrument of power will have to exert its influence (through actions and effects), so that the environment evolves towards the desired operational end state (ESFA, 2017, pp. 5 - A1 - 9).

[8] Centre of Gravity: "Characteristics, capabilities or localities from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength or will to fight. It is the primary source of power on which an actor depends to achieve their objectives" (AJP-5, 2013, pp. 2-32).

(COPD)[9], and even provided the conceptual basis for one of the chapters (Chapter II). This directive further elaborated the concept of "knowledge", which it defined as:

> […] the meaning rendered from data and information […] that contributes to the theoretical or practical understanding of a subject. Iteratively applied, the KD process converts basic data to more usable information, information to awareness (what is happening) and awareness to understanding (why it is happening) […] that can support […] political-military, strategic and operational level decision-making processes.
>
> COPD (2013, pp. 2-1)

KD is generally perceived as a proactive, collaborative, and iterative process, carried out at all levels, to which all functional and special staff contribute. Although some functional areas (e.g. Intelligence) have their own internal processes (i.e. a clearly defined information production cycle), their output will contribute to the knowledge requirements at the operational and strategic level (COPD, 2013, p. 2-2). That is, according to the COPD, Intelligence is a function / structure subordinate to KD.

Given the requirements of the CA, which is necessarily holistic and aware of the various influences, interactions, and capabilities generated by the key players in a given operational environment (Bi-SC KD, 2011, p. vii), the Knowledge Development Process was developed, presumably to replace the "conventional" Intelligence Cycle (IC) as the systemic model that ensures the acquisition, integration, analysis, and sharing of information and knowledge from military and non-military sources (COPD, 2013, p. 2_10). In fact, neither the first edition of the COPD issued in 2011 nor its second edition in 2013 mentions the IC, although it was the joint doctrine model in force at the time[10].

According to the document, this systemic process includes the analysis of the relationships and interactions between systems and actors, taking account of PMESII factors to provide a truly comprehensive understanding of the situation, as well as the possible effects of the actions taken by the various instruments of power on different systems and actors. This process consists of five phases, as shown in Figure 5.

---

[9] NATO started developing its COPD in 2008, when it decided to operationalise the Comprehensive Approach concept at the Bucharest Summit. The first interim version for internal testing was published in December 2010 and an updated version was issued in October 2013. The publication is developed by the two Strategic Commands to support the implementation of the NATO OPP at the strategic and operational levels.

[10] AJP-2 *Intelligence, Counter Intelligence & Security Doctrine* issued in July 2003 and AJP-2.1 Ed. (A) - *Intelligence Procedures* issued in September 2005.

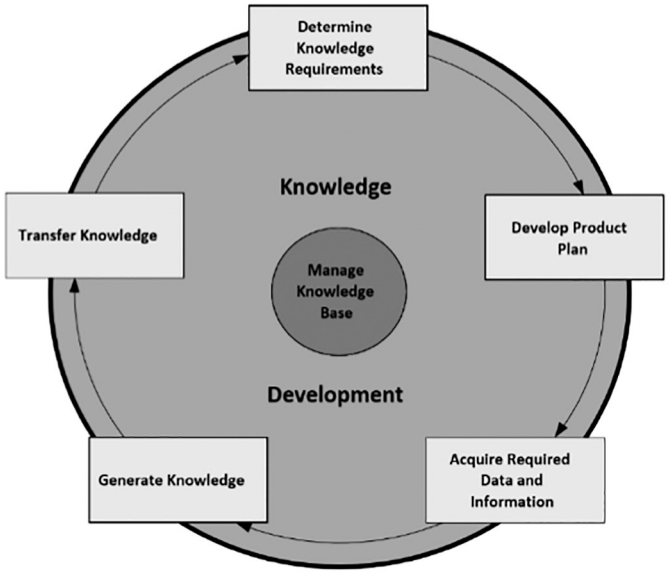

Figure 5 – Knowledge Development Process

Source: COPD (2013, p. 2_11).

Determine Knowledge Requirements is the first phase of the process, through which "knowledge requirements can be determined. This also involves the gathering and cataloguing of gaps in knowledge that derive from strategic, operational, and component […] decision-making processes" (COPD, 2013, p. 2_11).

Develop Product Plan is the second phase of the process, which "involves the development of a collection plan for developing a knowledge product and determining the sources […] that will be required. This may involve drawing on […] SMEs [Subject Matter Expertise] internal and external to NATO" (COPD, 2013, p. 2_11).

Acquire Required Data and Information is the stage where, "based on the product plan, the designated lead acquires data and information from internal and external networks of SMEs to support generating the required knowledge product" (COPD, 2013, p. 2_11).

The Generate Knowledge phase "involves […] activities […] to integrate and analyse information and intelligence, resulting in a knowledge product that satisfies […] knowledge gaps" (COPD, 2013, p. 2_11).

Transfer Knowledge is the last phase of the process, which "involves activities to manage accessibility and establish permissions […] for sharing knowledge products […] internal to NATO and external Non-NATO entities" (COPD, 2013, p. 2_11).

Information and Knowledge Management (IKM) is considered "an essential supporting element of the KD process [and] KM [Knowledge Management], and its intrinsic component IM [Information Management] is the means by which NATO organisations determine what

knowledge is required, manage existing knowledge and identify knowledge gaps to be filled" (COPD, 2013, p. 2_12).

When one examines the phases and purpose of this process, one finds quite a few similarities with the IC that has been in use since the NATO Standardization Office (NSO)[11] [12] approved the first joint doctrine publication on NATO Intelligence in 2003, with the publication of the AJP-2 *Intelligence, Counter Intelligence & Security Doctrine* (AJP-2, 2003, p. 1_3_2). Moreover, the IC model continued to be adopted in subsequent editions, respectively in 2014 (AJP-2, 2014, p. 4_1) and 2016 (AJP-2, 2016, p. 4_1), the latter being the version currently in force.

In the above documents, this cycle is defined as a sequence of activities through which information is obtained, aggregated, converted into intelligence and made available to users. This sequence comprises four phases, as shown in Figure 6 (AJP-2, 2016, p. 4_2).

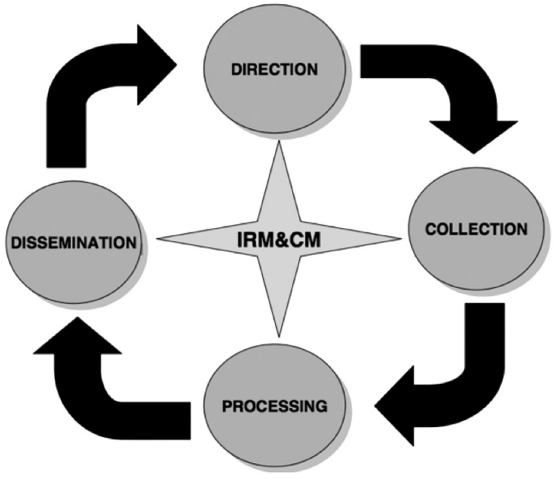

Figure 6 – Intelligence Cycle
Source: AJP-2 (2016, p. 4_2).

Direction: the first phase of the process, which consists in "determination of collection requirements, planning the collection efforts, issuing of orders and requests to collection agencies, and maintenance of a continuous check on the productivity of such agencies" (AJP-2, 2016, p. 4_1).

[11] The NSO is the body responsible for initiating, coordinating, supporting, administering, and evaluating the Alliance's Standardization activities, including doctrine, which is developed by several working groups (WG). The Allied Joint Operations Doctrine WG (AJODWG) is in charge of developing doctrine for joint operations, in particular operational level doctrine. This includes the development, revision, and harmonisation of all level 1 publications (doctrine publications that form the basis for joint doctrine, capstone, and keystone Allied Joint Publications, e.g. AJP 2) and level 2 publications (all AJPs that are subordinate to capstone and keystone AJP, e.g. AJP 2.1, AJP 2.2, etc.) (NATO, 2015a) and (NSO, 2016).

[12] The author is also an Army delegate to the AJODWG, which reviews and implements NATO Intelligence publications, among other documents.

Collection: the second phase of the IC, defined as "the exploitation of sources by collection agencies and the delivery of the information obtained to the appropriate processing unit for use in the production of intelligence" (AJP-2, 2016, p. 4_1).

Processing: this phase, is defined as "the conversion of information into intelligence"[13] (AJP-2, 2016, p. 4_1).

Dissemination: the last phase of the process, defined as "the timely conveyance of intelligence, in an appropriate form and by any suitable means, to those who need it" (AJP-2, 2016, p. 4_2).

As shown in Figure 6, the Intelligence Requirement Management and Collection Management (IRM&CM)[14] process monitors the IC and coordinates the four phases, ensuring that the information needs are met and that the collection means are used and prioritised according to the requirements and in an appropriate manner (AJP-2, 2016, p. 5_1).

Analysing these two processes leads to the question of whether they are that different or if they complement each other. In terms of overall process, both share a common purpose since they include a sequence of activities based on the identification of information / knowledge requirements; the development of a collection plan; the acquisition of data and information; processing that information / knowledge and disseminating / transferring knowledge. Similarly, both IKM and IRM&CM aim to manage and coordinate the various activities across all phases of the process.

That is, the conceptual model proposed in the COPD involves carrying out the same activities to manage and coordinate the way in which information is obtained, aggregated, and converted into intelligence that can be delivered to users, as shown in Table 1.

Table 1 – Phases of the IC vs. the KD Process

Information Cycle	Knowledge Development Process
Orientation	Determine Knowledge Requirements
	Develop Product Plan
Collection	Acquire Required Data and Information
Processing	Generate Knowledge
Distribution	Transfer Knowledge

Source: Adapted from AJP-2 (2016) and COPD (2013).

In our opinion, this conceptual model is redundant because the COPD does not introduce any changes in terms of the process and because both processes involve the same activities to achieve the same purpose. Since there is no difference in terms of the process, it can be argued, as the KD *Handbook* does, that the difference is that Intelligence activities, and consequently the IC, focus mainly on actual or potential adversaries from a specific country or region, and

[13] Processing is divided into five parts: collation, evaluation, analysis, integration, and interpretation. For more information on this process see AJP-2 Intelligence, Counter Intelligence and Security Doctrine, 2016, pp. 4-4 to 4-6.

[14] See AJP-2 pp. 5-1 to 5.6.

do not involve the use of non-military sources to acquire intelligence and knowledge of IOs, GOs, and NGOs, as well as other agencies and non-military actors.

At this point we will return to the focus of our study. Is KD a separate function, or even a replacement for the role of Intelligence? Or is it simply a conceptual evolution of the Intelligence process? In fact, the way KD was first presented in the KD *Handbook* led to the perception of "knowledge" as a concept that would replace Intelligence. According to Menzel, the handbook attempts to answer these questions by making a distinction between KD and Intelligence. However, according to the author, this argument is based on two outdated assumptions: the first is that "intelligence activities are focused primarily on actual or potential adversaries within a specific country or region" and the second, that "KD encompasses the deliberate use of non-military sources beyond the scope of Intelligence activities" (2016, p. 41).

However, the KD *Handbook* weakens its own argument by admitting that "[...] today's Intelligence also addresses non-military sources and domains, and operational practice will demonstrate how the delineation between KD and Intelligence can be better defined" (Bi-SC KD, 2011, pp. vi-vii). This last statement reveals the weakness incorporated into the concept: restricting Intelligence to knowledge about opposing forces contradicts its own fundamental paradigm about complex environments, since it holds that the complete PMESII spectrum must be observed to understand the origin, nature, and probable development of a threat (Menzel, 2016, p. 41).

Re-examining the existing NATO doctrine documents, we were able to find evidence that clearly contradicts the KD *Handbook*. The AJP-01 *Allied Joint Doctrine*[15] of 2010, issued prior to the publication of the Bi-SC *Pre-Doctrinal KD Handbook*, states that:

> Intelligence collection, analysis, dissemination and sharing will be critical to anticipating and, possibly, preventing or containing conflicts. Intelligence processes include agencies not traditionally associated with military operations, for example […] non-governmental actors. A full understanding of the operational environment and a proactive approach in the earliest stages of an emerging crisis will be required.
>
> AJP-01 (2010, p. 2_10).

Considering that the NATO doctrine on Intelligence architecture was developed and implemented long before the emergence of the KD concept, i.e. in 2003, there are some flaws in the argument that we are dealing with two separate concepts. Despite not being as comprehensive, the first doctrinal publications on Intelligence, the AJP-2 of 2003 and the AJP-2.1 of 2005, had already mentioned the importance of the nonmilitary factors involved in the operational environment and the possibility of using nonmilitary sources external to NATO (2003, p. 2_1_2). This publication already took into account the complexity of the operational environment and the information environment, stating that:

> The structural analysis of the operational environment should encompass the causes of a conflict, dividing it into military, political, economic, social, and cultural elements (including the media) and technological aspects [...] all key players and

[15] Capstone publication that serves as a guideline for the development of all NATO joint doctrine (AJP01, 2017, p. 1_3).

> their relationships should be identified […] their personalities, leadership styles, ambitions, motivation, goals, dependencies must be fully understood [...] as well as the adaptive relationships and dependencies between actors and social groups.
>
> AJP-2 (2003, p. 1_4_5)

The linkages to all non-military groups and organizations operating in the area of operations had already been deemed mutually beneficial and essential to ensure the flow of information and to acquire a better understanding of the operational environment (2005, 8_4). This clearly contradicts the argument that Intelligence addresses only military enemies and the space they occupy. In fact, the doctrine clearly shows that the Intelligence Function also deals with non-military actors, and that it regards the operational environment as a system of systems, and not exclusively as a military system, focusing on the relationships and dependencies among those actors. In our opinion, in conceptual terms, the KD Handbook mainly provides a more in-depth examination of how this approach should be operationalised by combining Intelligence with information from nonmilitary sources to produce a comprehensive view of the operational environment.

Moreover, the revisions and updated versions of NATO's doctrine publications on Intelligence issued in 2014[16] and 2016[17] and the reviewed edition of the COPD did not include some of the techniques and procedures defined in the 2011 KD *Handbook*. A good example of this is the fact that the IC is still in use, rather than the KDP conceptual model. The conceptual evolution of these publications has been increasingly moving away from an enemy-centric intelligence paradigm. It explicitly states that "Intelligence develops knowledge about the environment and the actors" (AJP-2, 2016, p. 3_2). Therefore, it should be able to produce intelligence based on a wide range of factors, using military and civilian experts and even others external to the NATO structure to support its analysis, or, if necessary, relying on analysis provided by other agencies, including non-military organizations (e.g. IOs, NGOs and GOs), i.e. in a collaborative process consistent with NATO's Intelligence and the operational principles related to the CA. However, while the same publication states that "KD is not an Intelligence function", it also contradicts itself by admitting in the same sentence that "the Intelligence staffs make a significant contribution to KD" (AJP-2, 2016, p. 2_3).

In our opinion, this "misalignment" in conceptual approaches also stems from the fact that these publications were developed within different fora. While the KD *Handbook* and the COPD were developed by the two strategic commands, specifically by working groups within their own structures, the AJPs mentioned above were developed by the AJODWG through a more inclusive process, in which the contents are developed by delegates from each member state and are subsequently submitted for approval to the bodies in charge of doctrinal standardisation in each state before the ratification of a specific publication. To achieve conceptual convergence, the different documents on Intelligence and KD must be better aligned. Considering that the AJP-2 has already been reviewed on two occasions since the publication of the 2nd edition of

---

[16] AJP 2 *Edition (A) version 1 – Allied Joint Doctrine for Intelligence, Counter Intelligence and Security Doctrine,* reviewed in 2014.

[17] AJP 2 *Edition (A) version 2 – Allied Joint Doctrine for Intelligence, Counter Intelligence and Security Doctrine* and AJP 2.1 *Edition (B) version 1 – Intelligence Procedures*, both reviewed in 2016.

the COPD, the revision of the latter document that is underway will be an opportunity to clarify definitively the relationship between KD and Intelligence.

Furthermore, the Joint Analysis and Lessons Learned Centre (JALLC)[18] already examined this clash between KD and Intelligence through an approach that we believe is rather objective and assertive, in a report issued in 2011 at the request of the two Strategic Commands, which had identified the need to increase efficiency and streamline information processes and structures. The JALLC reviewed the Intelligence structure within the NCS, as well as all ongoing processes to provide input for possible changes.

In conceptual terms, the JALLC analysed processes, functions, redundancies, and gaps according to the structures that would be implemented within the KD framework, clearly stating that the latter and Intelligence are inseparable. In fact, at the time, the COPD and the KD *Handbook* – which had only just been released – did not explicitly draw a relationship between Intelligence and KD. The JALCC report concludes that expanding the focus of analysis beyond a purely military scope to other domains (e.g. PMESII) and introducing new methods (e.g. systemic systems analysis and other collection sources) has strengthened the Intelligence capability, enabling an understanding of the operational environment in all its dimensions. That is, KD enhances Intelligence, transforming it into "Intelligence Plus", as shown in Figure 7. This essentially involves a change in mindset, which requires understanding that KD reinforces and supports the need for a more comprehensive focus of analysis, which encompasses the various operational domains, as well as an even greater need for collaboration and information sharing between NATO and other actors.

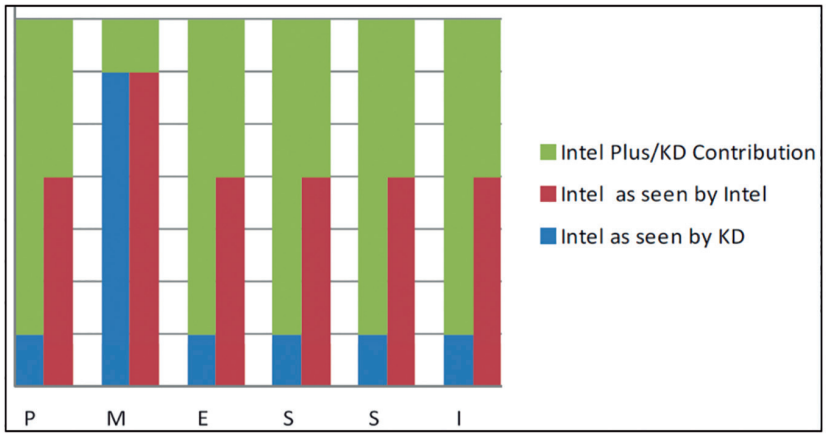

Figure 7 – "Intelligence Plus" concept

Source: JALLC (2011).

[18] The JALLC is subordinate to the Allied Command Transformation (ACT), and its overall mission is to provide joint analysis of NATO operations, exercises, and training actions and to support the exchange of experiences and lessons learned, developing the latter capability and reinforcing the continuous transformation and modernisation of the Alliance's forces and capabilities by carrying out projects to analyse operations, training, exercises, and experiments (JALLC, 2017).

The chart above represents the contributions of Intelligence and KD to a holistic understanding of the operational environment. Blue indicates what KD considers Intelligence is contributing, red represents Intelligence's own view of its contributions, and green shows the theoretical contribution with the integration of the KD concept, which enhances Intelligence, i.e. the concept of "Intelligence Plus" (JALLC, 2011).

The JALLC's approach is, in our opinion, a true representation of the relationship between Intelligence and KD, in which the latter is essentially a concept rather than a new function that supersedes or is separate from Intelligence. KD is a conceptual evolution of the Intelligence Function that broadens its scope of analysis by introducing new techniques and procedures, contributing to a global view of the operational environment.

We are, in fact, witnessing an evolution of the traditional intelligence pyramid[19] (i.e. the relationship between data, information, and Intelligence) to a paradigm in which the operational environment is viewed from a holistic perspective and the KD concept introduces new techniques and procedures, enabling the Intelligence Function to provide a global understanding of all the dynamics of an increasingly complex operational environment where Intelligence now involves "knowledge" and "understanding", as depicted in Figure 8. "Knowledge" results from the fusion of the information obtained from various sources, rather than exclusively military sources.

"Understanding" emerges from the process of integrating existing knowledge about a particular subject or area of interest, contributing to a comprehensive understanding of the operational environment and enabling logical, sequential, and rational military actions and decisions, as shown in Figure 8.

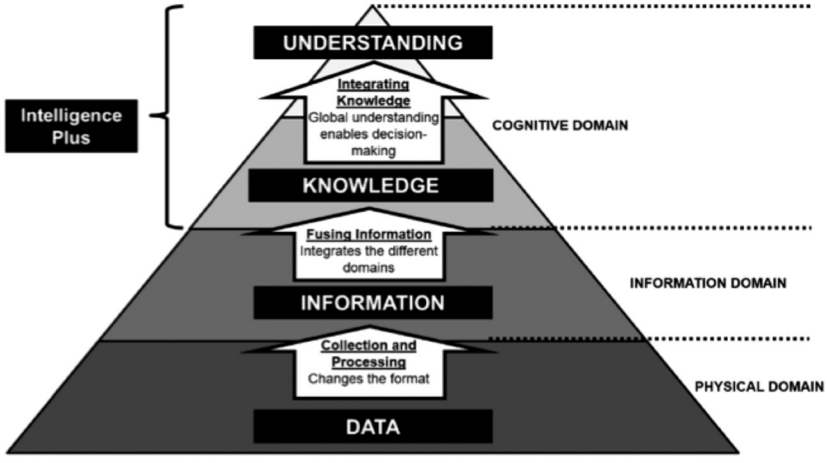

Figure 8 – Cognitive Intelligence Pyramid

Source: Adapted from Nunes (2015) and Biermann (2004).

[19] See Figure 1.

This Intelligence architecture involves the physical domain, the information domain, and the cognitive domain. We commonly associate the physical domain with the conduct of military operations in the land, naval, air, space, and cyber environments. It is where the command and control systems (C2), the collection sources, and the information networks that connect them are situated, as well as the data that includes signals detected by a sensor or source. The information domain is where information is produced, shared, and used and where C2 activities are processed. The battle for information superiority, which is fought in this domain, is what determines the success or failure of an operation. Finally, the cognitive domain represents what goes on in the mind of the decision maker, and operations are also won or lost in this domain since it is where inner strength, creativity, intuition, experience, and systemic and mental processes of a military decision maker reside (i.e. where knowledge is generated and situations are understood) (Nunes, 2015, pp. 35-36) and (Biermann, et al., 2004, p. 33).

3. The Structural Domain

In this section we will describe the impact of KD on NATO's structures to support the argument that it is not a separate function or a replacement for the role of Intelligence.

Similarly to the military strategy changes in the operational domain, the implementation of the CA also led to structural strategy changes that are reflected in the NCS.

> Structural strategy aims to detect and analyse the vulnerabilities and strengths of existing structures to define the most appropriate measures, including the creation of new structures, to eliminate or mitigate vulnerabilities and ultimately to improve the output of means or resources. Structural strategy essentially answers the following question: which structures should be eliminated, corrected, developed, or created to reduce vulnerabilities and enhance strengths, resulting in a better return on means and resources?
>
> Couto (1988, p. 232)

As early as 2011 (i.e. prior to the implementation of the NCS restructuring of 2012) the KD *Handbook* provided guidance for possible changes to NATO's structures in light of the implementation of the KD concept. This publication stated that the organizational structure required to successfully integrate KD should be sufficiently flexible and, therefore, be adapted to each level of operations. The increase in the volume of information requirements and the relative complexity of collecting information from organizations outside NATO control led to the need to implement and manage a knowledge network that would enable knowledge development (KD). Three KD functional entities were conceived: the Knowledge Management Centre (KMC); the Knowledge Development Centre (KDC); and the Knowledge Centre (KC), as shown in Figure 9.

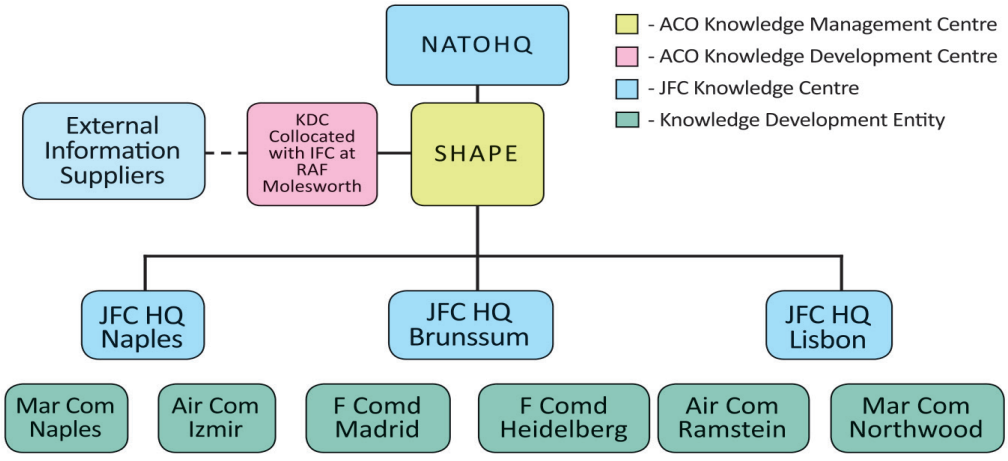

Figure 9 – Functional integration of the KD Entities within the NCS[20]

Source: Bi-SC KD (2011).

However, not all the measures proposed by the structural framework presented in the KD *Handbook* in 2011 have been implemented. As we mentioned when addressing the conceptual domain, the two Strategic Commands identified the need to increase efficiency and streamline the Intelligence processes and structures and tasked the JALLC with analysing the Intelligence structure within the NCS to assist in the NATO restructuring that was underway. The purpose of this report was to analyse the scope and responsibilities of the Intelligence Structures of the Allied Command Operations (ACO), the Supreme Headquarters Allied Powers Europe (SHAPE), and the Operational Command Knowledge Centres. The JALLC identified some functional inconsistencies, redundancies, and overlaps in the structural domain, notably at the level of the operational structure outlined in the KD *Handbook* (i.e. the JFCs). Therefore, the new NCS structure that started being developed in 2012 did not include a separate or replacement KD structure, although some inconsistencies still remain.

3.1. Knowledge Management Centre

The KMC was designed to establish a centralised knowledge base that would comprise a pool of experts ready to provide analytical expertise on PMESII domains, as well as a data repository to assist in the assessment of threats and the conduct of various NATO operations. The KMC would also work in close collaboration with the KDC and the KC of the JFC.

The KMC was established in May 2012 with the creation of the Comprehensive Crises and Operations Management Centre (CCOMC) under SHAPE's Transition Program, which aimed to make the Alliance more flexible, agile, and prepared to respond to the crises of the 21st

[20] Because this structure was designed before the new NCS was implemented in 2012, it still includes the JFC Lisbon.

century in an increasingly effective way, and the framework proposed for this strategic level was implemented in the 2011 KD *Handbook*. The CCOMC, which is the core of this approach to crisis management operations, comprises five cells: the Crisis Identification Group, the Crisis and Operations Planning Group (COPG), the Crisis and Operations Management Group (COMG), the Centre Support Group (CSG), and the Crisis Review Group, as depicted in Figure 10.

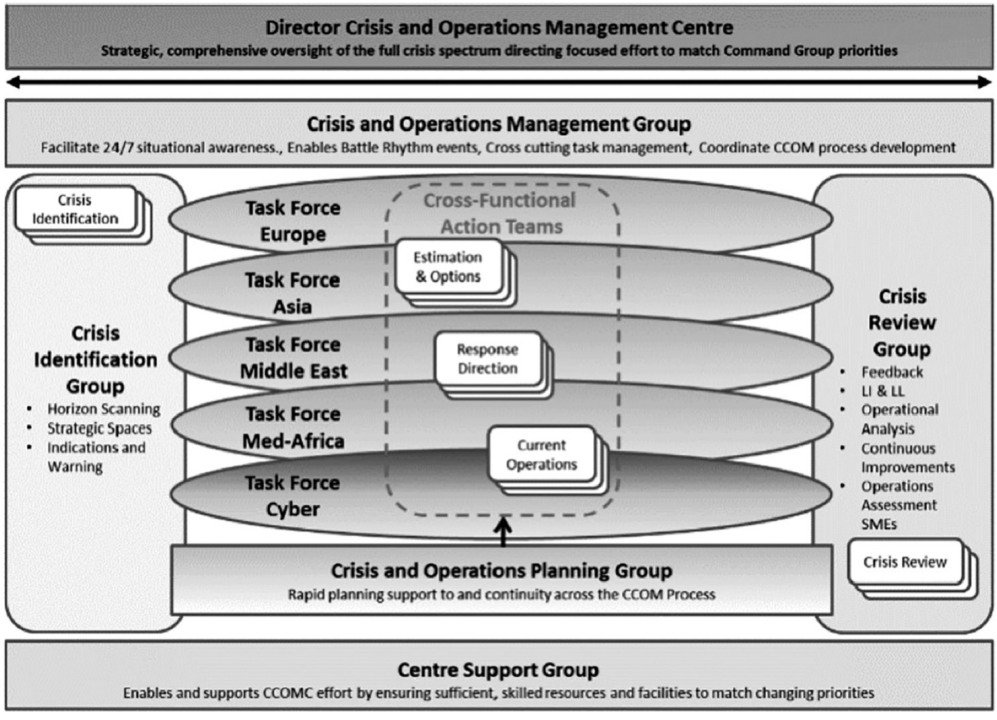

Figure 10 – CCOMC Functional Structure

Source: SHAPE (2015, p. 17).

Based on the "Think, Plan, and Act strategically" concept, the CCOMC aims to bring together civilian and military experts in crisis identification, planning, and execution of operations in a single forum that can provide a comprehensive understanding of the operational environment, allowing NATO to be better prepared to manage potential crisis situations. Within the CCOMC, the CIG is in charge of providing "fused information and intelligence" on potential or ongoing crises in NATO's areas of interest. The CIG comprises two main elements, the J2 (Intelligence) Operations Branch and Civil-Military Analysis (CMA). This is a flexible, multifunctional group with a permanent staff composed of members of the Intelligence community and reinforced by a wide range of experts (SHAPE, 2015,

pp. 12-13). Interestingly, the term "KD" is never mentioned in this context. However, while SHAPE has not established any formal KD organization at the CCOMC, the KD methodology (development of processed information[21]) is intrinsically implemented and applied in the CIG since the group includes military and civilian analysts (Menzel, 2016, p. 42). Therefore, we can conclude that, at the structural level, KD did not supersede or replace Intelligence, and is essentially viewed from the perspective of its conceptual application, according to the concept of Intelligence Plus presented above.

3.2. Knowledge Development Centre

According to the KD Handbook, at the strategic level, i.e. in support of SHAPE, the KDC would provide a view of all domains of the operational environment (PMESII), using unprocessed information from all available sources both inside and outside the NCS (Bi-SC KD, 2011, p. 4_3). The centre would be located near the NATO Intelligence Fusion Centre (NIFC), which would immediately constitute an unnecessary duplication, which effectively never happened since the centre was fully functional since 2007, providing intelligence support to SHAPE and ACO.

The NIFC mission is to provide information to assist SACEUR and ACO in identifying potential crises and in the planning and execution of NATO operations through the exchange and fusion of intelligence, working directly with national military intelligence centres (e.g. the Military Intelligence and Security Centre of the General Staff of the Portuguese Armed Forces), academies, think tanks, and relevant international organizations. Its aim is to develop in-depth understanding of the main intelligencerelated problems to improve NATO's situational awareness, particularly in its areas of interest (NATO, 2017).

3.3. Operational-level Knowledge Centres

As proposed in the KD *Handbook*, operational-level KCs would be implemented in the structure of each JFC to exchange intelligence with the KDC and to provide intelligence in support of the operational planning / decisionmaking process. The structure proposed in Figure 11 suggests that KD was considered a separate function from Intelligence, perhaps even incorporating it. In fact, there is no structural reference to the Intelligence function.

[21] That is, the information process that results from the fusion of information obtained from various civilian and military analysts.

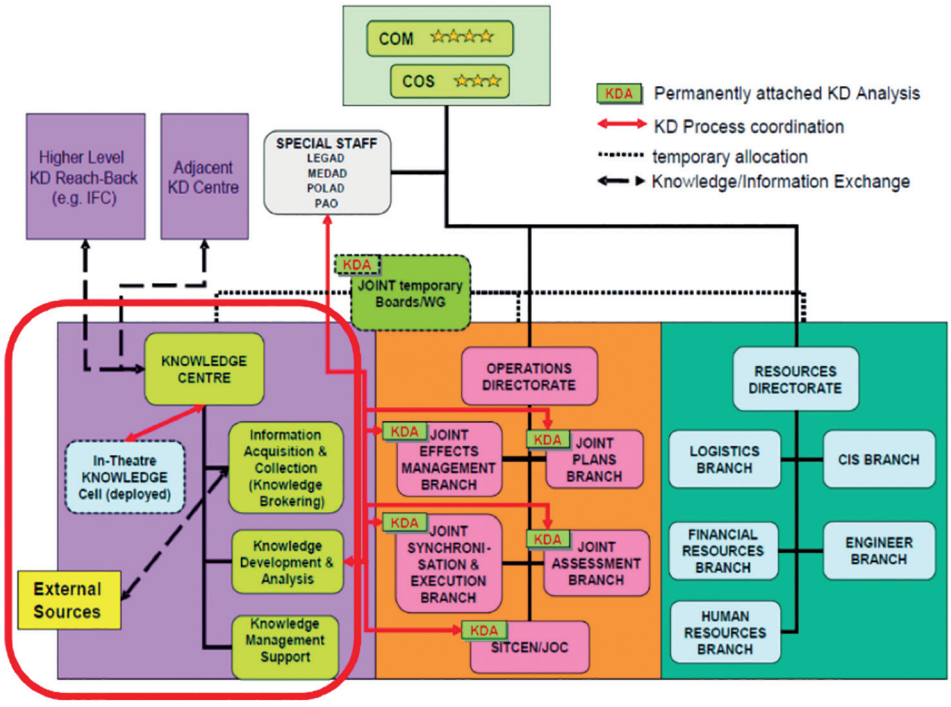

Figure 11 – Integration of the Knowledge Centre in a JFC

Source: Bi-SC KD (2011).

Unlike the KD-related bodies implemented at the strategic level (i.e. the CCOMC), it is at the operational level that the KD *Handbook* and the structures implemented in the two JFCs are least aligned, a consequence of the NCS restructuring initiated in 2012. The two commands do not have a formal KD organization, as we can see in Figure 12, which shows the generic structure of these commands.

After the reorganization of the NCS, KD-related tasks were assigned to the J2, where J2 Intelligence & Knowledge Assessment & Production (IKAP) conducts comprehensive systems analysis in collaboration with other JFC divisions. However, a J2 Knowledge Management (KM) cell still remains, perhaps as a residual element of the concept presented in the KD *Handbook*, which interpreted KD as an independent function with intrinsic KM responsibilities [i.e. Intelligence requirement management and collection management (IRM & CM)]. In our opinion, the existence of this cell makes it difficult for KD to be fully integrated into the JFC, since it overlaps with the J2 Information Acquisition (IAQ), which is tasked with conducting the overall IRM and CM[22] process. The low numbers of staff in the KM cell when compared to the others, as we can see in Figure 12, may even suggest that it is not as relevant in terms of effective applicability and utility for the requirement identification and information management process.

[22] Intelligence Requirements Management and Collection Management.

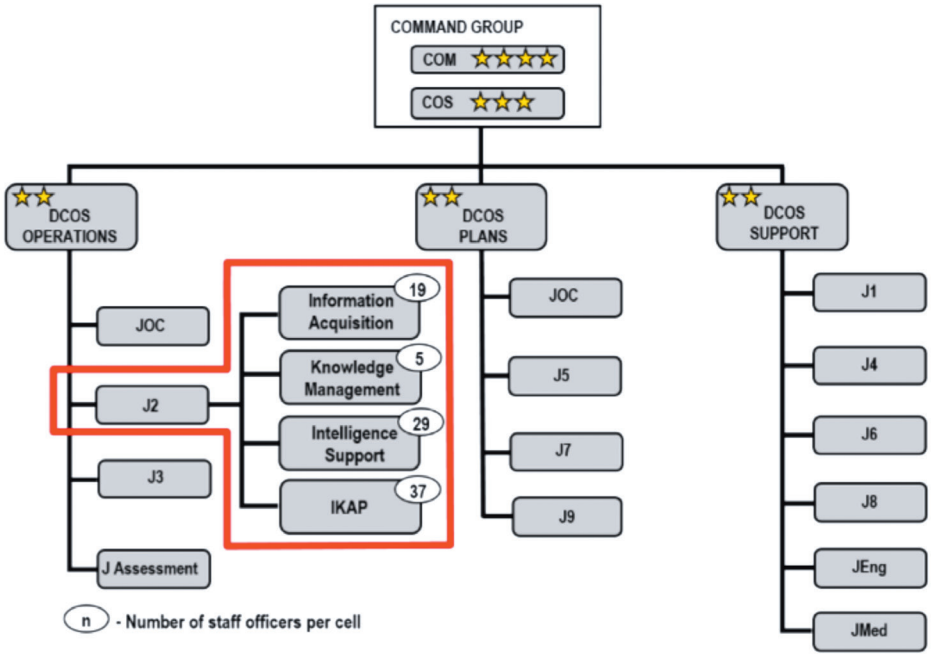

Figure 12 – Structure implemented at the JFC after 2012

Source: Rêgo (2016).

According to Menzel (2016, pp. 42-43), although the procedures established by KD appear to have been almost fully accepted, the too vague boundary between "Knowledge" and "Intelligence" means that using them in a significant way remains a challenge. Its processes and cells are needlessly complex and redundant (e.g. J2 KM), and are maintained to justify the existence of two different pillars (i.e. KD and Intelligence), jeopardising the overall consistency of the IRM and CM process.

Conclusions

This article aims to demonstrate that KD is essentially a concept that emerged to adapt Intelligence to the new dynamics and complexity of the operational environment both doctrinally and structurally. To that end, the article is divided into two parts: a conceptual part that addresses the development of KD, and an analytical part that presents elements to validate our argument.

The difficulties encountered by NATO, particularly during its first years in Afghanistan (i.e. from 2001 to 2007), in identifying the "problem" of the current operational environments revealed some Intelligence limitations that decreased the relevance of this Joint Function. This scenario led to the need to rethink the analysis and understanding of the operational problem through a holistic and comprehensive view of the domains of the operational

environment. To that end, between 2007 and 2011 NATO developed its KD concept in the Bi-SC *Pre-doctrinal Knowledge Development Handbook*, which aimed to provide an overview of the future integration of this concept. This publication approached KD as a separate function from Intelligence, both structurally and doctrinally, and some even believe that KD will replace this Joint Function, a perception that, about six years later, still generates some doctrinal and functional misconceptions.

In fact, the way KD was initially presented led some to interpret "knowledge" as a concept that would replace Intelligence. This argument is based on two assumptions, which, in our opinion, have not been confirmed: the first is that Intelligence focuses exclusively on military adversaries and the second is that KD involves the deliberate use of non-military sources beyond the scope of purely military intelligence activities. NATO doctrinal documents issued prior to the KD *Handbook* clearly state that Intelligence also addresses non-military actors, interpreting the operational environment as a system of systems rather than an exclusively military system.

We have witnessed the evolution of Intelligence to an Intelligence Plus paradigm characterised by a holistic view of the operational environment, in which the KD concept assists the Intelligence Joint Function in providing a global understanding of all the dynamics of an increasingly complex operational environment.

The recent revisions and evolutions of NATO's doctrine publications on Intelligence did not include some of the techniques and procedures defined in the KD *Handbook* or in the 2013 revision of the COPD. Even in terms of conceptual evolution, the publications in this area have been steadily distancing themselves from an enemycentric intelligence paradigm, explicitly stating the goal of intelligence is to develop knowledge about the environment and all its actors. We believe that it is essential to ensure a better alignment between the various documents, and that the current COPD review constitutes an opportunity to clarify definitively the relationship between KD and Intelligence to guarantee that the doctrine is consistent and correctly understood.

The implementation of KD, which stemmed from the application of the CA, also led to structural strategy changes that were reflected in the NCS. However, as we have seen, not all of the measures included in the structural framework proposed in the KD Handbook in 2011 have been implemented.

The most significant change occurred at the strategic level, with the creation of SHAPE's CCOMC, which prepared NATO to manage possible crisis situations by providing it with strategic direction and guidance for the planning and conduct of operations, contributing to a comprehensive analysis of the operational environment. However, it should be noted that while no formal KD organization has been implemented at CCOMC, the KD methodology is inherently implemented because the centre comprises civilian and military experts. That is, KD did not overlap with or replace Intelligence in structural terms, but is essentially applied in conceptual terms as the Intelligence Plus concept. Furthermore a KDC was envisioned at the strategic level, but because the role of this body was already being performed by the NIFC since 2007, it was never implemented since it would constitute an unnecessary duplication.

Unlike the KD-related bodies implemented at the strategic level (i.e. CCOMC), the greatest misalignment between the KD *Handbook* and the structures implemented in the JFCs resides at the operational level, as a result of the restructuring of the NCS initiated in 2012. The two operational commands do not have a formal KD organization since all KD-related tasks were assigned to J2 Intelligence, J2 IKAP is in charge of evaluating the various PMESII domains and of systems analysis, and J2 IAQ is tasked with Intelligence requirement management and collection management. However, a J2 KM cell is still in operations, possibly a residual element from the KD vision presented in 2011, which considered "knowledge" as a separate function. In our opinion, the existence of this cell hinders the effective integration of KD and contributes to some misconceptions as to its effective functional framework and the authority to which it responds.

Intelligence and KD are now clearly more aligned than in the initial stages, but some "misalignments" remain, which we have attempted to identify by describing the way in which the concept of KD is applied and articulated with Intelligence. An explicit delineation, as advocated in the KD *Handbook*, creates practical difficulties and risks, particularly in the information acquisition and management processes. Rather than developing a separate doctrine, increasing personnel with separate roles, and implementing additional processes and structures, it is necessary to operationalise the positive ideas generated by the KD concept, which provide the Intelligence Function with the tools it requires to make a decisive contribution to the understanding of the current dynamics and complexity of the operational environment.

Works cited

AAP-06, 2016. *NATO Glossary of Terms and Definitions*. Edition 2016 ed. Brussels: NATO Standardization Office.

AJP-01, 2010. *Allied Joint Doctrine*. Edition D ed. Brussels: NATO Standardization Office.

AJP-01, 2017. *Allied Joint Doctrine*. Edition E version 1 ed. Brussels: NATO Standardization Office.

AJP-2.1, 2005. *Intelligence Procedures*. Editon A ed. Brussels: NATO Standardization Office.

AJP-2, 2003. *Allied Joint Doctrine for Intelligence, Counter Intelligence and Security Doctrine*. Brussels: NATO Standardization Office.

AJP-2, 2014. *Allied Joint Doctrine for Intelligence, Counter Intelligence and Security Doctrine*. Edition A Version 1 ed. Brussels: NATO Standardization Office.

AJP-2, 2016. *Allied Joint Doctrine for Intelligence, Counter Intelligence and Security Doctrine*. Edition A Version 1 ed. Brussels: NATO Standardization Office.

AJP-5, 2013. *Allied Joint Doctrine for Operational-Level Planning*. Brussels: NATO Standardization Office.

Bartolomeu, J., 2012. Informações Militares – O atual ambiente estratégico. In: *Revista Militar No. 2525/2526*. June/July 2012 ed. Lisbon: Revista Militar, pp. 681734.

Biermann, J. et al., 2004. *From Unstructured To Structured Information In Military Intelligence – Some Steps To Improve Information Fusion*, Neuilly sur Seine: NATO Research & Technology Organization.

Bi-SC KD, 2011. *Bi-Strategic Command, 1400/SHIPB/004 / 2011-271740 Knowledge Development*. Pre-doctrinal Handbook ed. Mons: Allied Command Operations.

COPD, 2013. *Comprehensive Operations Planning Directive*. Interim Version 2.0 ed. Mons: Allied Command Operations.

Couto, A., 1988. *Elementos de Estratégia*. Vol. I ed. Lisbon: Institute of Advanced Military Studies (IAEM).

ESFA, 2017. *Fundamentos de las Operaciones Conjuntas – Tomo II Proceso de Planeamiento Operativo*. Madrid: Escuela Superior de las Furzas Armadas.

Flynn, M., 2016. *The Field of Fight How We Can Win the Global War Against Radical Islam and Its Allies*. New York: St. Martin's Press.

Flynn, M., Pottinger, M. & Batchelor, P., 2010. *Fixing Intel: A Blueprint for Making Intelligence Relevant in Afghanistan*. [online] Washington: Center for a New American Security. Available from: https://www.cnas.org/publications/reports/fixing-intel-a-blueprint-for-making-intelligence-relevant-in-afghanistan [Accessed 31 October 2017].

Hodermarsky, G., 2015. Principles and Mechanisms of a Comprehensive Approach. In: J. Mustonen, ed. *Good Practices of a Comprehensive Approach to Crisis Management*. n.p.: The Finnish Defence Forces International Centre and Crisis Management, pp. 12-23.

JALLC, 2011. *Allied Command Operations Intelligence Structures and Processes*. [pdf] Lisboa: Joint Analysis and Lessons Learned Centre. Available from: http://www.jallc.nato.int/products/docs/factsheet_aco_Intel.pdf [Accessed 12 July 2017].

JALLC, 2017. *Joint Analysis and Lessons Learned Centre*. [online] Lisboa: Joint Analysis and Lessons Learned Centre. Available from: http://www.jallc.nato.int/organization/mission_role_tasks.asp [Accessed 12 July 2017].

JP 2-0, 2007. *Joint Intelligence*. Joint Chiefs of Staff ed. Washington, D.C.: Joint Chiefs of Staff.

JP 2-03, 2009. *Joint Intelligence Preparation of the Operational Environment*. Joint Chiefs of Staff ed. Washington, D.C.: Joint Chiefs of Staff.

Menzel, M., 2016. Knowledge Development vs. Intelligence in NATO: A Problematic Delineation and its Ramifications. *Joint Air Power Competence Centre*, junho, pp. 38-43.

NATO, 2010. *Strategic Concept*. Bruxelas: NATO Public Diplomacy Division .

NATO, 2015a. *Committee for Standardization*. [online] Brussels: North Atlantic Treaty Organization. Available from: http://www.nato.int/cps/en/natohq/topics_69277.htm?selectedLocale=en [Accessed 13 July 2017].

NATO, 2015b. *ISAF's mission in Afghanistan (2001-2014)*. [online] Brussels: North Atlantic Treaty Organization. Available from: https://www.nato.int/cps/en/natohq/topics_69366.htm [Accessed 23 July 2017].

NATO, 2017. *NATO Intelligence Fusion Centre*. [online] Brussels: NATO Intelligence Fusion Centre. Available from: http://web.ifc.bices.org/about.htm [Accessed 16 September 2017].

NSO, 2016. *nso.nato.int*. [online] Brussels: NATO Standardization Office. Available from: https://nso.nato.int/protected/ [Accessed 12 May 2016].

Nunes, P., 2015. *Sociedade em Rede, Ciberspaço e Guerra de Informação: Contributos para o enquadramento e costrução de uma Estratégia Nacional da Informação*. Lisbon: National Defense Institute.

PDE 2-00, 2009. *Informações, Contra-Informação e Segurança*. Lisbon: Portuguese Army.

Rêgo, N., 2016. As Informações na NATO. In: *Aula ao Curso de Estado-Maior Conjunto 2015/16*. Lisbon: Military University Institute.

SHAPE, 2015. *Comprehensive Crisis and Operations Management Process Handbook*. Mons: Supreme Headquarters Allied Powers Europe.

Tzu, S., 2013. *A Arte da Guerra*. Lisboa: Bertrand Editora.

Vicente, J., 2008. Estratégia Baseada em Efeitos: em busca da clarificação conceptual. In: *Revista Militar N.º 2472*. Lisbon: Revista Militar, pp. 121-138.