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Cognitive Warfare and Human Domain. Considerations from François du Cluzel

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Abstract

This paper critically examines the evolving concept of cognitive warfare through the works of François du Cluzel, a former French military officer and project manager at NATO's Innovation Hub. Drawing on his key publications, the study reconstructs du Cluzel's central thesis: that emerging forms of non-kinetic conflict increasingly target the human mind as both a battlefield and a strategic objective. The paper situates his thinking within the institutional context of Allied Command Transformation and evaluates his conceptualization of cognitive warfare as distinct from – but overlapping with – information, cyber and psychological warfare. Particular attention is given to his articulation of the "human domain" as a potential sixth domain of operations, the role of neuroscience and neurotechnologies in modern conflict, and the strategic implications of cognitive superiority. Beyond assessing the internal coherence of du Cluzel's framework, the paper interrogates the normative and political dimensions of NATO's cognitive warfare discourse, including its possible performative function in shaping public opinion and securitizing internal dissent.

Abstract (Italiano)

Questo articolo esamina criticamente l'evoluzione del concetto di guerra cognitiva attraverso le opere di François du Cluzel, ex ufficiale militare francese e project manager presso l'Innovation Hub della NATO. Sulla base delle sue principali pubblicazioni, lo studio ricostruisce la tesi centrale di du Cluzel: le nuove forme di conflitto non cinetico prendono di mira in misura crescente la mente umana, considerata al tempo stesso campo di battaglia e obiettivo strategico. Il contributo colloca il suo pensiero nel contesto istituzionale dell'Allied Command Transformation e valuta la sua concettualizzazione della guerra cognitiva come distinta – ma in parte sovrapposta – rispetto alla guerra informativa, cibernetica e psicologica. Particolare attenzione è rivolta alla sua formulazione del "dominio umano" come potenziale sesto dominio delle operazioni, al ruolo delle neuroscienze e delle neurotecnologie nei conflitti contemporanei e alle implicazioni

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strategiche della superiorità cognitiva. Oltre ad analizzare la coerenza interna della cornice teorica di du Cluzel, l'articolo indaga le dimensioni normative e politiche del discorso NATO sulla guerra cognitiva, incluse le sue possibili funzioni performative nel plasmare l'opinione pubblica e nel securitizzare il dissenso interno.

Keywords: *cognitive warfare, human domain, hybrid warfare, NATO Allied Command Transformation, neurotechnology, strategic communication*

1. Sightings on the East Coast

Norfolk, Virginia, summer 2020. While the entire world struggles to discuss anything unrelated to COVID-19, on the Atlantic coast of the United States, a former French army officer gazes anxiously toward the future. A few months later, in January 2021 – amid ongoing controversies surrounding the U.S. presidential election and the management of the health crisis – a controversial report begins circulating online, quickly drawing the attention of those interested in strategic and geopolitical affairs. Titled *Cognitive Warfare*, the report is authored by François du Cluzel. On the cover, a bionic soldier in camouflage and helmet is depicted: his brain is exposed, reminiscent of a computer's hardware. He appears to be targeted, or perhaps meticulously analyzed. Possibly both. From the very first lines, the report provokes and unsettles in equal measure.

> The nature of warfare has changed. Most current conflicts remain below the threshold of the traditionally accepted definition of warfare, but new forms of warfare have emerged such as Cognitive Warfare (CW), while the human mind is now being considered as a new domain of war (Du Cluzel, 2021: 4).

The tone appears futuristic, yet plausible, especially within that specific historical context. Du Cluzel warns of a new generation of non-conventional warfare, one that is not fought on traditional battlefields but rather within the minds of individuals: a war without borders, neither temporal nor spatial, invisible and therefore even more dangerous. By leveraging advances in neuroscience and making extensive use of digital technologies, NATO's adversaries are

allegedly waging a mental war – one that spills no blood but aims to erode the very fabric of Western societies.

The forty-page report outlining this vision is the result of a study conducted between June and November 2020 for the Innovation Hub, an entity operating under the Allied Command Transformation (ACT): two institutions, particularly the former, that are little known outside the circle of scholars focused on transatlantic relations. Before delving further into the subject, it is essential to provide at least a minimal framework, without which the meaning and implications of *Cognitive Warfare*, as well as du Cluzel's broader reflections, would remain difficult to grasp.

ACT is based in Norfolk, Virginia, home to major U.S. military installations, including the world's largest naval base. Together with the Allied Command Operations, headquartered in Mons, Belgium, ACT represents a key structure within NATO. In the alliance's internal hierarchy, both commands report to the North Atlantic Council, the highest political authority, and to the Military Committee, its highest military body. While the Mons command focuses on present-day tactical and operational management of NATO forces, the Norfolk command plays a strategic role, oriented toward forecasting future threats and modernizing military capabilities. There is significant synergy between the two commands, despite their functional differentiation; both assumed their current form in 2002, following a reorganization of NATO's command structure. In 2012, ACT established the Innovation Branch, a division specifically dedicated to defense innovation. The Innovation Hub – where François du Cluzel served as project manager at the time of the report's publication – emerged as a spin-off of the Innovation Branch: a think tank that bridges the civilian and military spheres, aimed at fostering innovative solutions for the Alliance. Though closely linked to ACT, the Hub is physically located on the campus of Old Dominion University in Norfolk. The report published by du Cluzel in January 2021 thus emerges from this specific context – a context in which the French hold key leadership positions. Since 2009, following France's full reintegration into NATO's command structure, ACT has consistently been led by a French officer (cf. Allied Command Transformation; Weaver, 2021). Now, although the third page of *Cognitive Warfare* states that "this is Allied Command

Transformation (ACT) sponsored study but the views and opinions expressed in this publication strictly reflect the discussions held on the Innovation Hub forums," it is at least plausible to assume that the report reflects a broader sensibility present within certain sectors of Western armed forces, and specifically within NATO's leadership structures – especially when considered in light of various Alliance communiqués issued over recent years (cf. Deppe and Schaal, 2024).

Building on these initial observations and clarifications, this paper aims to critically reconstruct François du Cluzel's thinking on cognitive warfare, drawing primarily on the 2021 report, though occasionally referencing his other contributions as well – most of which largely overlap with the more comprehensive and elaborated *Cognitive Warfare*. As will become evident, this reconstruction also serves to highlight some of the more intriguing and problematic aspects of the concept, in view of future investigations into the subject from both historical and theoretical perspectives. The conclusion will offer some preliminary hypotheses concerning the origins, functions, and implications of du Cluzel's theorization, which is here considered, in its broad outlines, representative of NATO's rhetoric on cognitive warfare.

2. The Future Has an Ancient Heart

The concept of cognitive warfare evokes in the mind of the specialist a rather broad network of related terms, including information, cyber, psychological, cultural, political, and hybrid warfare: labels that often overlap, making precise definition elusive. While each term carries its own specificity – and regardless of whether some may be seen as subsets of others – they all share a vision of warfare that extends beyond the kinetic dimension alone. In an already crowded semantic field, was a new concept necessary? According to du Cluzel, yes: "there are key distinctions that make cognitive warfare unique enough to be addressed under its own jurisdiction" (Du Cluzel, 2021: 6).

At a macro level, this form of conflict may fall under the broader category of cultural or political warfare. More specifically, and with a view to strategic debates of recent decades (cf. Pietrobon, 2022; Stefanachi, 2024), du Cluzel argues that it is "a form of hybrid

warfare" (Du Cluzel, 2020: 2) – though he mentions this in passing, showing more interest in distinguishing cognitive warfare from more clearly delineated notions such as information, cyber and psychological warfare.

Whereas information warfare typically plays a supporting role in kinetic operations, cognitive warfare can operate independently. It does not target the infrastructure that carries information but rather the ultimate recipient of the message: the human mind. Its projectiles -ever-expanding in nature – include newspaper articles and memes, partisan historical narratives, manipulated or strategically exploited algorithms, pseudo-institutional videos and statements, and targeted disinformation campaigns. It can be waged indefinitely and is, in fact, difficult to halt due to its self-replicating and "participatory" nature (Du Cluzel, 2021: 8): the target of cognitive operations often ends up amplifying their impact, allowing them to potentially threaten "the whole of a nation's human capital" (Du Cluzel, 2021: 6). For similar reasons, it should not be confused with cyber warfare either. While cognitive warfare is largely conducted through the digital technologies central to cyber warfare, its core does not lie in infrastructure or logic systems (Du Cluzel, 2020). The distinction from psychological warfare is subtler and more problematic. While the latter aims to elicit emotions or disseminate beliefs aligned with a strategic objective, cognitive warfare specifically targets the mental faculties that allow individuals to orient themselves and act in the world (Claverie and Du Cluzel, 2022). It undermines memory, concentration, reasoning and decision-making; it exploits cognitive biases to mislead, confuse, or paralyze its victims (cf. Cheatham et al., 2024).

In broader terms, du Cluzel concludes that

> cognitive warfare is at the interface of two operational fields that have been managed separately until now: on the one hand, psychological operations (PsyOps) and influence operations (soft power), and on the other hand, cyber operations (cyber defense technologies) that aim to compromise the integrity of physical means of information or to destroy them [...] The main principle is not only to follow a strategy and win without fighting (a principle dear to Sun Tzu), it is also a war against what an opposing target thinks, likes or believes by modifying its representations of reality. It is therefore a war against its ways of thinking, its mental logics,

> its spontaneous representations and its conceptual processes. The goal is to alter the representation of the world, but this has the consequence of undermining the whole-of-society in a very likely durable way (Du Cluzel, 2020: 3).

This is not exactly a crystal-clear definition. While emphasizing its novelty, du Cluzel seems to struggle in pinpointing the specific features of cognitive warfare. Throughout his reports, he oscillates between overly rigid definitions and ones so loose they serve more rhetorical than analytical purposes. Nonetheless, the final quote deserves further exploration. Despite its similarities with information, psychological, and cyber warfare, cognitive warfare is neither fully congruent with any of them nor reducible to their sum. It may be likened to a borderland where multiple languages are spoken, but whose inhabitants, over time, develop a distinct dialect that sets them apart from their inland compatriots. In the case of cognitive warfare, continuing the analogy, what enabled its emergence as an autonomous field were advances in neuroscience and the global diffusion of ubiquitous communication technologies.

Despite the ambiguities noted in du Cluzel's discourse, the thesis worth considering is not so much the absolute novelty of this form of conflict, but rather that today's hybrid actors possess tools and knowledge capable of manipulating human beings in historically unprecedented ways (Lizza, 2024). Never has humanity had such deep insights into the brain, nor – through data extracted from digital platforms – such detailed knowledge of individuals' inner lives and the habits of social groups (Lemov, 2025). And this is only the beginning. To highlight the radical nature of the ongoing process and grasp its strategic implications, one may thus agree with the author on the need to introduce a new concept: that of cognitive warfare.

3. The Mind at 361 Degrees

Overcoming one conceptual difficulty reveals another. Having established that cognitive warfare aims to target mental faculties – whether those of a group of soldiers on the front line or an electoral district – through the strategic use of communication technologies,

du Cluzel then opens a chapter on the militarization of neuroscience, thereby expanding the scope of his discussion. Firstly, he refers to the enhancement of physical and cognitive capabilities through pharmaceuticals or neurotechnologies, and the hybridization of humans with computers and artificial intelligence – developments that open the door to transhumanism, a field already under active investigation and experimentation by major geopolitical actors (cf. Balestrieri and Balestrieri, 2024). Secondly, he highlights a more disturbing aspect: the deployment of neuro-weapons capable of directly targeting the human brain using chemical, biological, or directed energy weapons (cf. Farahany, 2024; Pietrobon, 2024). On this point, du Cluzel cites a leading authority on the strategic application of neurotechnologies, James Giordano of Georgetown University, who asserts that "the brain will be the battlefield of the twenty-first century" (United States Military Academy West Point, 2018). According to du Cluzel, this awareness – still relatively limited in the West – seems to be more deeply embedded in the upper echelons of the People's Republic of China, which has identified the cognitive domain as a strategic priority and is investing heavily in brain research not only for health and commercial purposes but also for strategic ends.

Are these developments entirely unprecedented? Du Cluzel himself acknowledges that such activities are not entirely novel. As early as 1953, CIA Director Allen Dulles, speaking to an audience of Princeton alumni, warned of a "brain warfare" waged by the Soviets, whose objective, he claimed, was "to condition the mind so that it no longer reacts on a free will or rational basis but responds to impulses implanted from outside" (CIA), on both individual and collective levels. Ironically, this ambition was not foreign to Dulles himself, as it is well documented (cf. Farahany, 2024; Lemov, 2025; Lisle, 2025). This example, among many others, illustrates that today's innovations do not emerge in a vacuum. At the same time, while it is wise to avoid futuristic overreach, it is equally important not to underestimate the implications of the scientific and technological advances identified by du Cluzel.

However, the conceptual difficulty alluded to at the beginning of the paragraph lies elsewhere: if neurological weapons can bypass the communicative ecosystem and strike the brain directly, does

defining cognitive warfare merely as a border zone between information, cyber and psychological warfare become reductive? With this additional element, the scope of the concept seems to expand to the point of undermining its already fragile definition. Put differently, to what extent can a neurological attack still be considered "below the threshold" of armed conflict?

Du Cluzel does not address this issue directly. He merely juxtaposes the neurological dimension with his earlier arguments to reinforce his core thesis: that the mind occupies a central place in today's strategic landscape. He does not attempt to draw conceptual consequences from this new frontier of conflict. Fully doing so could significantly shift the notion of cognitive warfare toward the realm of hard power. Alternatively, to preserve the original definition, one could exclude the neurological dimension from the strictly cognitive sphere, which remains more closely aligned with information, psychological and cyber warfare.

This productive terminological ambiguity should not distract from du Cluzel's central argument: that – however one chooses to conceptualize hybrid threats – neuroscientific discoveries carry significant strategic implications and could be exploited by revisionist powers such as Russia and China to destabilize Western forces. While du Cluzel points a finger at Moscow and Beijing, his pages also indirectly suggest that NATO itself is investing in human enhancement and the military application of neurotechnologies: a topic with profound social implications yet largely absent from public debate (cf. Farahany, 2024).

Within this broadened conception of cognitive warfare, du Cluzel also gestures – albeit briefly – toward yet another layer of conflict, beyond the communicative, psychological, and even neurological realms. In his report, he notes NATO's interest in maintaining "cognitive superiority" (Du Cluzel, 2021: 35; cf. NATO Warfighting Capstone Concept) – that is, the ability to access more information than adversaries, to process it faster, and to make decisions more swiftly. Again, this is not historically unprecedented: the imperative to know more than one's enemy and to interpret the context more accurately has been central to strategic thinking since ancient times (cf. Freedman, 2013). What is new, however, is the centrality this aspect has assumed in the current era, marked by the

diffusion of artificial intelligence and the geopolitical competition surrounding the technologies and knowledge required to implement it (Kissinger, Schmidt and Huttenlocher, 2022). Within this context, cognitive warfare emerges as a struggle between intelligences – a technological and scientific race to out-know the adversary across all domains, a condition necessary to retain a dominant position in the global hierarchy. This is a line of inquiry that du Cluzel does not pursue, but which surely warrants further investigation.

4. The Human Domain Has Its Limits

Trained as a military officer, du Cluzel hopes that his discourse will have doctrinal consequences.

> If NATO decides to adopt a very broad definition of CW, including all the elements mentioned above – the classical elements coming from information warfare, cyberwarfare and PSYOPS but also the elements coming from the convergence of NBICs and the militarization of Neuroscience and Technology, it will become necessary if not urgent to think about a new domain of operations (Du Cluzel, 2020: 9).

This is because, in addition to the physical and informational dimensions of the past, a cognitive dimension has now emerged – even more intangible than the informational one, yet no less decisive. As the author explains, introducing here the concept of "domain," which is more specific than "dimension": we are in front of "a new space of competition, beyond the land, maritime, air, cybernetic and spatial domains, which adversaries have already integrated" (Du Cluzel, 2021: 25). This is the "sixth domain." But how should it be defined? Rather than speaking of a cognitive domain, du Cluzel suggests it would be more appropriate to refer to it as the "human domain" (Du Cluzel, 2021: 25). Since the brain is the operational center of the body, targeting the brain means attacking the human being in their entirety.

To what extent, however, can the human domain be considered an autonomous domain, separate from the others? The author does not make things easier when he writes that "actions undertaken in

the five domains – air, land, sea, space and cyber – are all executed in order to have an effect on the human domain" (Du Cluzel, 2021: 4). To untangle this knot, it is useful to follow his reasoning more closely. Victory, du Cluzel argues, is not a purely technical matter: kinetic action, in the strictly military sense, always aims to bend the enemy's will, to force them to acknowledge a different status quo. The growing interest in the brain – in other words, in the human factor – merely brings this ancient awareness back to the center of strategic discourse.

> Within the context of multi-domain operations, the human domain is arguably the most important domain, but it is often the most overlooked. Recent wars have shown the inability to achieve the strategic goals (e.g., in Afghanistan) but also to understand foreign and complex human environments (Du Cluzel, 2021: 32).

Such an argument might suggest that, since the human domain is intrinsic to all others, it should not deserve separate recognition (cf. Hofstetter and Jossen, 2023). A valid objection, but one to which the author could respond by saying that access to the mental domain does not necessarily require passage through the other five domains of conflict. As already explained in the previous paragraphs, cognitive warfare can target the mind directly, translating a cognitive advantage into success in the other domains; or it can bypass them entirely, undermining the adversary's psychological defenses – weakening trust in institutions and the sense of belonging or responsibility – to the point that no resistance is encountered in the other domains. A victory without fighting, in line with Sun Tzu's famous maxim (2002: 14).

From a philosophical and strategic perspective, the issue of the human domain is undoubtedly stimulating (cf. Baños, 2020). But it is no less thorny, since before convincingly arguing for or against the recognition of a domain – especially one as broad and inextricably linked to the others as the human domain – it would be useful to preliminarily define the concept of domain, or at least refer to a precise definition, which the author does not do. If one wanted to justify du Cluzel's impressionistic approach, however, it could be emphasized that his contributions are not intended as doctrinal

reference texts, but as ideas pointing toward the development of a more complete doctrine on cognitive warfare (Du Cluzel, 2021: 34-35). In this direction, it should be noted that du Cluzel's normative proposal fits into a broader trend that has seen NATO, in recent years, recognize first the cyber domain (in 2016) and then the space domain (in 2019) at the doctrinal level. Writing in 2021, du Cluzel hopes that this process might culminate in the recognition of the human domain. Recognition by Allied Command Transformation could in turn prompt a similar acknowledgment by NATO member states, potentially giving rise to forms of cooperation and new structures dedicated to cognitive defense, as well as targeted policies and exercises (Du Cluzel, 2021: 33).

5. *Cognitive Warfare*. Reading between the lines

After having outlined the key points of du Cluzel's reflection on cognitive warfare, in conclusion it may be worthwhile posing the following question: what objective did the author pursue between the spring and summer of 2021 in writing the report *Cognitive Warfare?* A question that perhaps ought to be reformulated in these terms: what purpose did Allied Command Transformation have in commissioning the report and subsequently choosing to publish it openly, for all to read? At this point, it is important to recall that, although the 2021 report is the most frequently cited and arguably the most striking document on cognitive warfare, it is not du Cluzel's only contribution – as the citations in the preceding pages indicate – and that, since 2020-2021, there have been numerous interventions on cognitive warfare by experts in various ways affiliated with the Alliance. This leads to a more general question: what effect did NATO officials hope to achieve in recent years by fostering a public debate on cognitive warfare? It is, in essence, the question that contains all the others.

According to the 2021 report, the Innovation Hub had been tasked by Allied Command Transformation with conducting a detailed study on cognitive warfare, exploring the potential recognition of the cognitive domain as a sixth domain of conflict (Du Cluzel, 2021: 5). In this sense, the report's initial purpose appears

to have been internal to the Alliance, serving primarily to enrich strategic and doctrinal debate within ACT in Norfolk – hence the choice of du Cluzel, as an external expert, to provide a specialist perspective. With the hope, perhaps, that such reflection would eventually extend beyond the internal deliberations of ACT to involve researchers and analysts from broader academic and policy communities. But this explanation seems insufficient.

A second, broader objective may have been to influence NATO's military and political leadership, including that of its member states. Through the Innovation Hub report signed by du Cluzel, Allied Command Transformation may have sought to stimulate internal debate on cognitive warfare and on the most appropriate countermeasures, including the need to accelerate recognition of the human domain. In fact, the hybrid nature of the Innovation Hub facilitates the circulation of such exploratory reports, whose content can be rapidly leveraged to influence advisory and decision-making processes within the Alliance.

But there is a third, more indirect and controversial aim that deserves consideration. The 2021 report – and much of NATO's discourse on cognitive warfare – might be understood as part of a broader strategic communication campaign aimed at Western public opinion. More precisely, it could be interpreted as a textbook example of cognitive warfare itself. A paradox of sorts: "cognitive warfare" enacted as cognitive warfare. From this perspective, it is plausible to argue that NATO's studies, documents and statements not only call attention to a real dimension of contemporary conflict – specifically the threat posed by Russia and China – but also contribute to the narrative construction of the enemy, with all the political implications that entails (cf. Tögel, 2023). Beginning with the portrayal of Western liberal democracies as victims – less familiar with cognitive operations and thus needing to close the gap with their rivals and go on the offensive.

The NATO rhetoric – and not only NATO's – on cognitive warfare, insofar as it implies that every individual is already, knowingly or not, a cognitive soldier, theoretically opens the door to an increasing militarization of public discourse, with all the associated risks. Chief among them: the risk that legitimate criticism of Western policies may be dismissed as the result of foreign cognitive

operations (cf. Colon, 2023). This may thus be the further, implicit aim of NATO's cognitive warfare literature: to contribute to the "securitization" (Giusti, 2023) of information and internal political competition at a historical moment in which large segments of the population have lost confidence in traditional media and public institutions – to the benefit of the West's adversaries. A dynamic not unlike that produced by twentieth-century discourses on psychological warfare.

As Jeffrey White writes in a recent book on the subject, such discourses imply that

> individuals are compelled to understand themselves not as political subjects engaged in forms of democratic deliberation, but as subjects of war engaged in a form of continuous conflict in which the individual must comport the contents of their inner life to meet the prerogatives of national security. Psychological warfare thus produces obligations for individuals not only to know particular facts about the world and world politics, but to cultivate a certain kind of self-knowledge, a mode of thinking about oneself in the context of an intractable and ubiquitous form of ideological conflict. More than just "what" we must know, psychological warfare tells us "who we must be (Whyte, 2023: 4-5).

And cognitive warfare does the same when it seeks to explain what citizens should expect from, tolerate, or even demand of public authorities.

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