Free discussion of Multi-Domain

To better extend the discussion on the topic of Multi-Domain, three brief perspectives are offered here, each of which develops a particular topic.

Jean-Christophe Noël draws on the history of conflicts, particularly that of the First World War, to suggest that the tactical integration demanded by the advocates of Multi-Domain should be examined in more intellectual and practical depth. Patrick Bouhet explores some of the tactical, operational, strategic and political consequences of this concept. Finally, Romain Desjars de Keranrouë proposes a reflection on the evolution of the notion of subsidiarity in Multi-Domain operations, drawing on the experience of drone crews.

FROM THEORY TO PRACTICE

Jean-Christophe Noël

Let us first take a brief historical detour to the First World War. If we think about it, the challenge facing strategists at the time has much in common with the one faced by planners today. How do you break through a wall, which then consisted of a network of trenches, and today consists similarly of a network of weapons systems, in order to secure freedom to maneuver and ultimately defeat your opponent?

Commenting on the offensives conducted during the Battle of Artois in May 1915, General d'Urbal reported in his *Souvenirs et anecdotes de guerre 1914-1916* that "*a breakthrough is possible, but the moment is fleeting*". The vocabulary is certainly a bit dated, but it is strangely reminiscent of expressions used by contemporary Western strategists who refer to the use of "*windows of opportunity*" to gain access to an area and maneuver within a theater of operations.

If we stick to the Western Front, from 1915 onwards, a general had at his disposal infantry, artillery, engineering and air force squadrons to achieve this breakthrough. It is true that during each offensive, a few soldiers, more daring or luckier than their comrades who were strewn about the battlefield behind them, managed to reach the objectives set. But they almost never managed to maintain their positions and were often pushed back by enemy reinforcements.

It took the Allies three years to combine these assets in an effective manner, with the important addition of tanks. The first decisive breakthroughs were made on 18 July 1918 by French General Mangin between the Aisne and the Ourcq rivers, then again on 8 August 1918 by Australian General Monash close to Amiens.

There were many factors underlying these delays. Let us mention just a few. First, the generals had to learn to think in three dimensions. Until 1914, the conventional Western battlefield was flat and linear. The arrival of aviation offered new opportunities that had to be seized. Aviators and artillerymen had to learn to work together. They needed to adapt their methods to co-operate in real time so that enemy components likely to hinder the progress of ground troops (reinforcements and artillery) could be destroyed as quickly as possible. Some aircraft were designed to clear the way for advancing allied troops with bombs and machine-gun fire.

The different artillery units also had to coordinate their fire plans to best adjust to the reality in the field. For example, highly centralized at the beginning of the war, the planning of British fire was organized at the level of the army by the end of the conflict and execution was decentralized at the division level. Several tactics were tested, including the long-term shelling of enemy positions or violent but brief barrages. The Germans finally followed General Bruchmüller's method at the end of the war, first bombing for a limited time the enemy command post, then the artillery positions, and finally the enemy troops. A rolling barrage supported the assault troops who were ordered to break through the front. Industrial and logistical needs evolved simultaneously, requiring the emergence of new organizations behind the front lines.

We could elaborate at length on all the ingenious efforts that were made to break through the front lines. But what must be emphasized is that the mere existence of these resources was not enough. It was necessary to think deeply about how to combine them, to test solutions with often tragic results, to take into account the changes in trench networks that extended deep into the ground, to change logistics, organizations, etc. The learning curve was long and costly, both in human and financial terms.

What lessons can we draw from this today? Of course, it is difficult to examine industrial warfare and to use that as one's basis for thinking about digital warfare. But today we have assets in five dimensions and two fields. The combinations offered are therefore significantly more extensive than a hundred years ago and should thus offer concomitantly greater opportunities. Provided we know how to do it. This is where one of the decisive challenges of the coming years lies. If strategists have opened up a path, it is now a matter of exploring it and proposing solutions that work to implement it. Large-scale experiments will be necessary, which will probably lead to changes in our organizations, our ways of doing things, and our mentalities. For example, aviation support to ground offensives has led to the development of fighter aircraft. What will be the consequences of a systematic - and still potential - development of cyber capabilities for air operations? The United States is already implementing original solutions with Mosaic Warfare, based on artificial intelligence. This is a promising approach. There may be others.

TACTICAL, OPERATIONAL AND STRATEGIC QUESTIONS ON THE APPLICATION OF MULTI-DOMAIN INTEGRATION.

Patrick Bouhet

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Multi-Domain (MD)[1] is intended as a response to the new international context, challenges and new threats to enable the United States to maintain its military advantage and, above all, the ability to take and maintain the initiative. However, many of the questions raised by MD have not yet been fully addressed, or even truly considered. Because the application of the concept could give rise to many major developments, entailing consequences that go far beyond the mere technical and tactical aspects.

The future of the armed forces

First of all, what will happen to the armed forces as institutions? Each service has been, and continues to be, shaped by a culture derived from the original medium (Land, Sea, Air, to which we can now add, at a minimum*,* exo-atmospheric space and cyber). Within this framework, it is the joint level that is responsible for coordinating actions and effects. However, integration, which can be considered as one of the main characteristics of the Multi-Domain*,* could lead to a rethinking of this division of tasks. For each actor will not only have to take into account the other fields, but also think of them in the context of understanding, planning, and then acting as a whole.

To be fully effective, this integration will probably also have to be carried out at the tactical level. This, while reinforcing integration, will undoubtedly entail adaptations in terms of officer training, organization, particularly in terms of apportionment, but also in terms of capacity development. All of these areas are mainly within the institutional remit of the armed forces.

As a result, the distribution of responsibilities and powers between the joint level and the armies, commands and services, on the one hand, and between the armies themselves, on the other, may have to be reconfigured to ensure that the general organization of the military is adapted to its use in

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1. Multi-Domain is the term used by the English-speaking world to designate what the French doctrine defines as *multi-milieux/multi-champs*. The two terms are interchangeable. For France, there are five fields of confrontation (land, sea, air, space and cyber) and two fields of confrontation (electromagnetic and information). The difference between the milieu and the fields is explained by the existence of specific C2s for the former, which do not exist for the latter.

actual operations. This phenomenon has already been observed within the armed forces following the development of joint combat and the advent of increased versatility of resources.[2].

As far as the French Air and Space Force is concerned, joint integration can only question the principles implemented until now. Indeed, the centralized command from the national territory (JFAC - Joint Force Air Command located in Lyon-Mont Verdun), the organization of forces which was designed to make the most of the ability to shift efforts at both the strategic and operational levels, as well as to act over long distances and deep behind enemy lines (reach) is not necessarily adapted to the concept of Multi-Domain at its best. This would imply, for example, delegation of command and assets at a tactical level[3], as well as a speed of execution that is incompatible with the centralized drafting of an ATO[4] within 48 hours in the best of cases, or even 72 hours.

At the extreme, armies as we have known them for many centuries, may need to undergo profound changes, even if this means their disappearance as separate components[5].

Information and artificial intelligence

A second, even more general question concerns the implications for the conduct of war. Indeed, the importance given to information, to information gathering, processing and dissemination, corresponds to a desire to limit uncertainty both for one's own actions (risk of collateral damage, for example) and for those of the adversary (targets of opportunity, high value targets, etc.). This trend should be seen in parallel with the essentially technical American vision of war, which is often shared by air forces. A possible consequence of this phenomenon could be an "information dependency"

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2. Notably in the sense given to this term by the army, in the context of two fundamental moments: the end of the 18th century (ref. resorting to use of divisions) and the beginning of the 19th century (Army corps). For the Navy and the Air Force, developments of this type have shattered the traditional division of roles into their respective components: the appearance of aircraft in the Navy, involving collaborative combat engaging very different types of assets (surface ships, submarines and aircraft), as well as the appearance of on-board radio and radar, and the introduction of multi-role aircraft, etc., in the Air Force.
3. This problem was, for example, solved in the 19th century, at the time of the creation of the army corps, by distributing the strictly necessary cavalry and artillery forces between the army corps and by regrouping the remainder in large cavalry and artillery reserves. However, it is necessary to have sufficient forces to carry out this distribution with the necessary number of personnel to carry out all the missions.
4. Air Tasking Order
5. This was the case for the Canadian Armed Forces between February 1, 1968 and August 16, 2011. The motivation was primarily political at that time. Between these two dates, the Royal Canadian Navy, the Canadian Army and the Royal Canadian Air Force were unified into a single service divided into "branches": the Canadian Armed Forces (Canadian Forces Reorganization Act C-243 of February 1, 1968).

that would lead not to accelerate and help the decision but to slow it down or even postpone it, while waiting for reliable information or the assurance, based on the estimate made by an artificial intelligence (AI), of a complete and risk-free success.

The use of AI also raises the question of how to take into account the paradoxes intrinsic to warfare and strategy[6]. The real danger lies in a vision that is too linear concerning operations, and essentially systemic concerning the adversary. The definition of the desired effects and the way to obtain them could then only derive from the application of a pre-established doctrine, tending to dogma[7], transcribed into algorithms that are not free of bias in the same way as the human beings may be[8].

This notion of paradox can be illustrated, moreover, in the very framework of the Mosaic Warfare concept. The concept was to hit the adversary at its nerve centers, avoiding attrition and maneuvering, while creating a highly resilient complex. But what if the adversary adopted the same concept? An almost mechanical return to attrition and maneuvering, as the original intent could no longer be achieved, by definition, as the enemy had increased its level of resilience. The paradox of Mosaic Warfare lies in its potential capacity to be its own antidote.

Finally, there remain a certain number of points that still require further reflection at all the classical "levels" of military art and science, but also at the political level.

Tactical aspects

From a tactical point of view, several strong points can be identified. The first is the enrichment of the range of applicable modes of action, thus increasing the flexibility or agility in the use of forces. As a result, this leads to an increase in the number of dilemmas for the adversary and complicates his task to the point of preventing him from responding to a tactical problem. In fact, the S-300 or S-400 systems, for example, which were designed to deal with an essentially airborne threat, could find themselves at a disadvantage

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6. See on this subject the essay by E. Luttwak, *Le paradoxe de la stratégie*. Paris, Odile Jacob, 1989,

7. The temptation of dogma is a constant in military history. The offensive to excess, the moral force that had become dogmas in the French army, for example, showed their limits in 1914.

8. Algorithmic bias refers to results that are neither neutral, nor balanced, nor fair, reflecting the implicit values of the humans involved in the collection, selection, or use of these data. See, for example, the work of Helen Nissenbaum. The human being can be subject to many biases: those based on attention, judgments, reasoning, personality-related, etc. But the real question is to know which of the biases, algorithmic or human, is the most dangerous and especially the most likely to be corrected.

when faced with an attack carried out by ground forces, special forces, or cyber forces simultaneously[9]. The second is the fact that the action may no longer be conducted from the strong to the strong, in a frontal confrontation between capabilities specifically designed to oppose each other, but by circumventing the opposing power thanks to what is, in reality, a maneuver involving assets or resources of joint forces.

But weaknesses can already be perceived here. For example, such as the very strong dependence on cyber resources and on the more general use of the electromagnetic spectrum. This dependence must be considered as a vulnerability. This implies that the forces, and in particular the AAE, will have to maintain their ability to act in an impaired environment and with deteriorated capabilities.

Operational aspects

With regard to operations, the main positive aspects of the application of the concept seem to concern the pace of operations and the the enhancing of this level of war . With regard to the pace of operations, the sequencing of air operations and then land operations, as in the first Gulf War, could become much faster and more integrated. This would make operations more fluid, less predictable and more flexible in the face of changing situations and contexts. As a result, the responsibility of the operational echelon could be of capital importance in the design and conduct of operations, due to a faster observation/orientation/decision/action cycle.

However, there is a danger inherent in focusing on tactical aspects at the operational level. Indeed, Multi-Domain is also characterized by its objective to take advantage of all opportunities. The risk is that of moving from opportunity to opportunity, from target to target, losing the overall vision of the conflict and considering that victory could be the result of the sum of tactical successes. The effectiveness of this vision has been disproved in military history through many examples such as the Vietnam War. American forces did not lose any major military engagement, but the United States, and especially its Vietnamese ally, lost the war.

With regard to the Air and Space Force, the command structure may also be called into question. But more generally, it is also the positioning of the operational echelon that will have to be adapted. Until now, the operational echelon has been the primary echelon for synthesis and coordination of joint forces, to the point that it is sometimes confused with the joint echelon. The

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9. This is exactly the effect that was obtained at the end of the 17th century and the beginning of the 20th century by the development of inter-army combat. The latter made it possible to put an end to a certain tactical blockage due to a linear combat that favored only fire. On this subject: P. Bouhet, «*La coordination interarmes dans les guerres du Premier empire*», in Choc, feu, manœuvre et incertitude dans la guerre. Pully, Centre d'histoire et de prospective militaires, 2011, p. 77-91

application of the Multi-Domain concept also implies, by nature, joint integration at the tactical level. This may be an opportunity for the operational level to assert its central role in the tension between the strategic and tactical levels, which is in fact its *raison d'être*[10].

Strategic aspects

At the strategic level, the potential increase in the pace of operations is a formidable asset that can reinforce the decisive character of operations and thus drastically shorten the time required to achieve the objectives defined by the political authorities. Nevertheless, the means implemented within the framework of the Multi-Domain carry two potential dangers, which are the two sides of the coin in the development of long-distance, high-speed communication. On the one hand, there is the vulnerability of such resources. On the other, there is the temptation, of using these same resources within the lower echelons. The strategic echelon that focuses on the tactical aspects is not playing its role, as the operational, or even political, echelon would. By focusing on details, the risk is to miss the main issues, the bigger picture.

Between benefit and danger, two other questions arise: does this mark the end of domain focused strategies, if they still exist, and what about interoperability between the United States and its allies?

True joint integration implies *de facto* a certain loss of specificity for the benefit of the whole. However, will this not be to the detriment of certain areas of expertise, and therefore of the exploitation of the possibilities offered? The example that immediately comes to mind is that of considering the air force only in the light of the conceptions and horizons of the army, confining them to direct support missions for ground forces.

True integration also raises questions about command, design and control, and the application of the principles of subsidiarity and delegation. The means necessary for the application of the concept – datalinks, communications, sensors and effectors – must all work symbiotically. However, the importance of a major supplier of assets and doctrine is not without consequences on strategy, or even policy, when defining ends, ways and means. Can Allied Multi-Domain Integration guarantee the sovereignty of each of the allies, given the pace of operations and the high level of information transparency that is required?

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10. See in this regard in particular: A. Svechin, *Strategy*. Minneapolis, East View Publications, 1997. Translation from Russian of the book published in the USSR in 1925 or S. Naveh, *In Pursuit of Military Excellence*. New-York, Frank Cass, 1997.

Political aspects

Finally, at the political level, all of the risks and advantages described above are accentuated, particularly those of micro-management in the face of a renewed capacity to overcome certain bottlenecks, and thus to be able to achieve objectives more quickly while retaining initiative and freedom of action. Nor should the concept lead to the belief that a "military" solution is within reach at minimal cost, which entails the danger of the enticement to engage. It is always the nature of the conflict that will be of utmost importance at the political level, not just the mere available resources, because military success does not necessarily imply victory and even, sometimes, can carry defeat within it.[11]

It thus appears that the concepts attached to the Multi-Domain correspond fully to a cultural trend in the United States armed forces that favours technical responses to tactical, and even strategic, problems[12]. This culture is further accentuated by the technophilia of Air and Space forces, which can be largely explained by the characteristics of their respective environments[13]. But the question of adaptation to other strategic cultures, and more particularly to French specificities, remains open, because the way of conceiving and conducting war is a very significant factor of identity.

Certain dispositions can lead to considering war essentially only in its tactical aspects. Strategic and political victory is then considered attainable after a series of tactical successes. This is, *de facto,* at least a partial negation of the reasoning that led to the definition, for example, of the foundations of operative thinking.

Military history, over the long term, and experience, must underlie the reflections and work of the armed forces, in particular by calling for prudence. It is not a question of being pusillanimous, technophobic or overly conservative; quite the contrary. It is not about considering a single solution as the only viable or conceivable one. It is about not locking oneself into certainties that have not been established before the court of reality and the field. Finally, it is a matter of not considering an evolution, even a major one, of an essentially technical nature, as a revolution in the nature of war itself.

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11. This is the case, for example, of the consequences of the submarine warfare conducted by Germany during the First World War. It is essentially a military result that is sought. However, the tactical successes, more or less important, were sufficient to discredit the central powers and to push the United States into the war (torpedoing of the Lusitania on 7 May 1915).
12. See on this subject: V. Desportes, *Le piège américain*. Paris, Economica, 2011, in particular pp. 141-145 or B. Colson, *La culture stratégique américaine,* Paris, Economica, 1993.
13. P. Facon, *Précis de stratégie aérienne*. Paris. CESA - CEMS Air

Multi-domain or all-domain C2 and operations concepts and their French Mult-Domain integration counterpart should be considered, therefore, as one of the best possible solutions, not as a "magic bullet" or "panacea" to deal with all threats and modes of action of a potential adversary.

Moreover, by focusing on essentially technical questions and specific issues (A2/AD for example), the real danger would be to lose the overall understanding of the phenomenon of war. This understanding is necessary to limit the risk of war.

Subsidiarity in the context of Multi-Domain

Romain Desjars de Keranrouë

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Subsidiarity: the word is spoken, but is it really understood and applied? Chantal Delsol, in her essay on this subject, doubts it: "*the concept of subsidiarity conceals, for the educated opinion, a vague connotation of freedom and autonomy. It is also used to justify the empowerment of actors at all levels of social life. But very generally the principle is known neither in its content, nor in its form.*" [14]

Yet as defined in the concept of the use of force, and as well in its application as a doctrine, it is linked to Command and Initiative:

"*The centralization of command attains its full efficiency if it is coupled with subsidiarity. The principle of subsidiarity aims at granting each level of command the freedom of action essential for the proper execution of the mission entrusted to it. The subordinate is encouraged to take the greatest initiative, while respecting the spirit of the mission. This is what is meant by* Mission Command [15].*" [16]

"*Leadership performance is based on initiative, which is deeply rooted in the French military tradition. The initiative that must be granted to each level is the consequence of the principle of* subsidiarity*, according to which the responsibility for an action falls to the competent entity closest to the elements directly involved in the action or being the best able to grasp its complexity or sensitivity.*" [17]

These two definitions being stated, the concrete confrontation of these mere principles, with the reality of current military operations, raises questions. Whether in Afghanistan, Libya or Mali, the combatant's initiative has

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14. C. Millon-Delsol, *Le principe de subsidiarité*, Paris, Presses Universitaires de France, 1993, p. 123.
15. A command concept whose origins are mainly attributed to Helmut von Moltke and embodied by the Auftragstaktik. The aim was to encourage initiative on the part of subordinates in order to compensate for the lack of connection with the centralized command level during confrontations with the enemy. On the other hand, it requires a high level of training of the cadres so that everyone is aware of the overall maneuver and is involved in it.
16. Force Employment Doctrine, DIA-01(A)_DEF (2014), No. 128/DEF/CICDE/NP of June 12, 2014.
17. Force Employment Concept, 2020.

been curtailed in recent years by the systematic centralization of essential decisions concerning targeting, intelligence analysis and authorization to fire, thus disempowering a whole generation of forces in combat. This centralization is a consequence of our operational superiority, combined with a scarcity of assets, which sometimes makes these assets "strategic". This practice would probably no longer be possible if higher intensity conflicts were to occur, calling this operational superiority into question.

However, when faced with high intensity conflicts, in Multi-Domain operations where the importance of C2 will be reinforced, and where the information flow to be processed will be increasingly significant, we will need to think about the definition of subsidiarity, how it is to be applied, and the way to teach how it works. Such an approach would seem essential to bring about the cultural changes necessary for effective implementation.

An attempt at definition

Subsidiarity is often considered in the Air and Space Force (AAE) as viewed through the prism of direct exchanges and sharing at the same level, even if hierarchy remains present (between the COMJFAC – Air Component Commander – and an aircrew for example). However, this aspect would warrant further exploration.

It is not necessary to decide whether the relationship between actors should be horizontal. As mentioned in the definitions above, the principle of subsidiarity is indeed a sharing of decision and responsibility between the person in authority and the subordinate's freedom of action. It is therefore a question of responsibility and initiative given to subordinate levels, within limits set by the higher level, and not a simple sharing between actors of the same level, that needs to be resolved.

On the other hand, interference and micro-management, or the "crushing" of levels, expressions often used in operations to describe a retreat from subsidiarity, reflect the intrusion of authority into a field of competence normally dedicated to a subordinate level. For example, it is not uncommon to receive a call from COMANFOR or an aide in the cockpit of a Reaper drone, a few moments before opening fire, urging them to fire more quickly. This is a far cry from the "*eyes on, hands off*" approach mentioned by General Stanley McChrystal in his book *Team of teams*[18].

A second approach within the AAE does outline a sharing of competencies: the integration of effects. A recently published document states that "*the force employment concept takes an agile approach to building a C2*

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18. D. S. McChrystal, *Team of teams*. New-York, Portfolio Penguin, 2015.

Multi-Domain by opening the door to greater subsidiarity. The integration of effects *can be defined by the strategic echelon, or be the purview of the operational echelon, or be assigned to a tactical component."* [19] This approach is based on the air component, seen as a structure. However, the principle of subsidiarity is not only based on processes and tools, but also on people, because "*it implies a philosophy and an anthropology*"[20], that of the freedom of action granted by an authority.

According to Chantal Delsol, the proper application of the principle of subsidiarity is based on:

- "*trust in the ability of the actors and in their concern for the general interest, trust also given to individual decision*

- *the intuition according to which the authority is not the natural holder of the absolute authority as to the qualification and the achievement of the general interest*

- *the will for autonomy and initiative of the actors* [...], *which supposes that they have not been previously* [...] *infantilized* [...]." [21]

Finally, it is important not to confuse delegation and subsidiarity, which are two distinct and complementary principles. "*Delegation consists of entrusting a mission or an activity to a member of one's staff, giving him or her the power to act, but continuing to assume responsibility for the final result.*[22]" Behind the word delegation, there is therefore regular reporting and supervision of the action carried out, so autonomy is not total. Subsidiarity enters into a logic where "*The subordinate in principle has the power to decide on everything except for what falls under the authority of the higher level*".[23]The foundation of subsidiarity is that there is support, help from the authority that is at the service of the subordinate, yet all of this without interference. We are moving from a "*report from*" logic to a "*support to*" logic. The question arises as to whether subsidiarity can really be transposed to the military world, where regular reporting remains the soldier's first duty and where the higher echelons tend to keep a very close eye on the implementation of their decisions.

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19. Multi-Domain operations, the Air Force and Space Vision, Exploratory Concept CEAAE-2021/01_OM2MC (2021), p. 17.
20. C. Millon-Delsol, *op. cit.* p. 76.
21. *Ibid*, p. 37.
22. Eric Delavallée, Delegation and/or subsidiarity, Management issues, Eric Delavallée's blog, November 30, 2011, https://www.questions-de-management.com/delegation-etou-subsidiarite/
23. *Ibid*.

Yet, the integration of *effects*, desired for Multi-Domain operations up to the tactical level, implies that "*Integration is now needed at the tactical level of war*"[24], and would thus require the application of the three points developed below.

Confidence in the capacity of the actors

Accelerating the pace of engagements and decision-making in the face of massive flows of information is a response to constraint defined by the French vision as "*more limited opportunities for action*"[25] in future operations. This need is expressed in two ways: one is through the acceleration of flows, better connectivity, in a word through technology, which is often omnipresent in the discussion. The other need, often overlooked, refers to greater subsidiarity in analysis and decision-making, i.e., to the trust placed in subordinate levels, born of the intuition that the accelerated pace will no longer permit the higher authority to micro-manage everything. "*Such a capacity for analysis requires that the aircrews have an exhaustive knowledge and understanding of the expectations of all the missions programmed and the objectives of the chief. This involvement of effectors, which constitutes a very significant evolution in our operating principles and command relationships between the levels of planning and execution, represents a first level of decentralization* ».[26]

It is therefore essential not to remain at the component command level when expressing subsidiarity, but to go down to the aircrew level.

From this point forward, reliance on the expertise of actors in the field, who are open to factors that foster understanding, and having extensive knowledge of their environment, is a way to develop subsidiarity. This makes maneuvering more fluid and speeds up the OODA loop

Intuition that the authority is not always the most competent

Developed from actual feedback from current operations, the publication of an Intelligence Doctrine for the AAE in 2018 (*DAA 2.0, Renseignement d'intérêt Air*) has paved the way for full subsidiarity in real-time intelligence analysis, providing new opportunities. A Level 1 intelligence unit (considered to be a tactical level), deployed in the field (drone detachment, ISR Light aircraft, or C-160G), can provide correlated and merged level 2 real-time intelligence analysis (i.e., normally devolved to the operational level) in a limited scale of time and space, provided that this higher level has exhaustively pro-

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24. Introducing the Integrated operating concept, UK Ministry of defence, p. 10.
25. Multi-Domain operations, the Air Force and space vision, p. 11.
26. L. Pena, "Multidomain Command and Control (MDC2): an opportunity to renovate our C2", DSI Special Issue No. 147, "Air Warfare and Multidomain Operations, May-June 2020.

vided it with both the information at its disposal (decompartmentalization of intelligence, including SIGINT, subsidiarity of COP[27] sharing, etc.) and the commander's intentions etc. This sharing of information is a real demonstration of trust, granted by the operational level to certain intelligence units working at the tactical level, and a major advance in a very compartmentalized world. Combined with the acceleration of the pace of operations, this new organization is producing promising results, in line with the principle of "*increased subsidiarity in the chain of validation and dissemination of intelligence*" [28]. One of the avenues for progress is therefore to have this intelligence organization recognized at the joint forces level, and then at NATO level, in order to follow as closely as possible, the pace of operations in real time, which requires ever faster synchronization and integration of effects.

Contemporary operations illustrate the increased synchronization between different components. For example, Command frequently avails itself of intelligence to inform proposed operations. Intel-led operations demonstrate this accelerated pace, whereby the effects produced by several components are seamlessly blended. Today, in the Sahel, the synchronization of detection, followed by classification of the enemy, targeting, then intervention/neutralization, all involve intelligence flows, UAVs, combat aircraft, helicopters and commandos in a practical version of Mission Command. It is the aircrews who are in a position to carry out these missions, even though they are joint. All that remains would be to give them the responsibility of targeting and opening fire in order to be fully integrated into such Multi-Domain operations, while at the same time accepting for one component to entrust resources to the command of another. The example of a Reaper crew is quite telling: it can exercise Mission Command at the beginning of a fire action by commanding land component helicopters, an ATL2 and other fighters, and then switch to supporting an air-land operation once the commandos have landed on the ground, all within a time scale of an hour.

Willingness to be autonomous and take initiative: how to train for Mission Command?

Conferring subsidiarity to those whose role is to implement the platforms and weapons, can only be successful if staff are identified who can break down the barriers between environments and fields. Cross-referencing information flows, gaining perspective and hindsight, even within a detachment deployed in the field, will require a more global understanding of the role to be played in the joint maneuver and solid knowledge, extended to other environments and fields. "*Fully cognizant of the Air Force leader's intentions*[29], *he will make decisions that save a great deal of time*".[30]

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27. Common Operational Picture
28. Multi-Domain operations, the vision of the AAE, p. 20.
29. Here, this would be the COMJFAC.
30. L. Pena, *art. cit.*

Thus, "*nothing will be done without a deep cultural transformation* [...]. *This cultural change will only be possible as a result of strong leadership at the highest level of the hierarchy and the training of officers pre-selected and fast-tracked early enough in their educational process*".[31]

The challenge is therefore twofold: both to train tactical actors, so that they are able to see beyond a limited role in which they may sometimes be trapped, and to cultivate a sense of distance and perspective in decision-makers, to force them to see beyond the tactical level that reassures them, and to think about the next move. De Gaulle said nothing more in his book *Towards a Professional Army* when he described the inevitable mechanization of armies: "Leaders of all ranks will have to judge and decide with an extreme promptness that will preclude seeking advice and delay. In a matter of moments, they will have to assess the circumstances, make their decisions and issue their orders".

For example, during Operation Barkhane, the deputy general of operations, deputy to COMANFOR, called on the drone detachment to provide intelligence on enemy developments over time. This trust had the effect of broadening the detachment's understanding of joint maneuvers in order to be able to provide an assessment of the situation that was useful at the operational level. This initiative, quite unique, was an opportunity to gain perspective and hindsight, which would be worth extending to other detachments because it has an educational value and develops a sense of operations oriented towards the Multi-Domain.

Also, if it is necessary to focus on the training of managers at the tactical level, it is important not to forget those who will delegate and share the decision, responsibility and competence. Indeed, this sharing of competences and responsibilities can still be improved in the face of a French culture of centralization, reinforced by the reduction in our resources[32]. Also, we must educate future leaders (both operational and strategic) to establish a kind of "*forward imbalance*" that leads them to have the impression of decentralizing too much, of sharing the decision too much. Once in this position, the leader will then be able to consider that he or she has placed the cursor correctly, i.e., to be "*able to dynamically distribute more functions and responsibilities and do so as close to the action as possible to ensure the continuity of operations*".[33]

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31. D. Pappalardo, "Bringing tangibility to the concept of multi-domain warfare: to buzz or not to buzz", DSI Special Issue No. 70, "US Air Force: The Fist of America," February-March 2020.
32. Thus, since the number of fighters deployed in the Sahel is small, the slightest adjustment in format is by nature quasi-strategic.
33. D. Pappalardo, *art. cit.*

Finally, as one American military officer stated, "the *Air Force needs to empower commanders and operators at the lowest levels. Regrettably, the Air Force does not practice or exercise the type of command at the squadron or wing level that will allow forces to succeed in a future fight.*" [34]

The need for training at the line echelons, such as the squadron and wing, must become a major focus of effort. Giving them the initiative, even if it means disrupting the traditional ATO cycle ("What JFAC HQ currently does in its 'control' function – ensuring the ATO runs smoothly, making theater-wide decisions – could be decentralized"[35]), would allow both the identification and selection of future Multi-Domain leaders and the restoration of the principle of subsidiarity to a concrete place in operations.

Two fundamental aspects of the principle of subsidiarity can therefore be further improved: verticality, which concerns the sharing of responsibility and competence between an authority and a subordinate entity, and its embodiment, the part of subsidiarity that affects not the structures but the people, especially the crews.

Verticality and the embodiment of subsidiarity overturn the current conception of C2, the famous dogma of "*centralized command, decentralized execution*". For junior officers, it will be a matter of making Mission Command their own in order to adapt their conduct to events and thus apply General Lagarde's beautiful formula: "*initiative is the most accomplished form of discipline*" by going further than task execution. For the senior officers and generals in charge of C2, it will be time to move towards a decentralization of command, towards an "*off balance leaning forward*", where "*the art of leadership will be to know how to relinquish the baton, so as not to disturb the orchestra.*"[36]

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34. N. Tsougas, "Is the USAF Effectively Embracing the Challenge of Executing Multi-Domain Operations?", *OTH Over the Horizon Blog,* February 19, 2020, available at https://othjournal.com/2019/02/20/is-the-usaf-effectively-embracing-the-challenge-of-executing-multi-domain-operations/

35. L. Pena, *art. cit.*

36. Herbert von Karajan