



Relevance to contemporary infantry combat of the achievements of the Great War

Earth Thought Notebooks

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Histoire & stratégie

To study the legacy of the Great War for contemporary infantry is to describe an unprecedented modernization between 1914 and 1918. It also means making a hyphen of nearly a century to show that beyond technical evolution, the foundations have endured and remain relevant. Above all, it means looking to the future to ensure that contemporary infantry is armed to meet the challenges that lie ahead.

Finally, for the authors, it is to demonstrate that the common denominator between the infantry of yesterday and today remains its ability to adapt permanently to any strategic disruption.

**"It is good to anticipate and remember,
one eye in the past, and the other towards the future".**

Publilius Syrus, Sentences - 1st c BC

When the First World War is evoked in popular imagery, one thinks of the ill-equipped soldier in madder pants, the large brigade-regiment battalion divisions, a manoeuvreThe Chemin des Dames massacre... The infantry, "cannon fodder"... Therefore, any comparison with today's infantry would seem incongruous.

However, beyond this image of Épinal, both real and fantasized, the infantry of 1918 is no longer the infantry of 1914. It underwent notable changes in its equipment, its organisation and its use. At the end of the Great War, General Debeney's definition in the Revue de l'infanterie 1920-1925 could be perfectly adapted to the current context: "The modern

infantry marches preceded and flanked by projectiles of all calibers; it carries in the open air, or under armor, a powerful fire of its own, it maneuvers. It has once again become the weapon of movement. Of all its means of action, only one has not changed: the heart - and it is the most powerful".

From this initial analysis, several questions arise. While the arrival of the Scorpion system is likely to revolutionise the standards of engagement by 2025, how is the legacy of French infantry combat from the Great War adapted to the infantry combat of today? Do current technical and geopolitical developments inevitably lead to changes in the organization and standards of use of a weapon? Is there a logic of rupture or continuity?

Without disregarding the multinational character and diversity covered by the generic term infantry, the study will focus on the combat that the French motorized and "feline" infantry leads or can lead. It does not aim to deal in detail with the strategic aspect addressed by Bernard Schnetzler in "Strategic errors during the First World War». Nor does it aim to evoke in such an exhaustive manner the metamorphosis of the army brilliantly exposed by Colonel Goya in "Flesh and steel». But, based in particular on the doctrine documents of the time, this article aims to put into perspective the legacy of the Great War for the contemporary infantry in the face of the challenges ahead.

As the "Queen of battles" of past and present conflicts, the infantry must preserve, from the rich heritage of the Great War, its capacity to adapt to face a possible strategic break.

In order to demonstrate this, we should first of all highlight the achievements of the First World War, which still form the foundations of contemporary infantry, and then highlight their evolution through gradual adaptation. Finally, it will be necessary to verify whether, strengthened by this heritage, the infantry is capable of meeting the challenges that await it.

The infantry of the Great War and the consideration of the "fire factor".

The First World War, the mother of all modern wars, marks the beginning of a new era. The first months saw the telescoping of two models: the "Napoleonic" manoeuvres inherited from the 19th century and the appearance of increasingly destructive ^{modern} weaponry. Faced with this new situation, the French army and the infantry in particular had to adapt and modernise. This evolution, imposed by the "fire factor", requires in particular the adaptation of elements that react on each other: doctrine, functional organisation and combat procedures.

- The adaptation of the infantry to the reality of confrontation

Certainly, from the battle of the frontiers, the development of the "fire factor" called into question the doctrine advocated by the French High Command and the way it was disseminated.

22 August 1914, the bloodiest day in French military history. This date alone symbolises the failure of the doctrine of the excessive offensive [1], a failure accentuated by the unpreparedness and insufficient training of the troops. Theorised during the 1911 conferences of Colonel de Grandmaison, this doctrine was applied in the first months of the conflict. It favours movement, the shock of a frontal attack without prior manoeuvre. The emphasis is placed on moral strength, the spirit of sacrifice, the willingness to take ascendancy over the adversary at all costs. This is the myth of the decisive battle.

This doctrinal blindness is however outdated in the face of the "fire that kills". Between 1914 and 1918, the "material density" and the fire power in which the infantryman evolves are indeed multiplied. In 1914, the Lebel rifle equipped with its bayonet is the weapon the infantry uniformly and there are six machine guns per regiment. In 1918, the armament was multiplied and diversified [2]. There were 36 machine guns per regiment. Carried out at the rear of the front, technical training became essential to optimize the use of these new capabilities and make them accepted by the troop. As early as June 1917, General Pétain, the new general-in-chief, made it one of his priorities [3].

3] At the same time, fire and movement became complementary and inseparable elements in the manoeuvre. Allowing for material destruction, fire appears as a primordial element without which movement is no longer possible. Movement, leading to the moral destruction of the opponent, remains the decisive element that allows one to exploit the destructive action obtained by fire. As summarized in this maxim, fire and movement are, in short, closely linked: "Defense is fire that stops, attack is fire that walks, maneuver is fire that moves" [4]. This evolution of the doctrine is based on a virtuous circle of collecting the teachings of the front line, writing instruction manuals within the instruction section of the 3rd bureau, then disseminating "good practices" to the fighting units. The infantry is already part of a reactive adaptation mechanism.

- A new model built around the FM and the combat group

In the same way, the "fire factor" has a double impact in the functional organization. If infantry units are initially formed according to the number factor to provide a mass effect during the offensive, this logic does not however resist the terrible losses of the first engagements [5]. Consequently, the number factor will never play the same role again.

Indeed, a first remark is necessary. The increase in firepower is accompanied by a parallel decrease in numbers both overall and within the fighting units [6]. 6] This rationalization of manpower is partly explained by the increased destructive capacity of modern weaponry. An automatic weapon delivers a firepower equivalent to that of 40 infantrymen equipped with Lebel rifles, allowing maximum effect with minimum manpower. The number factor is thus supplanted by the fire and material factors which, at a given quantity, will determine the number of units formed. At the armistice, there will thus be fewer infantry battalions than at mobilization. Elementary units will have seen their strength reduced by 30%.

The increase in firepower is mainly accompanied by greater autonomy of the small echelons and a decentralization of command up to the level of section leader or even group leader. Infantry units are adopting less dense and more flexible formations, built around the machine gun (MF). In 1918, the section was divided into two identical half combat sections, each with an automatic weapon and three Vivien-Bessières grenade throwing rifles, allowing manoeuvring at the lowest echelon. This articulation, a real revolution in terms of the formations adopted at the beginning of the war, however, had

the disadvantage of placing under the orders of a single man a volume of force that was too heavy and too dispersed for optimal command. The model adopted after the war would consist of three groups of 13 infantrymen commanded by a sergeant. Each group will be composed of a team of machine gunners and a team of grenadier flyers. This model guarantees the best balance between the fire and movement components.

The combat group thus born is the major innovation in infantry combat in the 20th century. It still remains today the basic element of the infantry platoon manoeuvre.

- Tactical impact of the generalisation of the automatic weapon

Moreover, the "fire factor" upsets the infantry battle in itself and its interdependence with other weapons. The vision according to which "artillery destroys and neutralizes enemy armies, infantry occupies the terrain" [7] has become too simplistic.

After the victory of the Marne and the stabilization of the fronts, strafing weapons are no longer sufficient. Diversification of armament gives greater autonomy and widens the spectrum of use. Maneuvering is thus seen as a means of producing fire at the point, time and intensity required. In the advance phase, the aim is to make the enemy's defensive position untenable and to protect its own movement. In the boarding phase, the aim is to drive the enemy out and then clear the trench. During the occupation phase, the aim is to establish a line of fire strong enough to prevent any counter-attack. The generalization of the machine gun guarantees both the economy of means on the front and the concentration of forces during breaks in contact. It also leads to the dilution of the units in order to escape the fire. The machine-gun, an accompanying weapon, allows the

conservation of the conquered land. Slower and less precise, it acts as a complement when the use of the machine gun is not possible.

To get out of the bogging down and the war of positions, the infantry can no longer maneuver alone. The infantry combat of 1918 is thus the antithesis of that of 1914. It is part of a joint or even joint with the development of cavalry and artillery and the appearance of light tanks and aviation. The evolution of logistics and the generalization of the use of trains, trucks and even taxis allow the rapid redeployment of units on the front, guaranteeing the surprise effect and freedom of action.

Fighting is no longer delivered independently, but is integrated into a complex and modern unit with increased firepower. The increasing complexity of the infantryman's task at the end of the Great War led to the development of specialisation and interdependence between men and weapons. The infantry, at the heart of this revolution, became the integrating weapon par excellence.

The Great War saw two schools confront each other: one encouraging boldness and shock, the other favouring method and fire. The infantry, a synthesis of these two schools, was at the centre of a process of modernisation initiated in the first months of the conflict. From the birth of the battle group to the beginnings of inter-service combat, the achievements of the First World War have endured. They remain relevant through their continuous adaptation in the organization and doctrine of modern infantry.

Contemporary infantry and the deepening of the achievements of the Great War

Thus, these principles initiated in 1918 have been developed and reinforced in the evolution of the infantry up to the present day. This evolution has been particularly evident in the better consideration of training, the development of mobility and protection as well as the improvement of inter-service combat.

- The ever-increasing need for technical and collective training

The fundamental ability of the infantry is to be able to adapt to its environment. This adaptation is only possible through the application of the continuum of technical training ? tactical training ? operational training, directly inherited from the training principles of the end of the First World War. The aim of this training is to achieve "a more intimate link between the weapons and a continuous adaptation to the new combat conditions created by modern armaments" [8].

8] Today, this need for technical training has been confirmed and amplified with the increasing complexity of infantry equipment and weapon systems. This increased technicality poses the risk of a loss of versatility and specialization of the infantryman. The idea of over-specialisation of the infantry had already been rejected in 1917 by General Pétain who, refusing the creation of "Sto truppen" [9] in the French style, preferred to keep units equipped and trained in a uniform manner.

At the same time, the limited time devoted to training as well as the availability of unit equipment made it necessary to have centralized collective training. Although simulation means partly make it possible to overcome these constraints, the long lead times for collective control of weapon systems and integration into manoeuvres cannot be reduced. This principle of centralised collective training had already been initiated during the Great War in the divisional camps where good practices drawn from feedback from the front were disseminated. Moreover, it was reinforced by the creation of the "training and education" pillar in the new model of the Army [10].

- The problem of the volume of the group and its vehicle

Contemporary infantry has also inherited the fundamental principle of battle group structure. Built around the machine gun and its fire capabilities during the Great War, the infantry group is today defined in relation to the mobility and protection capabilities of its combat vehicle.

The last years of the Great War had already seen the advent on the battlefield of assault artillery accompanying the infantry. Some had then discerned there the beginnings of the current armoured infantry: "progressive transformation into mobile armoured infantry", "transport by tank of the elements of the battle group - machine gun tank" [11]. 11] Gradually, to meet the dual constraints of mobility and protection, this vehicle was transformed from an escort vehicle to the central piece around which the infantry group is structured. Today, it has become a real combat vehicle, replacing the tank of the Great War, but also the machine gun as the major weapon of the group.

However, this evolution has had several pernicious effects. On the one hand, to meet the necessary balance between mobility, firepower and protection, the carrying capacities of infantry combat vehicles were reduced. By elevating the "one vehicle for one group"

principle [12] to a quasi-dogmatic status, the group volume was drastically reduced to seven disembarked combatants. This is far from the critical volume of ten combatants defined by the lessons of the Great War. On the other hand, if the motorization of the infantry is necessary today in view of the current standards of engagement, the vehicle must not become the new paradigm of infantry combat. The fundamental principle of the infantry that "they move by vehicle and fight on foot" [13] is still valid. The vehicle is only one element participating in group and section manoeuvre, providing mobility, protection and support. It is therefore necessary to find the right compromise between power, mobility, autonomy, protection and adaptability to the mission to give the infantryman his full effectiveness. The future infantry vehicles of the Scorpion [14] programme, Griffon and light MBRVs will be part of this dynamic.

- From liaison between weapons to inter-service integration

But the greatest development during the Great War certainly corresponds to the beginnings of inter-service combat. The example of October 23, 1917 is a perfect illustration: "Preceding our infantry, remaining in close contact with it, [the tanks] reduced to cannon many machine guns" [15]. 15] This "liaison between the arms" as it was described at the end of the Great War has not ceased to be deepened since then. It has become inter-service cooperation and then finally true inter-service integration.

Today, collaboration between the arms is carried out down to the lowest levels. It takes the form of permanent or quasi-permanent structures at battalion and company level (GTIA, SGTIA[16]) or ad hoc at platoon level (DIA[17]). These structures have the particularity of grouping under a single tactical command all the operational capabilities of the different weapons, thus facilitating synergy in manoeuvre, but also and above all complementarity of effects. This systematic inter-service integration thus makes it possible to create ad hoc structures adapted to the mission and circumstances.

However, in order to avoid the distortion of combat and in particular the preponderance of support to the detriment of melee units, this inter-service integration requires a support weapon. Whereas as early as 1920, "[the infantry], the only complete weapon, is the main weapon used by the others" [18], it remains today the integrating weapon par excellence. This integrating function imposes in parallel a cultural revolution. The leader must no longer think like an infantryman, but must develop his tactical reasoning towards a synergy of effects. He must master the constraints and effects linked to each weapon in order to optimise "cooperation" and complementarity between weapons.

Inter-service integration therefore requires an effort to train leaders in particular, who must be imbued from the outset with this inter-service environment. It is therefore not a question of yielding to the temptation of an inter-service identity, but rather of relying on the strong identity of weapons such as the infantry to build common reference points.

The French infantry has been able to develop the major founding principles inherited from the Great War, which remain at the heart of today's concerns. Will these foundations still be relevant for the battles that infantrymen will have to fight tomorrow? And above all, will the infantry be able to adapt to major changes as it did during the Great War?

The Contemporary Infantry and the Challenge

The infantry of 1914, the result of a slow evolution of the "Napoleonic" model, found itself cruelly ill-adapted to the emergence of an unexpected factor and the advent of modern warfare. While the legacy of the Great War for the contemporary infantry is well known, is not the infantry of today in the same situation as its predecessor with a possible maladjustment to a new strategic break?

To avoid this pitfall, it must be ready to respond to the challenges that lie ahead: to face the emergence of a new threat, to assimilate the technological developments under way, to anticipate a possible technological leap.

- The infantry facing a new threat

Undoubtedly, the infantry, as part of a larger group with a joint and joint vocation, will occupy a predominant place in the face of a threat that is both diffuse and complex.

Indeed, even if the resurgence of a fort to fort confrontation cannot be excluded, the most likely threat in the short term could be that of a hybrid enemy. This enemy would have conventional capabilities, would employ asymmetric or even asymmetric modes of action[19], and would support its propaganda by means of mass communication. The precise identification of the contours of this threat, however, remains difficult. The current example of IA, one of the most fearsome hybrid forces, crystallizes the reflections. Breaking with the modes of action specific to asymmetrical combat, IA has also been able to conquer a vast territory by adopting a classic offensive manoeuvre.

Faced with this hybridisation, the current strategy of containment by air strikes has shown its limits as it fails to neutralise the threat. The response to be provided undoubtedly involves intervention on the ground with a model of forces whose definition remains complex. Thus, "the counter-hybrid fighter will have to know how to master the methods of joint weapons manoeuvre in the face of an adversary with lethal firepower, while understanding the social subtleties of a complex conflict" [20].

20] Faced with a threat that combines the specificities of each of the modes of warfare, the IATF model, a modular and versatile structure par excellence, seems perfectly adapted. Faced with a polymorphous and constantly adapting enemy, the infantry, because of its reversibility and its capacity for continuous control of the environment, would be the cornerstone. The infantryman would thus become the archetype of the counter-hybrid fighter.

- The infantry in the face of current technological developments

Moreover, the contemporary infantry must be able to assimilate, without losing its soul, current or future technological developments such as Feline or the Scorpion system.

Moreover, this is not to question the undeniable advantages that these systems provide in terms of aggression, protection, information sharing or info-valuation. Technology acts directly as a multiplier of effectiveness and reinforces the conviction of winning the decision quickly. It responds to the dual challenge of hitting the adversary by limiting its own exposure. It contributes to increasing the capacity for initiative and speed of action, which are key factors in military success.

However, certain pitfalls must be avoided. Indeed, the temptation could be great to compare in a purely arithmetical manner the capabilities of the "feline" infantryman to the "old generation" infantryman and draw hasty conclusions about the organisation or standards of infantry engagement. This reductionist vision, by threshold effect, would inevitably call into question the coherence of the units deployed and their ability to act on the environment. Similarly, while information systems (IS) are now the real "nerve centres" of our societies, they are also sources of vulnerability for the military domain. Weapons systems, which are increasingly dependent on IS, could be rendered inoperable by a cyber attack. The use of new technologies must therefore be based on a culture of resilience to the possibility of having to operate in degraded mode. Thus, "the challenge is to write orders capable of resisting the loss of electromagnetic superiority and radio silence".[21]

The possibility of having to operate without technological tools should therefore not be ruled out. A necessary factor for success, the technological field must keep the soldier at the heart of any IS. Returning to the hand-to-hand combat of their elders of 1914, the infantrymen of Operation Serval 1 were able to dislodge an enemy entrenched in the cavities of the Adrar of the Ifoghas. Thus, without renouncing the advantages that current or initiated technological developments provide, the infantry must retain its culture of rusticity and weaponry of the last 300 meters. Indeed, as General Debeney's introductory quote reminds us, "Of all its means of action, only one has not changed: the heart - and it is the most powerful".

- Infantry facing a technological leap

In a related field, the emergence of the phenomenon of battlefield robotization must be understood as a means of multiplying the capabilities of contemporary infantry and not as a substitute.

Indeed, robotization could contribute to improving the physical and sensory capabilities of the infantryman. While the weight of the combatant's equipment is constantly increasing, it would notably make it possible to increase protection, endurance and strength tenfold, to accelerate movements and to carry out more precise gestures. The projects of American "Hulc" or French "Hercule" exoskeletons go in this direction. Miniaturization should make it possible to implant cyber tools inside the body, such as this electronic patch developed in the United States, which makes it possible to perform basic medical examinations remotely. Still in the embryonic stage, the realization of these projects would allow the advent of quasi-cyborg infantrymen[22] on the battlefield.

Beyond this fantasized future or the desire to reinvent the concept of "zero death", the substitution of the infantryman by semi-autonomous humanoids[23] would, on the other hand, raise both a legal and an ethical problem. Indeed, automation raises questions about strategic control. How can control of a machine be guaranteed until the last moment? What credit should be given to the judgment of an automaton without artificial intelligence? Who of the actuator or decision maker would be responsible in the event of an accident or unintentional attack? Similarly, robotization presents the ethical risk of a double distancing of the combatant from the battlefield. A moral distancing that would manifest itself by the possible shift from the notion of sacrifice-courage towards a notion of self-preservation [24], or even the confrontation of robots and humans in an asymmetrical confrontation. A physical distancing that would materialize by a loss of contact with the population and the environment, fundamental characteristics of the infantry.

Acting as a complement, the robot could in the future advantageously relieve the infantryman of tedious tasks in order to allow him to preserve his operational capacity until engagement. Robot sensors or "mules" [25] could be seamlessly integrated into the infantry battle group. They could just as well lead to an evolution of the existing structure as was the case with the advent of the machine gun in 1915.

Conclusion

Adapted and outmoded in the first months of the Great War, the infantry underwent an unprecedented modernization process. Thus, in 1918, it became a benchmark. It was then the most efficient infantry in the world. The First World War infantry's achievements in terms of doctrine, organization and employment, which were disseminated to American and Canadian contingents at that time, have endured to this day. They have developed through gradual adaptation and are still major challenges.

Ultimately, if there is one asset that the French infantry has managed to maintain from 1918 to the present day, it is its ability to reinvent itself, to assimilate changes and to respond effectively to the threat.

Like the infantry of 1914 faced with the "fire factor", the French cavalry of 1940, a victim of the fossilization of the military thinking of our armies between the wars, found itself unsuited to the "movement factor" exploited by German units. But based on the experience acquired by the Allies, the cavalry adapted to the conditions of modern mechanized warfare. Even if since the Second World War its only confrontation with an armoured enemy dates back to the First Gulf War, the French armoured army has also been able to evolve its modes of action in line with the changes in today's conflicts.

Saint-cyrien, parachutist officer of the Navy troops, the LAMY Battalion Commander served as section chief and unit commander in the 8th RPIMa before taking up the position of officer dealing with the studies and prospective office of the Airborne Troops School. During his command time, he participated in 2012, in collaboration with the Army Technical Section, in the experimentation and demonstration of collaborative combat SCORPION.

Saint-cyrien, officer of the naval troops, the CATALAN Battalion Chief served as a section chief in the 2nd RIMa before taking up the position of "training infantry" advisor to the Djiboutian armed forces. After having commanded a combat company at the 21st RIMa, he recently held the position of section chief officer trainer at the application division of the Infantry School.

1] This doctrine was taught at the War School, notably by General Foch, who was director of the school from 1907 to 1911. He wrote in "Principles of war" "No victory without battle: victory is the price of blood [...] War is nothing but savagery and cruelty and [...] recognises only one means to an end, bloody effusion".

2] Infantry units are equipped with hand grenades, rifle grenades, Chauchat machine guns, 37-mm support guns and 81-mm stockpile mortars.

3] Guy Pedroncini, "[3] Guy Pedroncini, "Chief General Petain" Paris, PUF, 1974, p.78.

4] Commander Laure, "At the 3rd G.H.Q. office" Paris, Plon-Nourrit, 1921.

5] In August and September 1914, the French armies lost 329,000 men, killed, missing or taken prisoner.

Pensées mili-terre

Centre de doctrine et d'enseignement du commandement

6| Between 1914 and 1918, the number of infantrymen rose from 1,526,000 (71.6%) to 851,000 (50.4%). At the same time, an infantry company increased from 250 to 175 men. The decrease in the number of infantry or cavalry can also be explained by the rise, from 1915, of heavy artillery, support, observation and fighter aviation to protect it.

7| Colonel Dessoify de Csernek, "Quelques réflexions sur l'infanterie", in La revue d'infanterie - 60ème volume, Lavauzelle, 1922

8| Guy Pedroncini, op. cit. , p 76.

9| "Shock troops", elite units of the German Imperial Army during the First World War. They were created in the spirit of positional warfare. As the spearhead of an assault, they were given different weapons from other soldiers because of their status.

10| The "In Contact" model, adopted from 2015 onwards, describes the organization of the army into eight pillars, including a "Training and Education" pillar containing a School of Joint Combat.

11| François-André Paoli, "L'armée française de 1919 à 1939", Tome 1, "La reconversion de l'armée française en 1919", Ministère des Armées - service historique, 2nd part "La remise en ^{route} de l'instruction".

12| The doctrine for the employment of the infantry section on VAB Ultima (INF 36.001 Ultima Addendum) provides for the four groups of the section to be embarked in five vehicles, breaking with this quasi-dogma for the first time.

13| "Its Primary Purpose: Contact Disembarked Combat after Approach Under Armor", INF 20.001 Infantry Employment Doctrine, 2002, p.21.

14| As part of the Army Project 2020, Scorpion aims to renew the major means of contact combat and to strengthen the operational capability of contact forces. The first GTIA Griffon will be deployable in 2020. The first Scorpion BIA (two Griffon GTIAs - one Jaguar GTIA) will be deployable in 2023.

15| Guy Pedroncini, op. cit. , p 74.

16| Joint Battle Group (Battalion), Joint Battle Group Sub-Group (Company).

17 | Joint Detachment (platoon).

18| François-André Paoli, "L'armée française de 1919 à 1939", Volume 2, "L'armée française de 1920 à 1924", Ministère des Armées - service historique, 4th part "L^{évolution} des moyens".

19| "Asymmetrical conflicts set armed forces of a similar nature, but with different structures, volumes, equipment and technologies and doctrines, in opposition to each other. Asymmetric conflicts are of a type in which there is a disparity in the nature of the aims of warfare, the means and ways of acting" - FT02 General Tactics.

20| Élie Tenenbaum, "[20] Élie Tenenbaum, "The trap of hybrid warfare", IFRI , October 2015, p.38.

21| Lieutenant General Yakovleff, opening conference on the General Tactics Module, CESAT, 11/09/15.

22| Term coming from science fiction, it designates a human being who has received grafts of mechanical parts.

23| A humanoid robot or android is a robot whose general appearance is reminiscent of a human body.

24| Thesis developed by Grégoire Chamayou, "...UAV Theory».

25| The BigDog quadruped "mule" robot, created in 2005 by an American company, was tested in real conditions by the American army in 2009 in Afghanistan.

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