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REMARKS ON THE FIFTH-GENERATION WARFARE AND THE SECOND NAGORNO-KARABAKH WAR

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The second Nagorno-Karabakh War, in the autumn of 2020, is considered a turning point in the conduct of warfare. Until then, the fifth-generation warfare was only a theoretical subject. Also, the traditional air-power doctrine, claiming that air superiority is a precondition for winning a ground war, had become a topic for military historians. But, the latest exacerbation of the Armenian-Azerbaijani conflict in Transcaucasia has radically changed the situation. The fifth-generation warfare, dominated by non-kinetic actions to the detriment of the kinetic ones and by high technologies to the detriment of the classical, conventional ones, is as real as possible and the theory of air power returns in force. This article aims to answer the following questions: what are the characteristics of the fifth-generation warfare and how did they manifest in the Second Nagorno-Karabakh War? And what was the impact of the military confrontation in Transcaucasia on the way the modern warfare was conducted?

Keywords: the fifth-generation warfare; Nagorno-Karabakh; digital networks; cloud combat; unmanned aerial systems.

About the fifth-generation warfare

The "generational" criterion in the history of warfare was relatively recently introduced in the academic studies. A team of American politico-military analysts led by William S. Lind structured the "changing face of war" based on a series of indicators regarding the size of armies, the nature of military equipment, the tactics used in waging war[1]. Thus, they said in 1989, in the millennia from antiquity to the present, the war had known only four generations, of which the last two had developed in the second half of the twentieth century, in parallel with technological advancement and new industrial revolutions of computerization and digitization. Or, in other words, the way the war was waged reflected how wealth was accumulated[2]. The century of speed also left its mark on war – perhaps the most conservative way of *doing politics by other means*[3], if we are to relate to war in human history. First of all, the linear warfare was abandoned at a tactical level, focusing on speed, on strategic surprise, on stealth technologies. Then, war was decentralized by asymmetry, by erasing the demarcation between combatants and civilians, by the disappearance of the conventions of warfare, which no longer have to be declared, which turn the whole society into a battlefield, military uniforms becoming optional. And nowadays, we are surprised to see that time is "impatient" and that we are already in the fifth generation of warfare, in which hybridization and non-kinetic military actions, such as social engineering, misinformation, cyber-attacks, along with emerging technologies such as artificial intelligence and fully autonomous systems, have outperformed kinetic military actions, turning warfare into a confrontation of information and multiplying the theater of operations in all sectors of society.

An ubiquitous battlefield, conceptually foreshadowed by the great Prussian strategist Carl Philipp Gottlieb von Clausewitz (1780-1831), the theorist of unlimited warfare (later re-theorized as absolute warfare and total warfare) – the warfare without neutral spaces and non-combatants, the military and civilians being engaged in the common effort of the complete defeat of the enemy, until the final victory[4]. This ubiquitous battlefield uses a mixture of kinetic and non-kinetic force, in which conventional military violence has decreased, but in return, political, legal, economic, informational and technological violence has increased – according to some authors even more devastating than a conventional war[5]. Ideas that have been theorized by two Chinese colonels in the People's Liberation Army, Qiao Liang and Wang Xiangsui, who argued in 1999 that unlimited war in the modern era offers to militarily and politically disadvantaged nations

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a chance to successfully attack a geopolitical superpower. A geopolitical superpower whose military doctrine is driven by technology and by the effort to develop new and new classes of weapons and vehicles, extremely expensive and difficult to integrate into the already existing systems. Remarks shared by American analysts Frank G. Hoffman[6] and Nathan Freier[7], under the name of hybrid warfare and disruptive attacks or by Russian General Valery Gerasimov, the modern nonlinear warfare theorist, who remarks in an article on this subject that "no matter what forces the enemy has, no matter how well-developed his forces and means of armed conflict may be, forms and methods for overcoming them can be found. He will always have vulnerabilities and that means that adequate means of opposing him exist"[8].

In the same vein, American analyst Harlan Ullman, theorist of *massive attacks of disruption (MAD)*, believes that the modern warfare will be dominated by these disruptive attacks, components of the *shock and awe* doctrine, whereby the opponent's will to fight is paralyzed by the overwhelming magnitude of the attacks. These massive attacks of disruption, described by Ullman as "the fifth knight of the Apocalypse", are the result of seven major disruptive forces: government failure, climate change, cyberspace, social networks, drones, terrorism, and explosive indebtedness[9]. Forces that target societal vulnerabilities, that act synergistically through mutual empowerment and have a massive impact on the population. Forces acting on the "fabric" of interests and dependencies created by the interconnections of globalized, hyper-technological society. Forces that terrify precisely through the multitude of effects, on the domino principle, generated by the interference of technology, the diffusion of power and the dis-structuring of the Westphalian states.

Ideas in full agreement with the concept of unlimited warfare and the direction in which the hyper-technological society of the future is heading.

The characteristics of the latest generation warfare

There are four major features of fifth-generation warfare:

• *Extensive, interconnected and interdependent digital networks* that ensure the collection and transmission of information, detection, impact assessment and transmission of the command.

The different elements of force are interactive nodes on networks that can receive, operate and transmit data. The more these nodes are, the greater the power of the network is – if we refer to Metcalfe's Mathematical Law, which states that the value of a communications network is proportional to the square of the number of users connected to the system[10]. The transmission of data from the theater of operations is done in real time, through video recording systems incorporated in the military equipment in action.

• *Combat cloud.* Networks can form a virtual combat cloud – similar to commercial cloud computing - that allows data extraction and addition by digitally activating key combat platforms – missile defence, air combat, unmanned systems, ground force connectivity with other categories of forces through data links.

• *Multi-domain combat*. There are currently five synergistic operational areas: terrestrial, maritime, air, space and cyber.

• *The fusion warfare*. The concept of fusion warfare describes the vulnerabilities generated by the command-and-control warfare (encompasses all military tactics using communications technology), resulting from additional information flows, software incompatibilities and intrinsic vulnerabilities to attack and deception[11] – Operations security (OPSEC), Military deception, Psychological operations (PSYOP), Electronic warfare (EW), Psychological warfare, Cyber Operations.

The impact of the transition to the fifth-generation warfare

The modern warfare brings new risks and vulnerabilities but also new challenges, respectively:

• vulnerability to cyber intrusion, which can steal, delete, modify or insert false data into the system. Data that can spread quickly on the network, causing confusion and distorting the information;

• the risk of extended detection and annihilation by precisely guided weapons in case of network compromise;

Thus:

• cyber security is becoming essential in the context of modern warfare, issue that may lead to:

- the creation of a new, independent, cyber-force category, with the mission of waging cyber warfare and ensuring cyber security, contributing fundamentally to the operational unification of all categories of forces;
- development of military disciplines and education in cyber field;

• there is a need to fragment large networks into small and independent networks, on a neural model, whose eventual compromise would generate limited damage. But in this case, the functionality within the system might be disturbed;

• the increase of the expenses for the top research in the cybernetic field and for the acquisition of state-of-the-art equipment;

• networks imply the ideas of collective security and coalition. If we were to take into account geopolitical forecasts, we could say that modern warfare slides towards the civilizational component, which attracts a large number of international actors, united by common interests, principles and values, huge theaters of operations, massive forces engaged in fight as well as massive destruction and huge costs[12];

• state-of-the-art technology does not necessarily ensure victory. It has been demonstrated in Vietnam. The invasion followed by the conquest can end in failure, if the civilizational component comes into play, an aspect that might become prevalent in the future.

To all these aspects, there are added the non-kinetic components of the modern warfare, subsumed by the concept of MAD, already mentioned in this article, which could include biological weapons attacks on humans, livestock, forests or crops.

Last but not least, we must remember the research in the field of transhumanism, which aims to develop technologies to improve human biology, such as increasing sensory, cognitive, psychological, radical improvement of human health and prolonging human life. Technologies that will surely have military applications and that will bring up the sixth generation warfare.

Given these issues, which until recently were considered to belong to the distant future, we understand why the recent confrontation in Transcaucasia has been considered a turning point in the military field.

Brief remarks on the Second Nagorno-Karabakh War

Until Ullman's anticipations of the dismantling of the current international system are fulfilled, the Second Nagorno-Karabakh War was waged in the pure Westphalian tradition, from September 27 to November 10, 2020, between Armenia through the self-proclaimed Artsakh Separatist Republic and Azerbaijan.

Nagorno-Karabakh is a mountainous region of Transcaucasia (South Caucasus), in the Southwestern Azerbaijan, with an area of about 4,400 sqkm. Following the 1994 War, due to Armenian occupation of the hilly and plain territories around the region, on the border with Iran and Armenia, but also in the North and East, the separatist Artsakh Republic had come to control 41578,223 sqkm[13].

Azerbaijan's War Plan aimed at occupying these low-lying regions, closing the Lachin corridor – which is the only road connection between Nagorno-Karabakh and Armenia, isolation and falling of Artsakh. The fleet of unmanned aerial vehicles and the force of precise tactical ballistic missiles were launched into battle, destroying the fortified positions and military equipment of the separatists, so that five weeks after the beginning of the conflict, Azerbaijani troops were near the Lachin corridor and in the sixth week, Azerbaijani special forces captured the strategic city of Shusha, from where they launched mortar attacks on the region's capital, Stepanakert. Hostilities ended with a ceasefire agreement and the *de facto* victory of Azerbaijan, which retained control of the recaptured areas in Nagorno-Karabakh and also obtained transport communications to Nakhichevan, its exclave, from the immediate vicinity of Turkey and Iran[15]. Nowadays, along the Lachin strategic corridor between Armenia and Nagorno-Karabakh, Russian peacekeeping troops have been deployed (see the map in Figure no. 1).

Following this escalating episode of the "frozen" Armenian-Azerbaijani conflict, the separatists lost more than 185 tanks (out of a total of 400 in Armenia) as well as numerous artillery pieces, air defence systems, missile launchers and infantry fighting vehicles[16]. It was the first war won, mainly, by unmanned aerial vehicles – unmanned aerial systems (UAVs). "The first postmodern conflict ... in which drones overwhelmed a conventional

Figure 1 *Political map of the Nagorno-Karabakh region on December 1, 2020*[14]

ground force, grinding it to impotence and paving the way for Azeri ground forces to move and take control of a strategic chokepoint"[17] as it was stated by military analyst Uzi Rubin. And an electronic warfare, which blinded Armenian radars, thus facilitating their destruction and the destructions of the anti-aircraft batteries. A war in which Yerevan was "out-fought, out-numbered, and out-spent"[18]. A real postmodern war, in which every action was filmed and transmitted in real time by the attacking UAVs.

As for the victory, it was not at all surprising, if we take into account the discrepancy in power between the two states, Azerbaijan being three times bigger[19], three times more populated[20], more economically efficient[21] and much richer in resources, especially energy, than Armenia.

Yet, it was an extremely surprising victory by the way it was obtained.

Basically, the war was won from the air and not on the ground, where the advance was by no means a *blitz-krieg*[22], confirming a geopolitical theory that was launched in the 1940s, belonging to a military man and businessman, American of Georgian descent, Alexander de Seversky (1894-1974). Seversky said that military strategy, defined as "the general plan that defeats geography to apply military force against the enemy" cannot be fully applied outside air power, "the supreme expression of military power". Therefore, air superiority is the condition for winning a war with minimal human and material casualties, as "today's air vehicles, airplanes or ballistic missiles, whether manned or not, can rise directly from their national bases and can hit any target in the world [...] today, the air force is the only strategic force and is the main instrument of national military power"[23], consequently, the target of any nation that wants to win a war it must be "the domination of air and space above it"[24]. Or, in other words, *he who owns the skies, will own the ground*.

Air domination, this time, was no longer achieved conventionally, by manned aircraft and helicopters, visible on radar and vulnerable to anti-aircraft defence, but by a very complex system of UAVs, which:

- *ensured the surveillance of enemy troops* (real-time intelligence, surveillance and SRI reconnaissance),
- *misled the Armenian defence* by radar-visible biplanes, propelled by propellers and equipped for remote control, which blocked radars on false targets while attacks were launched with sliding bombs from Turkish UAVs Bayraktar TB2 and floating "suicide" HAROP drones of Israeli origin, which destroyed Russian mobile air defence systems of all kinds, from the old SA 8 Osa, SA 13 Strela 10, to the modern SA 15 Buk – the missile system that shot down Flight 17 of Malaysian Airline over eastern Ukraine, in 2014 – or S-300 surface-to-air missile platforms[25].

The one behind this victory was overwhelmingly the Turkish KORAL electronic warfare system, designed to block radar and wireless communications channels[26], which blinded radars, making it impossible to detect Turkish and Israeli drones. And, of course, the effort of Azeri special forces, that hardly fought against the separatists' fortifications.

And, it must be remembered that neither Azerbaijan nor Armenia used ballistic missiles against any target in the national territories, outside the conflict theater, out of the desire not to escalate and internationalize the war, although on July 17, 2020, Azerbaijan openly threatened to hit Armenia's Metsamor nuclear power plant with precision ballistic missiles[27].

The impact of the military confrontation in Transcaucasia on the way modern warfare is conducted

The recent Nagorno-Karabakh confrontation has revolutionized the way warfare is waged by:

- demonstrating the vulnerabilities of the conventional armament to the latest generation one. Consequently, the maintenance/acquisition of outdated weapons systems is totally counterproductive and costly;
- the need for an integrated air defence system (IADS) to counter modern air threats – meaning cloud combat. Such a configuration, with different layers of modern capabilities (long, medium, short and very short range) and well connected to the network, would allow better management of the plethora of challenges, from traditional aircraft and radars, to swarms of UAV;
- the fundamental role of electronic warfare in modern warfare;
- reiteration of the traditional air power doctrine that air superiority is a prerequisite for winning a ground war, revealing a new, more cost-effective and painless way to achieve it, through the disappearance of aircrew victims;
- certification of the radical transformation of the battlefield, in which unmanned systems and electronic "witchcraft" already operate;
- the fundamental role of the human factor, responsible for the strategic planning of defence and the capacity of a state to economically ensure its defence in a present dominated by an extremely rapid technological advance, which entails the need for a flexible military education system, based on creativity, analytical thinking and strategic thinking, adapted to the new realities of war;
- the fundamental role of scientific research in the military and civilian field, which, in the future, will make the difference between survival and annihilation;
- the overwhelming importance of alliances / coalitions, without which no state will be able to resist in the conditions of the current and future technological "sprint".

And, as an immediate consequence, in 2021 there was an increase in global demand for armed and unarmed UAVs and for offensive and defensive electronic warfare systems.

It should also be remembered that the success of the drone attack also depended on the weather, which allowed a good optical transmission. This raises the issue of geo-climatic tactical weapons and their role in countering UAV attacks.

And, last but not least, we must remember that, the current industrial revolutions behind this technological boom, bring upfront the need for new raw materials – the strategic ores – and new geopolitical stakes. Which means new and new areas of confrontation and even greater volatility of the international environment.

These aspects confirm that the war of the fifth generation is a certainty that no longer belongs to war games and anticipation, remaining only a matter of time, not at all that long, until war reaches the next level, the sixth generation, when android robots and the transhuman man face off in theaters of operations.

How prepared will all of us be then? It remains to be seen.

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