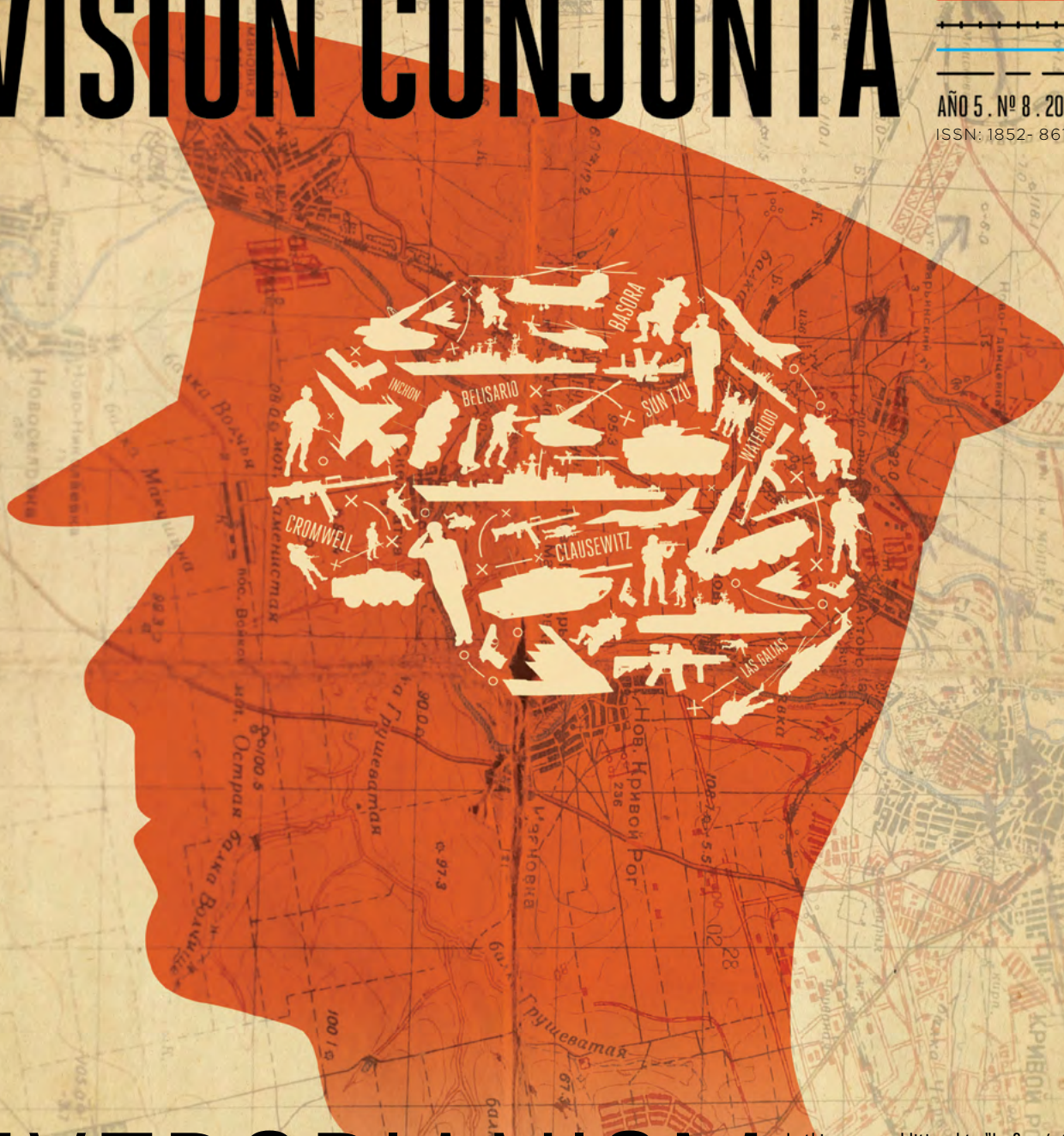


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EXTROPIANISM

In this essay, additional to "La Semántica del Caos", there is a methodological division of the levels of war, a related set of linked ideas simple to analyze, convenient for planning and practical in executing operations.

By Evergisto de Vergara

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03 By Alejandro Kenny

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CONSTANTINOPLE**
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OUR ICON

Our icon is the famous Rubik's cube decorated with the colours of the Argentine flag and the coat of arms that identifies the *Estado Mayor Conjunto de las Fuerzas Armadas Argentinas*. We have elected this ingenious mechanism for our journal as it is the visual representation of the complex joint actions.

The image shows the challenge to combine in a harmonic way the elements that are part of the Armed Forces to achieve an efficient use of military instruments.

The proper use of the forces allows to set, at the same level, the coat of arms of the *Estado Mayor Conjunto* which implies a mental process to combine variables in a very complex setting.

In order to be successful as to the situation raised, it is necessary to have a broad mindset that allows to have a general perception of the target to be achieved; this defines our "joint perspective".



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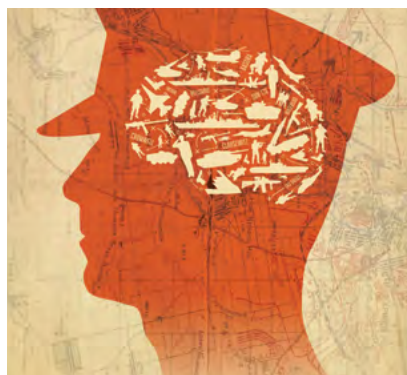
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MESSAGE FROM THE DIRECTOR¹

On July 8, I became the Director of the Escuela Superior de Guerra Conjunta de las Fuerzas Armadas, and was aware of the challenge I had to face, the responsibility of directing this Higher Education Institute recently created.

This work seems to be thrilling. We will continue the path that the Brigade General, Juan Manuel Durante started, who set the project and goals to be achieved and which was continued by the Rear Admiral José María Félix Martín seeking academic excellence.

The stamp of the legacy we have received calls us to work in teams in order to maintain our progress in which the input of each Force integrates in an ambitious educational proposal for our students and community. I am fully persuaded that the sum of the parts is more than the whole.

The maximum exploitation of the characteristics of thinking structures of each Armed Force presents us with the opportunity to grow in different horizons that widen our capacity to estimate and solve highly complex situations.

Our commitment, as arms men, puts us before the need to train ourselves in the systemic professional thinking.

By means of understanding this mind perception and our training as soldiers, we will be able to advice with intellectual freedom and to act with service vocation.



It is necessary to reach this and getting each member of the organization involved will be a success factor. The educational project is a single one; the actors that carry it out are all and each of us: officers and petty officers, retired personnel, professors, civil and hired staff.

As Director, I have the responsibility to manage this Higher Institute with all its implications.

I call upon everyone to continue our way for the own good of our students who are the spirit of this Institute and

who are the reference for our actions.

The journal *Visión Conjunta* is a tool that aims at the training of professors and students, both in personal and professional aspects. It will provide us with tools that will favor intellectual, kind and positive discussion.

We look forward to receiving concerns and suggestions of our readers that will contribute to get the excellence we pursue.

1. Colonel Major Federico Sidders.

THE CASE "A.R.A. LIBERTAD"

By **Alejandro Kenny**

On October 2, 2012, a judge from Ghana –pursuant to the laws of this country– ordered to seize the frigate A.R.A. "Libertad" in the port of Tema.

THE SITUATION

On October 2, 2012, the frigate A.R.A. "Libertad", a training ship of the Argentine Navy, was seized as ordered by a judge from Ghana in the port of Tema where it had arrived with the cadets of the last year of the Army School in their training voyage.

By means of a 20- page judgment, which seemed not to have any error, the judge did not even question the condition of warship of this frigate, but his interpretation did not consider the importance of its immunity under these circumstances.

The Argentine Administration, after having verified that the government of Ghana could not influence the decisions of the Ghana courts and that it was not an issue that could be dealt with by the Security Council of the United Nations,

resorted to the International Tribunal for the Law of the Sea based in Hamburg. And this was the right decision.

INTERNATIONAL FORA

The International Tribunal for the Law of the Sea- created in 1996 as a stage for solving disputes arising from the application of the Convention of the Law of the Sea of the year 1982- established the Case "ARA Libertad" (Argentina v. Ghana). This was the last of the 20 cases dealt with by the Tribunal. Although there was some hope because Ghana and Argentina were signatory countries, there was no certainty of success.

Why was this issue not simple? After some unsuccessful diplomatic negotiations, on October 30, 2012, Argentina informed Ghana that it would resort to the International



Tribunal for the Law of the Sea. On November 14, our country presented a motion for injunctive relief. First, the Tribunal had to admit that they had jurisdiction over the case, but the strong arguments of Ghana presented by their Legal Counsel –from one of the best lawyers’ buffets from London– expected the Tribunal to decline.

The Argentine representatives, also, stated that the sovereign immunity of warships had to be acknowledged even in the internal waters of a country. The regulations about immunity of warships, as established in Part II “Territorial Sea and Adjacent Area” of the Convention of the Law of the Sea, seemed to favor Ghana.

But, *prima facie*, the Tribunal acknowledged its jurisdiction and duly interpreted; stating the prevalence to custom law which states, the sovereign immunity of warships established in Article 32 of the Convention, that it does not exclude internal waters².

THE RULING

The ruling issued on December 15, 2012 held the release of the frigate as provisional measure under no conditions. Arbitration was pending but, in this case, curiously, the

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provisional measure is more important than the ruling on the subject matter of the dispute.

This ruling is historic for several reasons. First, this case was solved unanimously by the 21 judges that ordered the provisional measure, as it was required by one of the parties³. This has been unprecedented in the Tribunal for the Law of the Sea. Even the ad hoc judge from Ghana who is a member of this Tribunal ruled accordingly.

Moreover, the ruling constitutes doctrinaire background which, in general, strengthens the concept of sovereign immunity of warships. This also implies that the international acknowledgment of the sovereign immunity of the ARA Libertad Frigate as warship has been shown.

But the Navy has an additional role that is sometimes put sideways. The Navy, such as the Navy from the Argentine Republic, has to safeguard, by being present in the sea, freedom of navigation. This is so because in South America, we are an edge country and we are closely related to the sea, a fruitful source of resources that have to safeguard a maritime hemisphere par excellence. Presence in the sea gives rise to the exercise of a right that is one of the best ways to make it be acknowledged.

And the Frigate, although it did not totally comply with its previous mission related to the training of naval officers, could comply with another mission which is even more significant in historic terms. It contributed to clarify and explain the concept and scope of sovereign immunity of warships and their corollary, which is simply the strengthening of the concept of freedom of navigation as stipulated in the Convention of the Law of the Sea, by means of the right to innocent passage in the straits used for international navigation, right to innocent passage and passage through archipelago maritime ways and freedom of navigation in the exclusive economic zone and the high seas⁴.

The cause of the release was the result of the serious work carried out by a truly professional team from our Ministry of Foreign Affairs which led to the detention order to be revoked at an international stage.

Therefore, thanks to the ruling that ordered the release of the ARA Libertad, its future presence in the sea and any port in the world cannot be questioned.

REFEREED ARTICLE

1. United Nations: Third Convention of the United Nations on the Law of the Sea of 1982; Part II, Section 1, Subsection C, Article 32: Immunities of warships and other government ships operated for non-commercial purposes.
2. United Nations; International Tribunal for the Law of the Sea; "The "ARA Libertad" Case (Argentina v. Ghana). List of cases 20, Request for Provisional Measure, ruling in English and French dated December 15, 1982; Hamburg; Germany; paragraph 37: Considering that therefore the Tribunal, before prescribing provisional measures under article 290, paragraph 5, of the

Convention, must satisfy itself that *prima facie* the Annex VII arbitral tribunal would have jurisdiction. 94: "Considering that, in accordance with general international law, a warship enjoys immunity, including in internal waters, and that is not disputed by Ghana.
3. United Nations; International Tribunal for the Law of the Sea; Op. cit; paragraph 108.
4. United Nations; United Nations Convention on the Law of the Sea of 1982; articles 17, 38, 45, 52, 53, 58 and 87.

OPERATIONAL ART

A NEW APPROACH TO OLD AND SUCCESSFUL CONCEPTS ON HOW TO DO WAR

By **Omar Alberto Locatelli**

By means of questions, the author presents us with an operational commander in light of the need to respond at strategic level regarding the core issues of the operational art: the operational design. In order to do this, he takes into consideration the ideas of the analysts of military art who have proposed a dynamic thought throughout history that allows to get victory.

ORIGIN

How is a war won today? This is a question every operational commander asks himself when taking responsibilities ordered at Strategic level. This makes him put into practice what policy imposes as a need to finish military actions in a language that can be understood by the lowest levels of the Tactic.

This commander will arrive to the conclusion that he will have to win more combats than those posed by the opposite will. That is, planning and foreseeing a higher number of imponderable situations to unbalance in a better way the ones foreseen by the adversary as a way of being more severe both in thoughts and actions.

In the words of Clausewitz, we can find two activities: *to prepare and lead, in a separate way, the encounters and combine ones and the others to reach the Purpose of war*¹. In simple words, the first part is called Tactic and the second one is called Strategy.

The Operational level builds up its strategy by combining the results of tactical combats to achieve the operational end state. The Operational Strategy links the Strategic level with the modes of the Tactical level by means of the resources of the Operational level.

This new way of combining Ends, Modes and Resources is called Operational Art, which is understood as a creative activity which relates the Operational Commander, their Joint Board and their Subordinate Commanders to design Campaigns that combine the Elements of the Operational Design (EDO, in its Spanish acronym)².

1. Clausewitz, Karl Von- De La Guerra- Book 2, Chapter 1, page 72. Editorial Distal. Buenos Aires. May, 2011.

2. Estado Mayor Conjunto de las Fuerzas Armadas; *Manual de Estrategia y Planeamiento para la Acción Militar Conjunta; Nivel Operacional; La Campaña*; MC 20-01; Buenos Aires; en revisión 2013; Cap. III; p. 39.

It simply implies preparing and combining the encounters in a better way than the will opposed, according to the current needs imposed and the uses at that moment. It still is the continuation of Politics *for* and *with other means*.

EASTERN WAR ART

This operational commander already knows that he has the Operational Art to win the war. But he goes beyond this and asks himself how they select the war target by adapting this to what is required at strategic level.

What is the most adequate operational form to fulfill the strategic purposes with the usual scarce tactical means they have?

If we take into consideration the first military philosopher Sun Tzu (544-496 BC), we will see that his War purpose was victory³, an obvious conclusion easy to be expressed but difficult to be implemented. This philosopher considered that in order to get victory, it was necessary to make a proper use of the Art of War (current operational art?).

He lied on five constant factors that prevail on the battlefield: moral influence, time, land, commander and doctrine.

Beyond the first considerations, which are usual for any situation analysis, he also reached doctrine understanding it as the organization of their troops in their correct divisions, the classification of ranks among officers, the maintenance of roads through which supplies could be taken to the army and military expenses.

According to Sun Tzu, the purpose of War was victory. He considered that in order to get victory, it was necessary to make a proper use of the Art of War. He lied on five constant factors that prevail on the battlefield: moral influence, time, land, commander and doctrine.

If we make an analogy, we can interpret the organization of divisions such as the determination of the main and secondary Operational Efforts, which are understood as the application and/or concentration of means, force or effects in a certain place and time in order to get a favorable result⁴.

The classification of the ranks of officials may be understood as the determination of the different commands and subordinate commands that are necessary to carry out their duties in the campaign.

The maintenance of roads for supplies and military expenses may be understood as the setting of the Operations Lines, which refer to the set of actions that are related to each other and dependent from one another, the execution of which will allow to reach the Decisive Points that will lead to the Center of Gravity⁵.

The Operational Art stems from its eastern origins.



THE FIRST ROMAN CAMPAIGNS

This operational commander already has an idea of how to select their War Target materialized in a Center of Gravity (CDG, in its Spanish acronym), which is understood as a group of characteristics, skills and sources of power from which a system (nation, alliance, military force or any other group) gets their freedom to act, moral or physical strength and will to act⁶.

He still needs to decide how to structure their campaign. He keeps researching in history and gets to the Romans who show the necessary union of war and politics⁷, when subordinating military actions to the needs of the Empire: to keep borders far from Rome to expand their territories and secure the center of power.

This is perhaps the first occasion in which, without being unaware of it, they tried to affect the Center of Gravity of the enemy by protecting their own.

To do so, Hadrian established in his first orders⁸ that the initial problem was to know the troops as well as possible, not only as to their number, but also as to *their value*. The second thing to consider was to get information about the type and activity of the forces gathered by the enemy, information obtained through *explorers* and *speculators*; and centralized by the *consilium* of the emperor and the *officium* of each commander.

In third place, it established how to be sure of logistics in order to decide later where the meeting would take place.

Finally, it gave priority to the battle order of their troops to reach a better performance in the operation pursued. The main factors to be balanced were speed and security.

To summarize, the question to be solved was in what order to arrange infantry and cavalry, legionnaires and assistants and, above all, where to put baggage⁹.

The Campaign implied displacing an army and then making them go into combat. This is, in general, what today is understood as campaign: a series of operations attributed to magnitude forces that carry out strategic, operational and tactical actions to get strategic and operational targets in a given time and space¹⁰.

THE NEW PACE TO MAKE WAR

Having made some more research to comply with the

requirements of the conflict, this operational commander found that, according to Marcus Tullius Cicero, as commander should have the four attributes of a general: military knowledge, courage, authority and good luck (*scientiam rei militaris, virtutem, auctoritatem y felicitatem*)¹¹. So, in order to continue increasing his *scientiam rei militaris*, he found that the evolution of the military thought of that time (described by Procopius during the 5th century in the book Wars) could lead to defeat the enemy with care through maneuvers that do not contribute to a direct encounter¹².

This Commander concluded that the fact that the approach within the **Operational Maneuver** may be Direct or Indirect understanding it as such when it is directed to the Center of Gravity of the enemy or when it focuses on the **Critical Vulnerabilities** to turn them into **Decisive Points**¹³, is not a finding of the current Operational Art.

Belisarius, oryphoroi¹⁴ of Justinian, showed that with scarce resources and movements that did not attack, it was possible to make conquests, such as the ones that gave Rome the territories of Northern Africa, Italy and Southern Spain back¹⁵.

His determination to find the sensitive point of the enemy (**Critical Vulnerability**, maybe?) shown in the improper equipment of the infantry at that moment, led him to exploit the weakness discovered (**Decisive Point?**) when increasing the strength of a new weapon that made the form of war evolve in the coming times: cavalry. The

This new way of combining Purposes, Means and Forms is called Operational Art, which is understood as creative activity which relates the Operational Commander, their Joint Board and their Subordinate Commanders to design Campaigns that combine the Elements of the Operational Design

3. Sun Tzu – The Art of War – Chapter II – Page 28. Estaciones Editorial – Buenos Aires – July, 1992.

4. Manual de Estrategia- Op.cit. – Chapter III – Page 69.

5. Manual de Estrategia- Op. Cit. – Chapter III – Page 58.

6. "Manual de Estrategia"- Op. Cit. – Chapter III – Page 47.

7. Goldsworthy, Adrian – "Grandes Generales del Ejército Romano" – Chapter 16 – Page 441 – Editorial Ariel – Barcelona – 2006.

8. Le Bohec, Yann – "El Ejército Romano" – Chapter IV – Page 147 – Editorial Ariel – Barcelona – 2006.

9. Le Bohec, Yann – Op. cit. – Chapter V - Page 175.

10. "Manual de Estrategia"- Op. cit. – Chapter III – Page 37.

11. Goldsworthy, Adrian – Op. cit. – Chapter 7 – Page 196

12. Goldsworthy, Adrian – Op. cit. – Chapter 15 – Page 419

13. "Manual de Estrategia"- Op. cit. – Chapter III – Page 68.

14. *Doryphoroi: member of a section of the military house who lived at the expense of the emperor in order to receive physical training to be an officer.*

15. Liddell Hart, Basil – "Estrategia, la aproximación indirecta" – Chapter IV-Page 88 – Editorial Circulo Militar –Buenos Aires -1984.

speed in the way of combating introduced the concept of pace to be given to operations.

According to the type of enemy to face in the battlefield, different types of troops were used (from light infantry to heavy infantry, armed with arch and spear and protected with a *bucellari*¹⁶ armor of Belisarius).

Our operational commander concluded in the need to know how to allot tempo to the different stages of his campaign, which is understood as keeping a constant pressure over the opponent and, thus, creating new problems before they can solve the previous ones¹⁷. More than a simple indication of movement or speed of movements, it is an indicator of the necessary speed to keep the initiative and get a significant advantage that can give freedom of action.

The operational commander started to combine more ideas to turn their operational form into a self-sustaining campaign.

THE IRREVERENCE OF TACTICS IN THE MEDIEVAL STRATEGY

The operational commander saw that his organization problems were not new. Trying to get means has persisted in time, as it was the turning of feudal armies from the Middle Ages to the royal from the early Modern period.

The lack of means of feudal armies led to the search of new techniques (tactics) and new arts (strategies) to face the challenges of that time.

The evolution of the different types of cavalry from light cavalry to the heavy *catafracta*¹⁸, which were indestructible

until that moment, sought for a new type of combatant to face it: the archer.

Combat procedures were shaken by the irreverence that small, mobile and well- disciplined forces successfully faced huge and heavy cavalry and infantry formations with different pace of movement and combat. The Agincourt battle (October 25, 1415) was one of the first examples of the successful and creative confrontation between English archers and French cavalries¹⁹.

The way new designs are used allowed to combine mobility with the occupation of important strategic points both to assure lands conquered and to prevent the reconquest of them.

Edward from England was one of the first who built castles in key places and connected them through safe roads²⁰ to break the enemy that was in continuous movement through combined attacks of cavalry with archers while he protected their own center of gravity.

The new thinkers and commanders will have to use their wisdom to implement the campaign modes with the usual scarcity of means and the permanent uncertainty as regards ends.



He may not have known it, but he was able to find the skill to act within a distance that is compatible with the magnitude and support in order to get a decisive point, which is nowadays known as operational approach.

Moreover, he took into consideration the operational approach, understood as the arrangement and synchronization in time and space of movement, actions and effects of subordinate commands to carry out the campaign.

This operational commander arrives to the conclusion that simultaneous or sequential operations do not necessarily derive from the current Operational Art but they were the need that the great strategists from the past had and, also, from the current logics of each moment.

THE APPEARANCE OF THE FIREARM

The Strategy of strong points became relevant during the battles of the Middle Age making the *strategos*²¹ of the moment comfortably defend the places for the stockpile of ammunition as a certain success factor without worrying about the wars to come.

This operational commander, considering that defense is only a status to get to the offensive, seeks for the reasons of the influence of gunpowder in the attacks of the Modern Age.

The appearance of gunpowder in the combat and its consequent evolution to firearms and the replacement of the pike with the bayonet led to the end of medieval wars and the beginning of modern wars²².

The infantry of the 17th century, which was diversified among pikemen, musketeers, fusiliers and grenadiers, joined in one infant armed rifles and bayonets. The combat technique of the moment started when the companies, formed in three lines, shot the enemy from a distance of 30 to 40 steps until the smoke of the shots could cover the load of the bayonets. The infantry “softened” the enemy so that the cavalry could load, with a saber in hand, and could end the encounter.

John Churchill, the next duke of Marlborough, was the one who taught that the strategy of passive defense must be replaced with a direct offensive showed in his campaign to go through the Netherlands and get to the Danube river in order to help Vienna relieve from the Frank- Barbarian threat. He added Turenne’s maneuvers and Cromwell’s tactics to the strategic examples of Gustavo Adolfo simplifying the organization in platoons and sections,

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taking the formation in columns of six lines to fire lines of three lines in which the first one shot, the second one could get ready aiming at the target while the third one could load their weapon.

Moreover, he made cavalry lighter with only three pistol loads so that they could have a saber in hand.

The campaign that ended with the Blenheim battle (August 13, 1704) was an example of an operational link that combined sequential operations in which even places for resting were planned with the enemy having no chance to affect their march. The operational pause, which was understood as the temporary stop of certain activities before the end of an operational phase or before reaching all targets²³, was decided beforehand.

The Operational Art of an operational commander was present once again.

THE ILLUSTRATION OF THE NAPOLEONIC MILITARY THOUGHT

Our operational commander, overwhelmed by so many definitions and analogy finally gets to the analysis of a period during which operational art blossoms and becomes similar to its thought.

16. *Bucellari*: cavalry soldier with scarce resources that looked for the protection of a boss to whom he rendered military services.

17. Manual de Estrategia- Quoted - Chapter III - Page 65.

18. *Catafracta*: a combined Word that means totally covered, closed or protected. It is a unit of heavy cavalry in which both the rider and horse carried armor.

19. Liddell Hart, Basil - Quoted - Chapter V-Page 119.

20. Joint Board of the Armed Forces; op. cit.; Chap. III; pp. 72 y 73.

21. *Stratego*: term used in Ancient Greece to refer to the General, Chief Commander of a land military body.

22. Laffin, John; Grandes Batallas de la Historia; Editorial El Ateneo; Buenos Aires; 2004; Chap. 11; pp. 152 y 153.

23. Joint Board of the Armed Forces; op. cit.; Chap. III; p. 72.

24. Peltzer, Juan Felipe; "Jomini & Clausewitz en la Doctrina Operacional Argentina"; Editorial Universitaria del Ejército Argentino; Buenos Aires, 2009; Chapter 1; p. 11.



1. Sun Tzu | 2. Marco Tullio Cicerón | 3. Belisario | 4. Karl Von Clausewitz | 5. Oliver Cromwell | 6. John Churchill | 7. Liddell Hart | 8. Martin Van Creveld

Clausewitz considers three elements that allow to fulfill the military target of imposing their own will: military forces to be destroyed, territory to be conquered and the will to subdue

This period is characterized by the turning of royal armies into national armies which leads to think about how to think and make war.

When reading Jomini and Clausewitz, the concepts mentioned before become clear and can be put in order²⁴.

He starts by simply understanding that, according to Clausewitz, war is an act of force to *impose our will upon the enemy*²⁵. He also understands that imposing our will upon the enemy necessarily implies destroying or disarming them taking this as a specific purpose of military action.

Moreover, he defines for the first time that war is *not only a political act, but a real political instrument, an*

*extension of his activity carried out through other means*²⁶.

For the surprise of this thoughtful commander, Clausewitz considers three elements that allow to fulfill the military target of imposing their own will: military forces to be destroyed, territory to be conquered and the will to subdue (almost identical to Sun Tzu's ideas). This statement is also the logical order to carry out actions for that purpose.

He starts to understand why strategy is the use of encounters to reach the purpose of war (end state²⁷). Later, he understands why war is an endless number of encounters which are subsequent or simultaneous and of different intensity²⁸.

The campaign appears to be defined as the *group of events which took place in the same and only war setting, adding that it also includes events related to it*²⁹. He, thus, understands the concepts of center of gravity, operational targets, critical vulnerabilities, culminating point efforts and operational lines both at the Strategic and Operational levels³⁰.

Notwithstanding the main evaluation, this operational commander takes, as Jomini and Clausewitz do, the highest reflection and leadership level of war is the political one³¹.

Martin Van Creveld identifies six main elements to be considered during war: tempo, main effort, surprise, combined arms, flexibility and decentralized command.

Once again, the elements of the operational design are present, understood in the same concept, with a different name but the same meaning.

THE CONTEMPORARY CONCEPT OF THINKING HOW TO MAKE WAR

Once the method of how to think about making war has been detected, this operational commander seeks for the most modern thinkers to contrast them with their *scientiam rei militaris*.

In this way, he reads Liddell Hart and finds in *Bases para la Estrategia* that Alternative Targets²⁵ must be planned to replace the original in case it is not reached with the subsequent political relation to said success (contingency plans, maybe²⁶). When studying the last conflicts, he adds the last change of armies to the method: from national to multinational³⁴ and, thus, the process of turning political decisions into tactical orders becomes more complex.

When getting closer to this century, he discovers William Lind who, in spite of being a Technical Commander, in his *Manual de la Guerra de Maniobras*, he uses three mind filters or reference points to think and act in military actions.

These filters are: mission- type orders, the main effort and the search for strengths and weaknesses which he calls “surfaces and gaps³⁵”.

Beyond the tactical aspects with which the two first filters are focused; the third one (strengths and weaknesses) is another way of expressing critical skills, requirements and vulnerabilities that will create the decisive points to materialize the operations of the tactical level.

One of the last military theorists, Martin Van Creveld,

in his book *The Transformation of War* identifies six main elements to be considered during war: tempo, main effort, surprise, combined arms, flexibility and decentralized command.

Once again, the elements of the operational design are present, understood in the same concept, with a different name but the same meaning.

It is even more affirmed when expressing that the art of strategy is to use strengths against the weaknesses of the enemy³⁶.

CONCLUSIONS

Victory is the art of continuing from where others have decided to stop.

In this historical review of different actors and actors of war, the purpose of war has always been present. The elements of the operational design, under different names and in different times, have continued showing their need to be used.

The goal was consistent with what the strategic level understands from politics and for this operational commander to be able to distinguish how to make Clausewitz *encounters* have the effect desired by the State. But it has not been easy to make ends materialize a due use of means through the most adequate modes.

It has always been crucial to make the person conducting the battle to clearly understand how it must be finished³⁷ according to what the society supporting it expects from their forces.

It has never been easy and Liddell Hart has written: *The time has come to update the review of the doctrine of the final or military goal in light of the recent experience and current conditions. It would be desirable to start said review based on a joint level, because there is today a dangerous disagreement about doctrine in each Force³⁸*. Any similarity is a mere coincidence. This task is very well marked.

New theorists and operational commanders must take advantage of their creativity to reach the campaign modes with the usual scarce means and the permanent uncertainty without forgetting Einstein's words: *perfection of means and confusion of ends seem to characterize our age.*

25. Clausewitz, Karl Von, op. cit.; Libro 1; Chap. 1; p. 19

26. Clausewitz, Karl Von, op. cit.; Libro 1; Cap. 1; p. 30.27. Clausewitz, Karl Von, op. cit.; Book 1; Chap. 2, p. 35.

27. Joint Board of the Armed Forces; op. cit.; Chap. III; pp. 43, 44 y 45.

28. Clausewitz, Karl Von, op. cit.; Book 4; Chap. 2; p. 153.

29. Clausewitz, Karl Von, op. cit.; Book 5; Chap. 1; p. 162.

30. Peltzer, Juan Felipe; op. cit.; Chap. III; pp. 120 y 130

31. Peltzer, Juan Felipe; op. cit.; Cap. IV; p. 153.

32. Liddell Hart, Basil; op. cit.; Chap. XIX p. 541.

33. Joint Board of the Armed Forces; op. cit.; Chap. III; p. 63.

34. Keegan, John; "El rostro de la Batalla"; Ediciones del Ejército – Servicio de Publicaciones del EME; Madrid 1990; Foreword; p. 22.

35. Lind, William; "Manual de la Guerra de Maniobras"; Editorial Circulo Militar; Buenos Aires; 1991; Chap. 2.

36. Van Creveld, Martin; "The Transformation of War"; José Luis Uceda Editor, Buenos Aires; 2007; Chap. IV; page 167.

37. Locatelli, Omar; "El Arte Operacional de Clausewitz en la Segunda Guerra del Líbano"; Journal *Visión Conjunta*; Escuela Superior de Guerra Conjunta; Year 3; N° 3; p. 11.

38. Liddell Hart, Basil –Op. cit.–Chap. XXI-Page 577.

SIEGE AND FALL OF CONSTANTINOPLE

The Mehmed Turks II were at the entrance of Constantinople, the symbol city of Byzantium and its fall meant the triumph of Islam over the most persistent and firm defender of Christendom for about 800 years. The fall of Constantinople, after which Mehmed would be called “the Conqueror”, was possible due to the sultan strategic perception. He understood that without the control of the maritime access to the city, little could be done by his powerful troops. Thus, land and navy forces were able to subdue a courageously defended place which, for centuries, had resisted innumerable sieges and blocks.

By Rubén A. Barreiro

THE SITUATION IN THE MID 15TH CENTURY

The decay of Byzantine was more than evident: in the territorial aspect, it only had the city of Constantinople and its adjacent territories of little extension which lie on the coast of the Black Sea and the Sea of Marmara; to the interior, it had domain over a few kilometres. In the Peloponnese, in the south of Greece, it kept the Despotate of the Morea, which, in theory, was under Byzantine control but physically separated by a vast territory under the domain of the Ottoman Turks. Some islands and small enclaves were still under the domain of the Empire, some in distant places, such as the Peninsula of Crimea in the Black Sea.

For the Byzantine, the 14th century was a period of political failure¹; this is why at the end of this century... Constantinople... was no more than a melancholic and decaying city, whose population had significantly declined from half a million in the 12th century to no more than fifty thousand.

On May 29, 2013, it was the 560th anniversary of the Fall of Constantinople in the hands of the Ottoman Empire. with this, doors were open to the centre of Europe and the consequences of this are still seen.

The author presents the war fact that led to this process and, at the same time, a broad scope for the analysis of said consequences, especially, in the aspects regarding geopolitics, strategy, sociology and culture

In light of this, the huge flood of Ottoman Turks took possession of great part of Anatolia (Asia Minor) and the Balkanic territories in the north, west and south of Constantinople. The city was surrounded.

In 1451, Sultan Murad II died in Edirne (Adrianapole) and his son Mehmed II, 19, succeeded him². Some time before, in 1449, the Byzantine emperor John VIII had died and Constantine XI Palaiologos was his

successor. Both of them were the protagonists of the final battle.

TO WAR

For Mehmed, the first and most important [of his obligations] was the conquest of Constantinople³. The desire of the sultan is not surprising: during the long fight between the Byzantine and the Muslim, the city had been sieged several times, as from 676, by Arabs and Ottoman. All of these attempts failed⁴.

1. Runciman, Steven; *La caída de Constantinopla*; Espasa-Calpe, Madrid; 1973; p. 12.

2. Seven years before, Murad had abdicated in favor of his 12- year son; however, and due to the discontent of ministries and the military with the new King, he had to take the throne again two years later although he had taken the control of the army before.

3. Runciman, Steve; op. cit., p. 47. During the winter 1452/53, the vizier Chalil visited Mehmed and gave him, as it was a tradition, some gold coins. The sultan rejected the present saying: "I want one thing only, give me Constantinople".

4. The Ottoman called the Balkan "Rume-eli" or Rumelia, that is, "land of the Romans". Both Mehmed II and his closest predecessors asked to be called Sultan-i-Rum, whose meaning could be "sovereign of the Romans" and have a connotation related to those who subjugated with the strength of guns. Muslims from the East often referred to the Ottoman as rumiyun, "Romans" (Nicolle, David et al., *The Fall of Constantinople. The Ottoman Conquest of Byzantium*, Osprey; Oxford; 2007; p. 174.)





Mehmet II

To the end of January, 1453, Mehmed gathered his ministers and persuaded them to authorize the war in order to conquer the city:

...He declared that the Turkish Empire would never be safe until they could take possession of Constantinople. The Byzantine could be weak, but despite having showed how well they could manage the enemies of the Turks and, due to their weakness, they could put the city in the hands of allies that would not be so inefficient. Constantinople was unassailable. The first sieges failed due to external reasons⁵.

Mehmed II, “who was an outstanding strategist”, carefully planned his future assault against Constantinople. He warned that the siege of the



Source: Author

city would only be successful if it included a naval component in their forces⁶. The sultan foresaw that his navy would have the main goal of preventing aid from getting to the people sieged and avoiding a fight against the Venetian war galleys that were prowling in the area⁷.

At the beginning of the year 1451, Mehmed had decided to build a fortress on the European coast of the Bosphorus. This fortress, in

coordination with the one existing on the coast of Anatolia (Anadolu Hisari)⁸, would serve two purposes: ensuring a free path from one side of the strait to the other and controlling the ships coming from Venetian and Genoese colonies of the Black Sea. Moreover, during the siege of the city, the fortress would be an impassable bastion so that aid could come from the east and the fleet would have to serve as those in the western accesses.

5. Runciman, Steve; op. cit.: p. 57.

6. Philippides, Marios y Hanak, Walter A.; *The Siege and the Fall of Constantinople in 1453. Historiography, Topography, and Military Studies*; Ashgate, Farham; 2011; p. 429.

7. As we will see, the crew of Turk vessels (most of which were Greek) was of lower quality than the potential enemies. This situation was understood by Mehmed and he knew they had to avoid those encounters.

8. In this area, the Bosphorus is around 800 meters wide.

9. The inhabitants of the city were alarmed with this construction. Emperor Constantine tried to

persuade Mehmed not to continue with it, but the sultan replied without leaving any doubt: He would do what he wanted to do *in a region that was under his control and concluded: I will skin anyone who dares to talk about this issue in the future.* The Byzantine weakness could be seen: in the construction, they used columns from a Christian temple and killed the inhabitants who tried to prevent that. Only Italians (Genoese, Venetian) could successfully be involved but they were not interested in the Levante issues and their indifference encouraged Sultan's imperialist plans (Philippides, Marios; op. cit.: pp. 403/404.)

10. Runciman, Steve; op. cit.: p. 15.

To the end of August, 1452 and after four months and half work, the fortress of Rumeli Hisar (“Rumelian castle”) was built (the Greeks called it *Laemocopia*, or *murderer’s castle* or, more precisely, *executioner’s castle*⁹). Any vessel passing in front of it on the Bosphorus had to stop to be inspected and had to pay a contribution; two Venetian vessels eluded the rule, but a third vessel got sunk due to the shots of three huge fortress cannons and its captain was impaled and left by the wayside.

Meanwhile, Emperor Constantine was still looking for support from the West, as his predecessor did. The question was, essentially, to try to unite both Christian churches: Roman and Orthodox. This, in other words, meant for Byzantium to abide by the Roman Church. But in Constantinople, *only politicians and intellectual men defended the union*¹⁰. For John VIII, Constantine’s older brother, only the western aid would save the Empire... *Only the western Church could make the West agree on the release of the East*¹².

However, the events showed that the West was not interested in saving Byzantium. The different kings *entertained themselves at home*¹³. Venetian, Geonese and Ragusans, who had different interests in the region, took care of the issue, but thought mainly about the defense of those interests frequently wondering whether they would be favoured

The Turk Army was trained in Thrace, in the west of Constantinople. Different authors disagree on the number of troops of this army. According to Runciman, the most reliable figure is 80,000 regular force men, apart from 20,000 bashi-bazouks and some thousands of assistants. One of the best known eyewitnesses, the Venetian surgeon Niccolo Barbaro says that Mahomet went to Constantinople with 160,000 men. Fuller says there were 50,000 men.

with the Turks by dominating Constantinople.

OTTOMAN FORCES

In light of this situation, Mehmed started a campaign against the city of Constantinople. He had gathered a powerful fleet with almost 130 vessels of all types as he knew that having domain over the sea would contribute to victory.

The Turk army was preparing in Thrace, in western Constantinople. There are very different figures regarding its number of troops: According to Runciman, the most reliable number is 80,000 regular force men, plus 20,000 *bashi-bazouk* and several thousands of assistants. One of the best known eyewitnesses in the area, Venetian surgeon, Nicolò Barbaro, says that Mehmed went to

Constantinople with 160,000 men¹⁴. Fuller speaks of 50,000¹⁵.

It was made up of three types of troops: the Janissary (“new troops or “new soldiers”), the *bashi-bazouk* and the men recruited from different provinces. The first of them, considered by Fuller as *the most fantastic fighters of the 15th century*, were between 12,000 and 15,000, a relatively small number and this may be why they did not have a decisive influence on the war¹⁶. In general, they were dismounted archers, who were highly disciplined, militarily trained since they were very young (they were recruited among teenagers and even kids), a standing force for the direct service of the sultan and those who were Christians were turned to Islam¹⁷.

The *bashi-bazouk* (which means “disorganized” or “airhead”) were

11. On December 12, 1452, in Constantinople, there was the union of the Catholic and Orthodox churches as a consequence of what was agreed in the Ferrara-Florence Council. Although the court and the nobles were part of the event, it was repudiated by the anti-union clergy and great part of the people. Lucas Notaras, last great Byzantine minister, was said to have a strong position: “We prefer the turban of the sultan to the cardinal’s hat”. Some time later, he was decapitated as ordered by Mehmed, together with his two sons.

12. Runciman, Steve; op. cit., pp. 20/21.

13. Frederick III from Habsburg prepared his Coronation; Charles VII from France was recovering after the Hundred Years’ War, as the King of England did. The monarchs from Castile were busy with their own war against the unloyal. Only Alfonso V of Aragon seemed to be interested but he demanded an excessive price, thus impossible, for the throne of Constantinople. (Runciman, Steve; op. cit., p. 49.)

14. *Giornale dell’Assedio di Costantinopoli*, 1453. Translated into English by John Melville-Jones *Diary of the Siege of Constantinople 1453*, New York: Exposition Press, 1969, partially available on the website <http://www.deremilitari.org/resources/sources/constantinople3.htm>. Runciman (62) says that this diary, without any extra information, presents the most probable description of the siege. The Turk return of this description is the one by Hermodoros Michael Kritovoulos, who was at the service of Mehmed and spent his last days in Constantinople (which was already Istanbul), as a monk (for the paragraphs related to the siege, see <http://www.deremilitari.org/resources/sources/constantinople4.htm>).

15. Fuller, John F.C.; *Batallas decisivas del mundo occidental y su influencia en la historia*; Luis de Caralt Ed.; Barcelona, 1961; tomo I; p. 579. Runciman remembers that the Greek estimated that the Turk army amounted to three to four hundred thousand men and that the most moderate among the Venetian made them amount to five hundred thousand.

16. Oman, Charles; *A History of the Art of War in the Middle Ages*; Burt Franklin; New York; 1925; vol. I; p. 342.

17. Delbruck, Hans; *History of the Art of War, Volume III, Medieval Warfare*; University of Nebraska Press; Westport; 1990; p. 474/475.

18. Fuller, John F. C.; op. cit.; p. 580.

irregular soldiers, *an undisciplined mob of Turks poorly armed and renegade Christians*¹⁸. Apparently, their pay was only the chance to loot conquered cities (according to Fuller, the Turk attack started with the call “loot!”¹⁹).

However, the most important force of the Turks was artillery, in which they trusted to get victory “spending powder and saving blood”. Mehmed had 70 cannons and bombards, although the main instrument was the *Basilica*²⁰, a huge iron bombard that shoot 800- pound ammunitions. Its inventor and constructor, Orban, from Hungary, had first offered his services to Constantine but he could not afford the price Orban requested and considered it excessive, especially because he did not have the elements to build it. It took forty two days, sixty oxes and more than two hundred men to take it from Adrianapole, an effort that did not have the expected result as after some shots, it burst and could not be used again²¹.

THE DEFENSE OF CONSTANTINOPLE

The first and most important defense of the city was, on the one hand, the characteristics of the terrain on which it was erected; on the other hand, the great chain of walls that protected



Basilica. 8 meters long. Diameter: 75cm. Weight of cannon: 18 tons. Weight of projectile: 544kg. Reaches 2 km.

it, both on the land and the marine access (see details).

This could make up, only in part as it is natural, for the small number of defenders. Under the order of the emperor, they amounted to only 5,000 men and 2,000 foreigners with few cannons and a small fleet²².

Although most of the Christian sovereigns, as explained, chose to be silent upon the Bizantine request, there were foreigners who were actively involved in the defense of the city²³.

First, Venetians, whose colony in the city offered *unconditional support... to honor God and all Christianity*²⁴ and nine Venetian

merchant vessels that were in the port were turned into warships. Then, the Genoese, led by Giovanni Giustiniani Longo²⁵, were accompanied by seven hundred soldiers from Genoa, Chios and Rhodes. There were Catalans led by Peré Julia (consul) and some men from other nations. Others, instead, ran away: on February 27, about seven hundred Italians left the city in seven vessels.

THE SIEGE

The movement of troops and vessels of the Ottomans increased since January, 1453. To the end of March, Mehmed left Edirne and set his camp in Maltepe on April 2 (on Sunday 1, the distressed inhabitants of the city had celebrated Easter), while Constantine, without doubts of the coming attack, ordered to lay down the chain that blocked the entrance to Golden Horn, destroy the bridges that went through the ditches and close the doors of the city.

The plan of the Ottomans had some military considerations as guidelines:

1. Act quickly to get a decisive victory before there is a reaction from the West.
2. Spend gunpowder and money and save blood.
3. Use the huge cannons to destroy the walls of the city and the fleet to prevent the arrival of food and reinforcement.



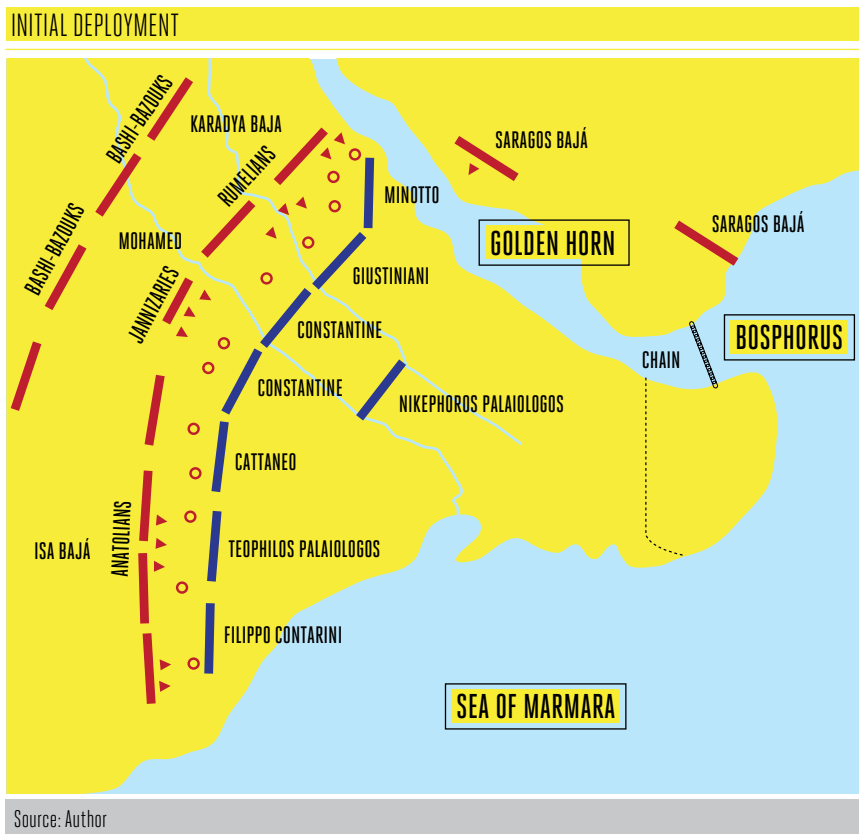
4. Take the city with as few material destructions and loss of inhabitants' lives as possible as these people would be the future subjects of the sultan.

Instead, the main target of Constantine was to cope with the siege as long as possible to give Hungary some time to prepare the land or sea intervention from Italy²⁶.

From April 4 to 6, 1453, the siege was started with the arrival and deployment of Ottomans in front of the city walls. Mehmed ordered half of his troops to move 1,5 km away from the outer walls and the next day a great part of the Ottomans were less than four hundred meters away from the defense. Byzantine troops had already been deployed in this defense.

To the right, the Turks deployed the Anatolians commanded by Muhmad Pasha and Isa Pasha; in the middle, the sultan with the Janissary and to the left, the Rumelian contingents commanded by Karabya Pasha. A thousand soldiers were sent to the opposite side of the Golden Horn from which a detachment was set to observe Galata.

Meanwhile, the Byzantine occupied the walls in the following order, from right- Golden Horn- to left- Sea of Marmara-: from the sea to Kerkpoporta, the Venetians led by Girolamo Minotto (they particularly defended the empire palace,



Blachernes); emperor Constantine and his Byzantine troops as well as the Giustiniani Genoese (to the right of Constantine) were in the area considered to be the most exposed, the one on both sides of Lycus river between the gates of Chasirios and Saint Romanos; from the gate of Saint Romanos to Reghium, there were

the Genoese troops led by Mauricio Cattaneo; then, Teofilos Palaiologos defended from the Reghium door to Pegac; from the latter to the Golden Gate, there were the Venetians led by Filippo Contarini. To the back of the sector defended by the emperor and Giustiniani, there was the reserve led by Nikephoros Palaiologos. On the

19. The Muslim tradition set some principles with relation to the conquered cities. If the city gave in, there would be no looting, but only compensation and the worship places would be respected. With some differences, this was applied to the surrender after an unsustainable defense. But if it was necessary to assault the city in order to conquer it, there would be looting for three days and the worship places would belong to the leaders of the winners who could do what he wanted with them (Runciman, Steve; op. cit.; p. 105).
20. During this time, cannons used to be given a name. For example, in the castle of Edinburgh, Scotland, one of them, *Mons Meg*, is still kept.
21. There are different versions about the reason for stopping the combat of the *Basilica*. While some say the event was due to a shot by Giustiniani's artillery, others think that it was an accident or an improper management of the impressive bombing by servants, who did not cool the cannon of the weapon. Whatever it was, the device was kept and is now shown at a Museum in Istanbul.
22. The census that Constantine ordered at the end of March, 1453, gave a small result as regards men

- who were apt for combat: 4.983 Greeks and less than 2.000 foreigners. The emperor, *afraid of the figures, ordered not to disclose them* (Runciman, Steve; op. cit.; p. 64.) The population of the city amounted to 40,000/50,000 people. The number of combatants was, according to authors, between 9,000 and 6,000/7,000 (Setton, Kenneth M.; *The Papacy and the Levant (1204-1571) The Fifteenth Century*; The American Philosophical Society; Filadelfia; 1978; p. 116).
23. The reasons for this intervention were different: ideas, defense of religious principles, fear of losing privilege and getting benefits, as among the most courageous defenders, there were mercenaries as it used to happen in those years.
24. Runciman, Steve; op. cit.; p. 62.
25. Giustiniani was an expert in the defense of cities surrounded by walls; therefore, he was immediately requested to take control of the city next to land walls (Runciman, Steve; op. cit.; p. 63).
26. Said reinforcement never arrived: three Genoese vessels sent by the Pope were stopped by a storm in Chios. On May 11, Venetians sent some vessels that could not arrive in time. Hungarians planned a sea attack on the Ottoman flank, which did not take place.

walls that faced both sea- sides, there were troops of different origin.

Since April 6, the city was bombarded during eighteen days although it is necessary to note that cannons were recharged slowly so there were no more than seven or eight shots per day and cannon²⁷. The first day, it seemed that victory was close for the Turks: one part of the wall was seriously damaged in the area where the channel that provided the city with water was on the side next to the Golden Horn; the next day, damages were increased but during the night, defenders were able to fill the gap.

Meanwhile, the efforts made by the Turks to force the way that was closed with the chain laid in the entrance of Golden Horn were unsuccessful. But artillery was used against the walls and these collapsed in some places. On April 18, the first of the main attacks took place in the area where Lycos entered the city. There, Mehmed attacked with several soldiers among which the Janissary Guard stood out. The fight was terrible and the people from the city were also involved. After four hours of fight, the Turks withdrew.

NAVY ACTIONS IN THE GOLDEN HORN

Since April 9, nine Venetian galleys were defending the entrance to the Golden Horn and the port that was there. The next day, great part of the Turk fleet arrived and anchored in the Bosphorus, 8 kilometres away from the city.

On April 20, 1453, the only naval battle related to the siege took place. As it was explained before, Mehmed,



Mehmed transported vessels by land (among the masts, the city). (Fausto Zonaro 1854- 1929).

who knew that the great number of his fleet did not make up for the low quality of the crew, had ordered not to start a combat. However, on the date indicated, four vessels approached the sieged city. They carried supplies, three of them were Genoese sent by the Pope and the fourth was a freighter led by an Italian that tried to enter the Golden Horn. Mehmed ordered to capture or sink the convoy and sent a great number of vessels. But, the western crafts were favoured by courage, climate conditions and the sea. The Turk fleet reached them and a fierce combat started and during this combat the Christian vessels seemed to be defeated, partly due to the strong tides that pushed them against the walls. But the wind, which was still until that moment, started

to blow favourably and they were able to reach the entrance to the Golden Horn, where after opening the chain, three Venetian vessels came to help and escorted them until they reached a safe port. In this way, Mehmed's fears turned real: Not only did the Christian vessels break the blocking but they also had few casualties. This may be due to the fact that European vessels were much higher and better protected than the Turk vessels and, especially, due to the lack of ability of the Ottoman crew²⁸.

It was clear for both sides that getting domain over the Golden Horn was essential. Mehmed, then, tried an audacious solution: avoid the chain that blocked the entrance to the estuary transporting ships by land from the Bosphorus. A road was built incredibly quickly by thousands of workers while the Turk artillery distracted defenders. The Turk vessels started to move pulled by oxes with the sails open. The Bizantine, on the other shore, saw that strange group starting to go down the slope that would lead them to the Golden Horn. Their desperate attempts to stop

27. Batteries were placed according to the walls points that were considered to be the weakest, specially the ones closer to the Golden Horn. Orban, the inventor of the Basilica, gave some advice with respect to this, using the knowledge acquired during his original relationship with the Byzantine.

28. The Bulgarian renegade, Balta Oghlu, admiral in charge of the Turk fleet was deprived from leadership by the angry sultan who gave him to his crew (rudely treated by him) to be punished. The nature of the punishment was not known but some versions agree that he was harassed in all senses (Setton, Kenneth; op. cit.; pp. 116/117).

The land and walls of Constantinople

The one- thousand history shows the wisdom of Constantine as he chose Byzantium as his new capital. He needed a place from which the emperor may exercise his authority over the South- East of Europe and Asia and from which the Danube and Euphrates rivers could be easily reached... there were few places to choose... but none that could be compared to the promontory Byzantium, in the entrance of the Bosphorus, in terms of strategic potential (Bury).

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Beyond the strategic importance of the situation of Constantinople, the geographic characteristics of the place give it a huge advantage in terms of defense against the attacks of possible invaders.

The city was surrounded by water in three of its sides: the so- called Golden Horn to the east and the Sea of Marmara to the south and north. The city could be accessed by land only through the west. The territory was like a triangle and was six to seven kilometres in its longest part and six hundred meters to six or seven kilometres wide. There were some hills of between 80 to 100 meters high and the Lykos river went through it.

The first wall was built by Constantine. It was three kilometres long and went from the Sea of Marmara (Proponeis) to Golden Horn.

During his kingdom, Theodosius II (408-450) decided to build a new wall taking into account that the growth of the city had turned Constantine's wall obsolete and it was necessary to extend the protected territory to the west.

The wall, known since then as the Theodosius wall or Theodosian wall had five parts. The main or inner part was 4.2 to 5 meters wide and 11/12 meters high. In this part, there were 96 square or octagonal towers which were 18 to 23 meters high, separated one from the other by 50/70 meters.

Between the main wall and the exterior wall, there was a free space, terrace or field (parateikon), of between 15 to 21 meters wide used for the movement of defenders and their eventual grouping in case of invasion by the enemy. The exterior part was thin if compared to the main part: it was between 60



centimeters and 2 meters wide and between 9 and 10.5 meters high. It also had 96 towers.

Between the exterior wall and the beacon scarp of the trench, there was another path for movement (peribolo) of 14 meters wide.

The trench was about 18 meters wide and it had a variable depth.

Apart from this wall that protected land access, several walls surrounded the city for protection purposes with respect to the attacks through the sea. They were more than 14 kilometers long and between 10 and 15 meters high and they had 300 towers.

Golden Horn was also permanently protected by a thick chain supported by pontoons that prevented the entrance through the Bosphorus. The edge that corresponded to Galata was in a tower from the years of Justinian in which a mechanism could stretch or loosen the chain, as it may be convenient.

On May 29, 2013, it was 560 years of the fall of Constantinople in the hands of the Ottoman Empire. Upon this event, the doors opened for expansion to the centre of Europe and the aftermath can still be seen.

The author presents the war event that gave rise to this process and, at the same time, a broad field for the analysis of those consequences, specially referring to geopolitical, strategic, sociological and cultural aspects.



the crowd and prevent vessels from reaching water were unsuccessful: part of the Turk fleet was already occupying the Golden Horn and, under their protection, Mehmed started to build a pontoon bridge so that his soldiers could reach the walls more quickly.

This situation had a significant impact on the development of the siege, while the Byzantine had to send reinforcement to the walls that were

on the side of the Golden Horn. Said reinforcement was taken from the main defense which became, thus, weaker²⁹. The Turks were able to avoid an attack with fire ships against the vessels that they were able to introduce in the Golden Horn, thus consolidating their presence although there were still some Venetian galleys in the area. The rest of the Turk fleet tried unsuccessfully to force the entrance that was protected with chains.

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ATTACKS AND COUNTERATTACKS

The courage and ability of the defenders, especially the ones led by Giustiniani, obliged Mehmed, in light of the possible failure of his artillery that caused damages that would soon be repaired to use another resource. This time, they did so by digging galleries underneath the walls with the purpose of weakening their foundations and using the excavation to get into the interior of the city. The defenders used to flood or fire the galleries when they found them. There were even some underground combats between opponents. As this means failed, Mehmed used a powerful mobile tower made of wood whose purpose was to protect those who worked to blind the ditch that surrounded the walls and which was seen as the main obstacle to destroy them although a great part of them were extremely damaged due to the bombing. When that purpose was about to be reached, the defenders were able to destroy the tower by blowing it.



The tactic of the sieged was to go out periodically trying to avoid a static defense. In light of the “dynamic tactic” of the sultan based on variable means, the defenders went out accessing the terrain between the outer wall and the ditch³⁰. They kept going out until the last days of the siege.

On May 7 and 12, the Turks launched the second and third attack against the defenders of the walls which were repelled after a strong fight.

To the end of May, hope was vanishing among Christians. On the Turk field there was also a pessimist and failure feeling. Siege was already seven weeks and in spite of all this, the strong Turk army

*with their great war instruments had not done much. Defenders may have been exhausted by that time with few men and little material and the walls of the city have suffered serious damage. But not even one soldier had gone through them. There was also the danger that some help could arrive from the West*³¹.

Finally, during the first hours of Tuesday May 29, 1453, a first group of Turks (*bashi-bazouks*) attacked the gate of Adrianople with the purpose of making the defenders tired and making them spend ammunition. This attack was repelled after two hours, but a second group of Anatolia troops that were more skilled and disciplined attacked taking advantage of the fact that defenders were exhausted although they were rejected by Giustiniani and two Janissary groups, about ten thousand of them were in combat. Giustiniani, who until that moment seemed to be the most successful, repelled one attack and another by the Turks, was seriously injured and had to withdraw from the battlefield and died some days later in Chios where he was moved³².

A fifth group of attackers finished the fight. Constantinople was under the Turks domain; they had killed more than four thousand people and there was looting and destruction of churches and libraries for three days. Emperor Constantine died defending the city in unknown circumstances. Several Venetian galleys and Genoese vessels could overcome the chain of the Golden Horn and fled to the west. Saint Sophie was dedicated to Allah.

This was the end of the millenary Byzantine Empire.

TO FUTURE

The fall of Constantinople meant for the Turks the platform through which they could reach the centre of Europe in an expansion that would finish in the outskirts of Vienna in 1683, after being defeated by the Holy Roman Empire and its allies. Said expansion had been the strategic and geopolitical target considered by the predecessors of Mehmed, who made it possible by means of his decisive conquer and later carried out by Suleiman the Magnificent³³. The Ottoman presence during more than centuries that said expansion lasted left some traces (nowadays rooted) in terms of culture, religion, ethnicity and linguistics, among others, in great part of Southern Europe.

But the fall of Constantinople also meant another expansion that is seen in the Bizantine legacy that was left to the western civilization. In Byzantium, there was a merger of the Hellenistic tradition (language, literatura, theology, worship) and the Roman tradition (law, military tradition, diplomatics, state supremacy)³⁴. Throughout the years and after its decline, Byzantium disappeared as a political institution but it had the traces of the symbiosis of the great traditions that, with the presence of the people who emigrated in 1453, had a powerful influence on the European Renaissance.

> REFEREED ARTICLE

29. To fix those failures, there was crew of the Venetian galleys led by Gabriel Trevisan, which could explain the indifference of these ships in light of the presence of Turks vessels that had reached the interior of the Golden Horn. It is evident that this was the effect sought by Mehmed with his daring movement.

30. Philippides, Marios; op. cit.; p. 497.

31. Runciman, Steve; op. cit.; p. 116. Among the Turks, there were those who fostered some kind of arrangement with the Christians and there were even some proposals to stop the siege.

32. Giustiniani became the key commander of the defense of Constantinople. While he controlled the operations, the city strongly resisted to Turk assault. Only after having been injured during the

last combat, he decided to withdraw and the city was then in hands of the Janissary (Philippides, Marios; op. cit.; p. 378). His withdrawal with a great number of his men, compared to his heroic performance was fiercely criticized by many of his contemporary men and led to a discussion among historians, which was never fully solved, although the almost immediate death of the Condottieri due to his injuries reasonably justifies his actions.

33. It cannot be said that the Ottoman purpose did not have a strong religious aspect based on the Muslim expression which, as a paradox and simultaneously, was being expelled from Spain after the long Reconquest path which started in Codavonga, eight hundred years before.

34. Baynes, Norman H.; *El Imperio Bizantino*; Fondo de Cultura Económica; México; 1951; p. 195.

EXTROPIANISM¹

In this essay, additional to “La Semántica del Caos”², there is a methodological division of the levels of war, a related set of linked ideas simple to analyze, convenient for planning and practical in executing operations.

By **Evergisto de Vergara**

Levels of war, referred to as levels of conflict in Argentina to include peace, crisis and war situations, is a way of organize linked and related ideas to understand the chaos, fog and friction of wars as a social phenomenon in which human nature is deeply rooted.

Worldwide, it is commonly accepted three or four levels of war. The category considered for this systematization is a relationship ends to means. In Argentina, four levels are taken: General or National Strategic level; Military Strategic level; Operational level and Tactical level. In some other countries the names may vary, i.e. Brasil names the National or General Strategic level as Political level, and the Military Strategic Level plainly as Strategic level. In other countries, only three levels of war are considered: strategic, operational and tactical as the general strategic level and the military strategic level are melted³.

Levels of war are related to their own strategy: general strategy; military strategy; operational strategy and tactics, meaning by the latter the strategy of means to engage each other. The way to understand this systemic concept is simple: the strategic level directs/drives and prepares the use of the armed component of national power while the operational and tactical levels implement/ operationalize that direction by planning and executing actions.

At the operational level, Campaign Plans, Operational Plans and Contingency plans are prepared; at the tactical level, Tactical Plans and Alternative Plans are prepared.

ENDS AND MEANS AT EACH LEVEL

Thus, for the systematization of thought, we can identify⁴:

From another point of view, note that ends at a lower level are means/effects at the immediate superior level.

As Clausewitz said “The activities characteristic of war

LEVEL	ENDS	MEANS
General Strategic	Obtain political ends	All components of National Power
Military Strategic	Obtain the desired military end state to contribute to political purposes	All military means of the nation
Operational	Obtain the desired operational end state within an Operational Area/Theater of Operations to contribute/support the desired military end state	Military means of the nation allocated to the Operational Areas/Theater of Operations
Tactical	To achieve victory (Clausewitz); to achieve results tending to obtain the operational desired end state.	Engagements

may be split into two main categories: those that are merely preparations for war, and war proper.⁵ Thus, Military Strategy deals with the use of military means of the national power, thus, it necessarily derives from a political direction. The working body of the Military Strategy is the Joint Staff responsible to provide the strategic direction, including:

- › A *military strategic concept* defining the nature of the estimated eventual future nature of conflicts to face, and the structure of forces required to achieve success. This derives into an Equipment Plan, a Peace Deployment Plan, a Mobilization Plan and a Support Plan for the short, medium and far term.
- › An employment concept, this is to say the contingencies – events that may or may not occur – which may require the use of the armed component of the national power. These are only assumptions for planning purposes at the operational level to start a planning process. Assumptions may include the Desired End State, expressed as



maximum or minimum conditions to be achieved, the tentative allocation of means; the estimated duration of war efforts, and the estimated political restrictions.

In addition to these concepts, the military strategy performs the following tasks: drafting of joint doctrine, carrying out joint training, implementing standardization among armed the armed forces for their joint action (compatibility, interoperability, interchangeability and commonality), deploy and withdraw troops from the Operational Areas or Theatre of Operations, and support the deployed troops during the war effort.

The Military Strategic level allocates means to the Operational level. Some units or elements coming from the Military Strategic under a Component Commander authority (Army/Navy/Air Force) are granted to the Theater of Operations Commander. There are some opinions which argues that the Army/Navy/Air Force Components do not belong to the Operational level, but to a “Superior tactical Level”. However, a logical sense indicates that a level of war cannot be a vacuum of means. It would be inconsistent for the operational level to have ends but no means. The purpose of the Operational level is maneuvering and applying resources to prepare successfully fighting/engagements.

At this level, maneuvers and logistics must get ready to establish fighting forces in the best conditions to achieve

Levels of war are related to the own strategy: general strategy; military strategy; operational strategy and the strategy of engagements, universally known as tactics.

victory. In order to do this, the operational end state to be achieved and the decisive points to get there must be established. There are ways to get the desired end state and are related to the decisive points. These ways link means and ends. Those links are called Lines of Operations. The key is to get means to be stronger at the decisive point when the fighting/ engagements are to take place. “The best strategy is always to be very strong; first in general, and then at the decisive point. . . . There is no higher and simpler law of strategy than that of keeping one’s forces concentrated.”⁶ This is shown in the Campaign Plan, throughout simultaneous or sucesive decisive points.

The Operational level is mainly a joint level because means of all armed forces [services] (Army/Navy/Air Force) are mixed in single joint organizations namely Subordinate Joint Commands, Task Forces Joint Command, Functional

1. “Extropy”: as coined by Tom Bell (TO Morrow) in January, 1988, defines the extent of a living or organizational system’s intelligence, the functional order, vitality, energy, life, experience and capacity and drive for improvement and growth.
 2. de Vergara, Evergisto; “La semántica del caos”, revista *Visión Conjunta*, Nro. 6; Escuela Superior de Guerra Conjunta; Buenos Aires; Argentina; 2012.
 3. Only for the United States, the strategic level includes Theater Strategy. This is so because this country divides the world into Unified Commands and the eventual Theaters of War and

Theaters of Operations are within these geography- based Strategic Theaters.
 4. There is no methodological inconvenience if General Strategic and Strategic levels are joined.
 5. Clausewitz Carl, *De la Guerra*, con prólogo de Howard Michael, Peter Paret, Edición de la Universidad de Princeton, Ed 1984, P. 127 a 147.
 6. Clausewitz Carl, *De la Guerra*, con prólogo de Howard Michael, Peter Paret, Edición de la Universidad de Princeton, Ed 1984, P. 177 a 204.

Joint Commands or even some Specific Commands might be organized.

To understand in depth a Campaign Plan, it must be understood that during a Campaign, planning and execution run simultaneously, therefore the Campaign Plan ends when the execution has been finalized.

THE PASSAGE OF MEANS FROM THE OPERATIONAL TO THE TACTICAL LEVEL

Nobody knows what may occur after two main forces engage each other at a decisive point. Therefore, it is required to complete the first Operational Plan up to the decisive point, and keep in mind the initial scheme of the full Campaign Plan until facts confirm or deny previous assumptions. The Theater Commander prepares or delegates the preparation of the first Operations Plan to a Subordinate Joint Commander/Commander of Joint Task Force – on geographic or functional basis – and according to the results of the fighting/engagements at the decisive point, joint elements are organized in Battle Order.

Thus, there is a grouping of means based on the tactical target- decisive point as it will require a confrontation or effect to be achieved⁷. This grouping of means – joint means – are subordinated to the Commander of the Theater of Operations. The full organization is called Structure of Command of the Theater of Operations.

The structure of the command of a Theater of Operations may use a series of options of Subordinate Joint Commands⁸. Some authors make a difference between a Subordinate Joint Command of a Joint Task Force depending on the duration of the operation. The Subordinate Joint Command is for long missions and the Command of a Joint Task Force is for shorter missions. They also differ in the logistic support:

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long missions may require a centralized logistic system, and shorter missions may maintain a single service support.

The structure of the Theater of Operations is prepared after having decided how the mission is to be carried out.

According to the situation, it may be structured as follows:

1. Component Command of each one of the Armed Forces [services]. These are the Army, Navy and Air Force Components. As they are part of the structure of the Command of the Theater of Operations, they belong to the Operational level, including the allocated service elements. A Component Command may be appointed as Joint Task Force adding means of other armed forces. This has the advantage that the command systems and communications already established and practiced are used, but this requires the communication and computing means to be standardized to operate jointly.
2. Subordinate Joint Commands, designed for extended periods, may require centralized logistics, or Joint Task Force Commands, for shorter periods, may require single service support. These Joint Commands might be based on geography or function, i.e. a Special or Amphibious Forces. Every Joint Command at the Operational level has Components Commands, coming from the Specific Theater Component Commands. Since these Components Commands subordinated at a Joint Command might mix forces of diverse services acting in the same geographical or functional area, they are not called anymore Army, Navy or Air Force Component, but Land, Maritime and Air Components. These Land, Maritime and Air Components subordinated at a Joint Command act are the tactical level.

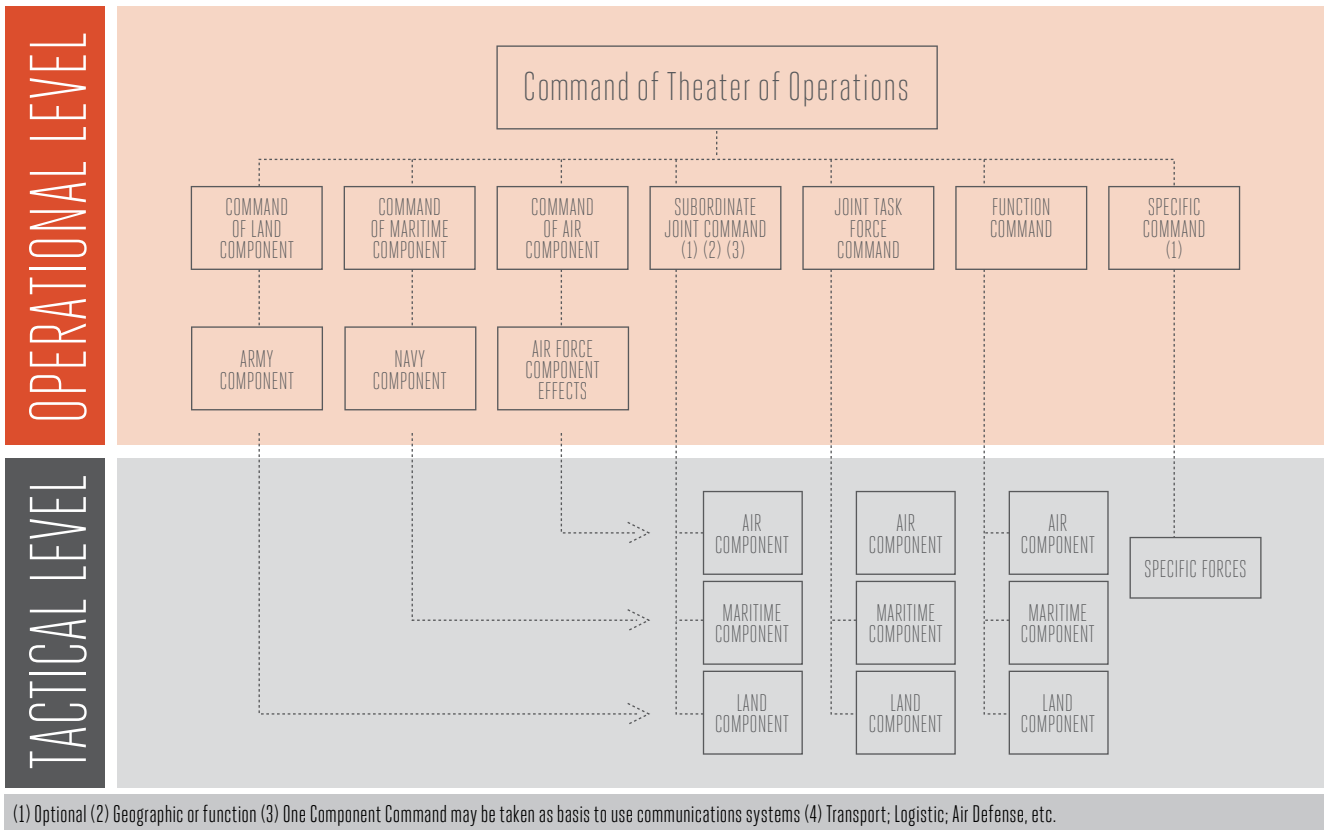
Be aware that The Air and Maritime Component may not deliver elements or hardware to Joint Subordinate Commands, but effects in air tasks or maritime tasks.

3. Function Command: It deals with Transport or Logistics in case a Centralized Logistics Command of the Theater is decided. It is necessary not to create centralized logistic superstructures that are not necessary and that can be replaced by a Logistic Control Center that assigns priorities.
4. Specific Force Command: This is when elements of only one of the armed forces take part in obtaining a target. This may occur in the maritime area.

The Component Commanders assigned to a Theater of Operations at the Operational level perform the following duties:

-
7. Confrontation: Means are not required to be symmetric, for example, troops against troops, ships against ships, planes against planes. Although they represent effects, conquering or defending a decisive point means a confrontation of wills.
 8. In other countries, this is called "Unified Commands" instead of "Joint Commands".

POSSIBLE STRUCTURE OF A THEATER OF OPERATIONS



- › Assign their means to Subordinate Joint Command/Joint Task Force Command/Function Commands as required.
- › Recommend the proper employment of their elements. If a decentralized logistics is decided, the Operational Component Commanders are responsible for the logistic support of the elements of their force deployed in the Theater of Operations; they also suggest changes in the logistic organization depending on the circumstances.
- › Get data from the Specific Intelligence of their Component. In this way they contribute with the Preparation of the Battlefield.
- › Anticipate all administrative requirements, combat support and services for combat support of their services.

Therefore, Component Commands of a Joint Subordinate Command/Joint Task Force Command/Joint Functional Commands, whether based on geography or function, perform their activity at the Tactical Level.

ARTICULATION AMONG LEVELS

The systematization of the levels of war or conflict is not to be considered as a dogma. In reality, boundaries are vague. This classification only pursues to order thoughts in a

situation of chaos and, in this way, facilitate the allocation of tasks and means to achieve them to lower levels.

There are linkers – commonly known as hinges – between one level and the other. At the National Strategic level, this linker is the Ministry of Defense, the working body of which is the Joint Staff. At the Military Strategic level, the linker is the strategic concept addressed to each of the armed forces for the design of its structure in times of peace and the concept of use addressed to the eventual Commanders of the Theater of Operations as an assumption of contingencies to start planning. This is called the Deliberate Planning process.

At the Operational level, the linker is a Subordinate Joint Forces Command/ Joint Task Force Command/Joint Functional Commands. These Joint Commands design the Battle Order of the Joint Force. Their Commanders get a mission (task + purpose) and translate it into objectives (Land Component), and functions or effects (air and maritime components).

CONCLUSIONS

Unified action is difficult and in the most developed armed



Military Strategy deals with the use of military means of the national power, thus, it necessarily derives from a political direction.

forces, it took several years to carry out joint action. Some examples account for this statement:

During the Persian Gulf War, there was not an only commander of land forces. The army fought its own war, the Marines fought theirs and Schwarzkopf has to harmonize all of this. During the invasion to Irak, there was an only land commander that was above all the land forces, including the allied troops and who directly reported to General Frank (CentCom). This was General Mc Kiernan who was head of the Coalition Forces Land Component Command (CFLCC)⁹.

When General Mc Kiernan was appointed Commander of the Land Component, he observed that the plan he was presented with, called “hybrid”, had little combat power at the beginning which could lead to a pause in the land combat and, also, the plan was unnecessarily complex. These remarks led to replace the invasion plan with a plan which was the one that was applied¹⁰.

General Frank ended by telling his commanders that

he expected to work together; he did not want to encounter the sort of friction and bickering between the Army and Air Force that had cropped up during the unsuccessful Operation Anaconda in Afghanistan, which left the services blaming each other for its failure. *“We are going to fight jointly, I want you and Buzz Moseley to eat with the same fork,” Franks told McKiernan. “The childish behavior we saw in Afghanistan will not be repeated. There is a long road in front of us, but we have the best team in history. Welcome to history. This ain’t no Kosovo. This is a real big deal because of you”.*¹¹

This is not dogmatism, but a problem of organization and efficiency. Saying whether something is written in a manual or regulation (or not) cannot be accepted as an excuse for defeat. Needs will indicate the best way to organize the Joint Forces at the Operational level, without attaching to any recipes. A war cannot be lost arguing that the Theater of Operations was organized as it was established in the regulations, commonly and mistakenly known as “the doctrine”.

Operation lines are structured on decisive points, whether physical, functional or psychological, in which the three armed forces take part under a unified command. It is necessary to avoid the tendency of every service carrying out its own war, with the only link of “coordination”. Coordination is not a Command Joint relationship. If so, it is easily deductible that the Theater Commander won’t have any authority to assign missions and tasks. Plainly, this is wrong; Lines of Operations are to be designed throughout decisive points, by employing joint organizations. The Theater Commander task is to synchronize lines of operations, and not single and isolated services.

This is what happens when the operational level of war is disregarded.

9. Gordon, Michael R. and Trainor Bernard E., General; Cobra II, The Inside Story of the Invasion and Occupation of Iraq; Pantheon Books; New York; 1st. edition; 2006; p. 93.

10. Gordon, Michael R. and Trainor Bernard E., General; op. cit.; p. 92

11. Gordon, Michael R. and Trainor Bernard E., General; op. cit.; p. 93

THE LOGIC OF OPERATIONAL PLANNING

This essay takes the last Argentina war experience as example and aims at applying the concept of effects to be achieved and the determination of the necessary forces for the Campaign as a useful method at the planning level which is applicable both in the military environment and others that are part of the conflict scenario.

By Patricio Justo del Niño Jesús Trejo



INTRODUCTION

Historically, war is simply a fight to death between two people. Today, the use of violence, significantly extended due to the dimension and magnitude of actors, must be adapted to more evolved and pragmatic concepts in which conditions to achieve cohesion and systematize the use of force are created since absolute victory is costly in human and material terms.

In this context, there is the operational level which attempts to articulate ideas with actions and to combine the different components of the military instrument for the development of the campaign.

World War II and conflicts that took place at the end of the 20th century showed its importance and, for our country, it was the operational level the one that showed the greatest failures during the development of the Malvinas War as it was not able to articulate a plan that integrates the different components in an efficient manner.

During the operational origin of the campaign, as in any military planning in general, the enemy is analyzed in first place. Then, they are linked to the geographical environment and the center of gravity while skills are determined taking into consideration what they can do. Subsequently, modes of action are prepared. Thus, they could follow a method but they must inevitably have logic and the one that best adapts to this level is the logic developed by complex thinking¹ and the general systems theory².

Complex thinking states that the analysis of a phenomenon may be carried out from two perspectives: holistic and reductionist. The first one refers to an analysis of the whole or multiple as a whole and the second one to the parts.

During the operational origin of the campaign, as in any military planning in general, the enemy is analyzed in first place. Then, they are linked to the geographical environment and the center of gravity while skills are determined taking into consideration what they can do. Subsequently, modes of action are prepared.

Moreover, the general systems theory allows for a broader and interdisciplinary analysis of the problem³.

ANALYSIS OF THE OPERATIONAL TARGET AND THE CENTER OF GRAVITY

In order to better explain and show the theory described in this essay with facts, we will take the Malvinas War as case study.

The first thing we have to determine during the analysis of the initial situation is the Operational Target that will be agreed upon with the strategic level. Then, the forces that are part of and which support said target are determined and, after this, the critical requirements that allow said forces to operate as a system are also determined. These will, inevitably, have weaknesses that will represent their critical vulnerabilities.

In this work, we aim at giving another perspective of what we understand as center of gravity and, in order to do this, it is important to remember the military origin of the expression which relates to the use

that Clausewitz gave it in the military arena and which was an adaptation from the scientific paradigm of the age.

Clausewitz, who was contemporaneous with Napoleon, was a great observer who could summarize the military ideas of his times. This was determined upon the rapid gathering in the place and the right moment and determination of the Center of Gravity of the enemy (a concept that has had different interpretations since then) to apply forces and to be able to destroy it by means of a decisive battle.

This conception was influenced by innovative mechanical and physical principles spread by Newton principles⁴, since the 18th century, with which there was some consensus as to the way to start and solve battles in the military arena.

However, if we say that the origin of war, from a Judeo-Christian perspective, lies on the single battle between Cain and Abel, then, in order to understand its logic, we must start by analyzing psyche and the forces that are part of the group of each

1. Theory developed by Edgar Morin, French philosopher and sociologist, born in Paris on July 8, 1921.

2. Theory attributed to Ludwig von Bertalanffy, Austrian biologist, who coined the name in the mid 20th century.

3. Cornut, Hernán; "El Pensamiento Sistémico como marco conceptual de la Acción Militar Conjunta", *Journal of the Escuela Superior de Guerra del Ejército*; N° 578; May-Aug 2011; p. 31.

4. Theory expressed by Edgar Morin, French philosopher and sociologist, born in Paris on July 8, 1921.

fighter during a battle in order to get conclusions that may be applied in a general way to modern conflicts.

The purpose of war, considering its origin, is to destroy the intention of fighting of the enemy and to make them subjugate, whether by means of getting their forces exhausted or affecting them psychologically, so that they cannot continue the battle.

In this context, it is necessary to analyze what the Center of Gravity is, where it is located in the human body and how it performs during a battle.

The Center of Gravity, in the human body, is a non-material point subject to modifications. It is determined by the convergence of all forces that interact in it; in this sense, it changes its location according to the movements each fighter makes during the battle.

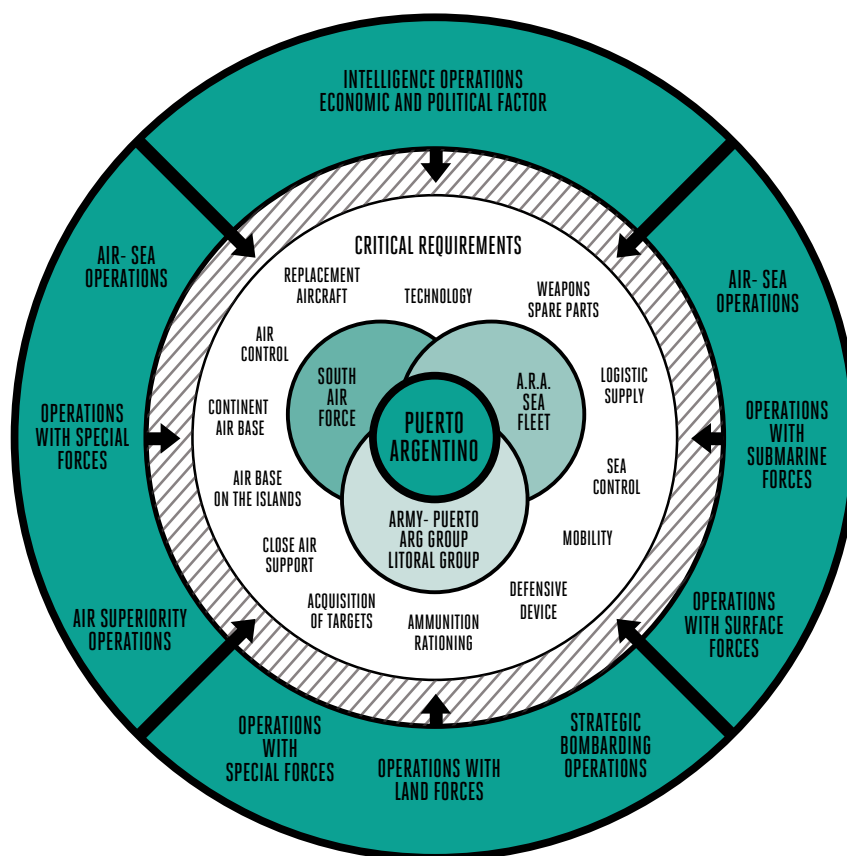
Taking this into account, the purpose must not be to directly attack the Center of Gravity, but the critical needs and requirements that allow the forces that support said Center of Gravity to act as a system.

In war, we must act by analogy to how a battle between two men develops. During the conflict, the Center of Gravity may vary its location and it may sometimes be more supported by one force and, some other times, by another one. It will be the main and key responsibility of the operational commander to determine the key requirements to take in each stage of the campaign in order to be successful.

DETERMINATION OF THE SKILLS OF THE ENEMY

When preparing the Skills of the Enemy at the operational level, it is necessary to state what the enemy operational purpose is and, then, determine the main effect to be achieved in the military arena within the Theater of Operations.

MODEL OF ANALYSIS OF AN OPERATIONAL TARGET APPLIED TO MALVINAS WAR



Source: Author

Once these two aspects are defined, they will be located within the geographical space included in the Theater of Operations aiming at specifying the contributing effects that allow to achieve the main effect.

Determining the Skills of the Enemy will be a key step during the campaign planning as it will allow to have a general idea of the magnitude of the opposing forces, their deployment and movement times within and without the Theater of Operations.

A way of establishing a comparison

parameter that allows to get closer to the structure of forces necessary to be successful in the campaign is the Power Unit.

POWER UNIT

The Power Unit is a planning tool that allows to represent, in a scheme format, the forces that are present with their skills and limitations.

Its use will help to determine the enemy capacity based on the analysis of relative battle power, space and time and it is very useful during

confrontation. This will help to make conclusions that allow to structure the campaign having an idea about the magnitude and type of forces without details of tactical units.

Its creation may vary according to the detail requested and it may be a navy power unit with its amphibious; aircraft and submarine elements, among others, air power unit which may be blocking hunting, bombarding, bombarding- hunting, transport, helicopters, etc. and land power unit with mechanized, armored, mount, mountain, air transported elements, etc.

Whatever is necessary to determine in magnitude and type of force may be identified as power units. In this way,

The purpose of war, considering its origin, is to destroy the intention of fighting of the enemy and to make them subjugate, whether by means of getting their forces exhausted or affecting them psychologically, so that they cannot continue the battle.

there may be power units for special, logistic or military police forces.

Moreover, each power unit will have a relative value with respect to magnitude, training and technology which will allow it to have the particular effect to be achieved in each stage or phase of the campaign.

Power units do not exactly

represent tactic units although they are so sometimes, taking the example of the Malvinas War we can see how the HMS Conqueror submarine was opposed as British power unit to the Argentine navy power unit, made up of the ARA General Belgrano cruiser and the ARA Comandante Piedrabuena and ARA Comodoro Py destroyers. This British power unit was able to fulfill the contributing purpose of isolation in time and space. This shows how power units can be compared.

Following the example of the Malvinas War, we can understand the enemy's capacity from the English side in this way:

Capacity attributed to the Argentine Armed Forces during the Malvinas War

To adopt a defensive operational attitude with up to two land power units and one air power unit on the islands, with up to two navy power units and one air- sea power unit around the archipelago to secure the logistic channel, support their navy and land forces with up to four combat air power units and two medium transport and a capacity to reinforce the island with up to one air- transported land power unit.

DETERMINATION OF CONCEIVED ACTION MODES

In a traditional war, the military environment becomes important and it is just there where the commander must make the main effort during its planning.

First, and as starting point for the preparation of action modes at



Source: Author

the operational level, it is necessary to agree and state together with the strategic level what the operational purpose is and to determine the main effect that is sought at this level, which is closely related to the current concepts of end state and war termination criteria.

Once these two aspects have been clarified and taking the geographical environment within the Theater of Operations as basis, we will specify the contributing effects that will allow to achieve the main effect.

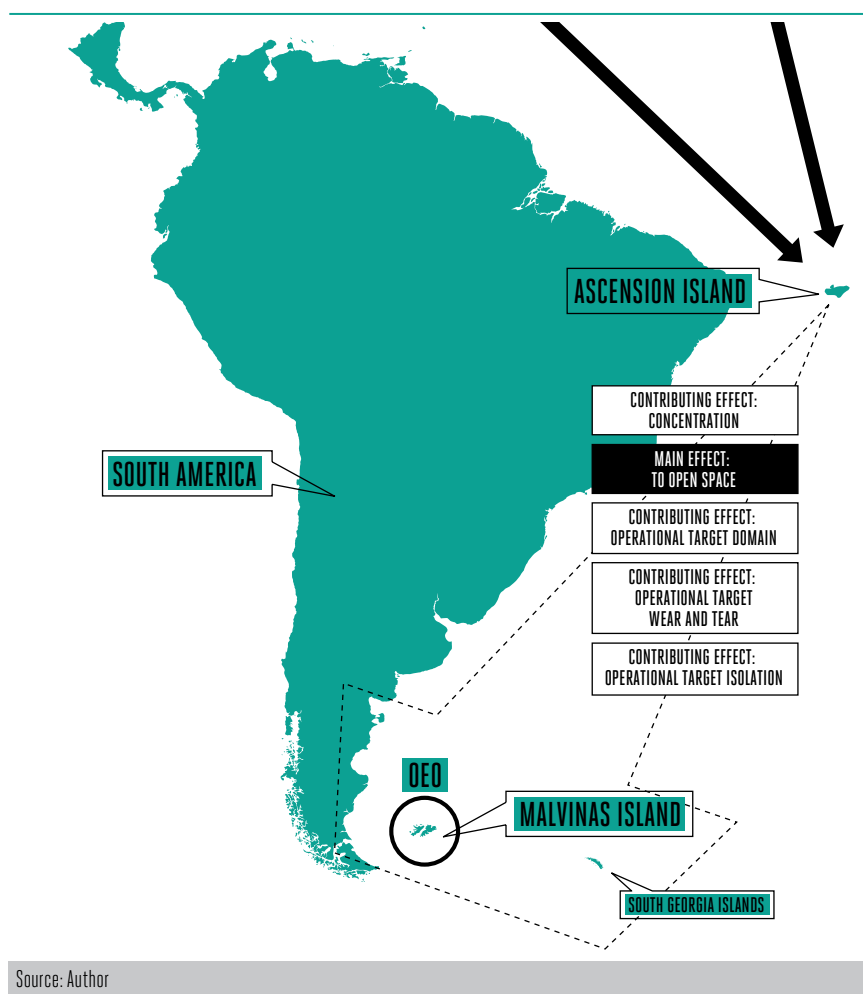
Action modes allow us to express the general idea of the campaign, mainly seen in effects. Therefore, it is important to be able to show it in a graphic that allows for its understanding, which we normally call operational conception and which can be supported by a map⁵ or strategic map to have an initial idea of space and time.

In the non- traditional military environment and the conflicts caused by fourth generation wars⁶, it will be the sociogram⁷ the one that will play that role.

As an example and following the understanding proposed for this work, we can understand the Conceived Action Mode by the English in the following way:

Action Mode Conceived by the British during the Malvinas War:

To open the space towards Puerto Argentino (OO) through a concentration near the South Atlantic, a progressive isolation around the islands deteriorating its combat power to facilitate our subsequent control and domain of the archipelago



Source: Author

APPROACH TO CONFRONTATION BECAUSE OF EFFECTS AT THE OPERATIONAL LEVEL

What identifies the operational level is the general and particular analysis carried out simultaneously, trying to have a look at the whole and the parts at the same time. For this reason, the battle must be carried out supported by the geographical space included in the theater of operations, but it will also be necessary to have enough geographical details in the particular

events to be analyzed that may be the decisive points of the campaign or not.

The first step during a battle will be the responsibility of C-2 (intelligence officer). In this sense, they will deploy the forces proposed in the strategic map as enemy capacities using power units to get a specific analysis that shows the contributing effect in each stage of the campaign.

The second step will be the responsibility of C-3 (operations officer) and will consist in setting the operational target on the map, determining the main effect that reflects its contributing effects.

Then, the enemy power units will confront, the own power units that allow to reach the particular effects

5. Campos, Guillermo, A.; "Inteligencia Estratégica, aproximación conceptual y metodológica", Summary of the Intelligence course at the Escuela Superior de Guerra del Ejército; Buenos Aires, Argentina; 2011; page 135.

6. The term was originated in 1989 when William Lind and four officers of the Army and the Marine Infantry of the United States titled the document: "The changing face of war: to the fourth generation". This year, the document was published simultaneously in the October edition of Military Review and the Marine Corps Gazette. It is related to Asymmetric Warfare and Counterterrorism Warfare.

7. Campos, Guillermo, A.; op. cit.; p. 135.

specified in the Conceived Action Mode.

This analysis carried out in effects will favor the creative freedom of each component (air, land, sea) in the determination of the necessary and efficient operations to reach their targets.

In this sense, if we take the example of the Malvinas War, we can see that the operational target was Puerto Argentino and the main effect to be reached by the English was to open the space to get its control. Moreover, the contributing effects were: isolation, wear and tear and domain of the operational target.

As from these contributing effects, the components will constitute their efficient and necessary operations, among which we can identify the following: from interdiction to navy traffic, air and sea control, a second stage with wear and tear operations including air- sea bombing, shore recognition and operations with special forces and, finally, a stage with amphibious operations and main land operations over the operational target.

Based on the contributing effect that is sought in each stage, it will be necessary to determine time and

During the Malvinas War, we can see that the operational target was Puerto Argentino and the main effect to be reached by the English was to open the space to get its control. Moreover, the contributing effects were: isolation, wear and tear and domain of the operational target.

space, by means of confrontation and relative combat power that is necessary to reach it, taking into account the resulting wear and tear.

A way to reach this will be to establish the power units table with its corresponding coefficient so an aircraft carrier group power unit may have a value of 5, a hunting air squadron may have a value of 3 and a submarine may also have a value of 3.

It will be important to take into account the magnitude, type, training and technology in the grade of the power unit, this will allow us to assess the necessary force for the campaign.

In the case in which the main effect is isolation and the main necessary operation is an interdiction to navy traffic, the combat relationship will be,

at least, 1/1 which will determine the type, quantity and quality of the power units necessary to reach said effect in each sector.

Where the main effect is to *wear and tear* and the necessary operations are air- sea bombing, recognition and operations with special forces, the combat power relation to reach said effect will be lower than 3/1 favorable to the red ones (*colorados*). With this estimation, it will be possible to determine how many blue (*azules*) power units are necessary to reach the effect desired.

To these cold calculations, we need to add the deterioration resulting from the days when the effect desired was sought in each area. These studies will allow to have an idea of the final



status quo to be reached by the force in each sector when each phase or operation concludes.

This analysis will allow to have an initial approach of what deep, intelligence, special forces and strategic bombarding operations, among others, will be. Moreover, it will determine what logistic and intelligence operations will be in the rear; and it will require the contributing effects in the other power factors that allow to reach the operational target.

The design of efficient and necessary operations will start during confrontation in light of the main effect and taking into consideration what operations will be necessary to reach the contributing effect in each sector of the theater of operations.

It is necessary to be able to make a graphic and carry out the confrontation in the geographical space within the Theater of Operations. In this sense, and following the example of the Malvinas War, the following graphic methodology is proposed:

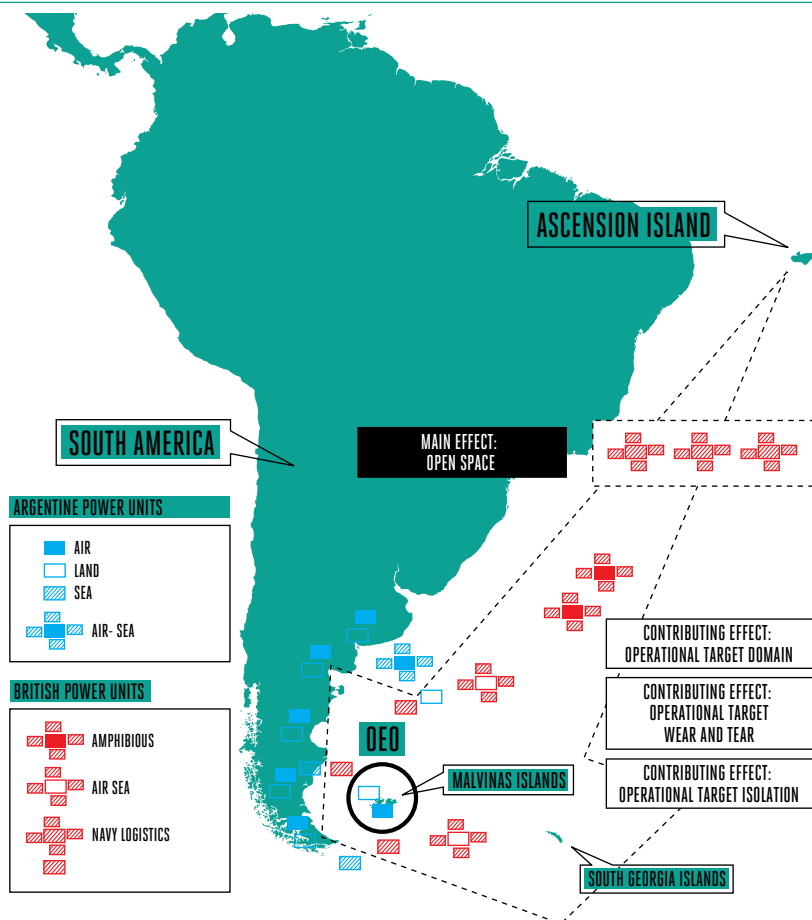
POWER FACTORS AND THEIR INFLUENCE ON OPERATIONAL LEVEL PLANNING

Evolution of conflicts has caused other power factors to acquire relevance during planning which makes the complex military situation even more critical.

It is just during the study and analysis of war as a great system when the necessary effects will arise in the other factors. In this sense, for example, war in the field of communication needs to be dealt with efficiently as the psychosocial factor in the population is key to maintain the war effort.

In recent history, there are examples of how a combat action was more aimed at the psychosocial factor than at the enemy. In that way, the Darwin combat could be framed taking into account that the British has previously suffered

MODELO GRÁFICO DE LA CONFRONTACIÓN POR EFECTOS EN EL NIVEL OPERACIONAL



Source: Author

after the sinking of the Sheffield and Coventry type 42 destructors, Ardent and Antelope type 21 frigates and the Atlantic Conveyor container ship apart from planes and helicopters that represented unaccountable losses in the eyes of society, the government of which was about to collapse due to the opposing party.

This shows what Clausewitz stated when he pointed out that war is the continuation of politics by other means as it was a war action that responded to political targets more than to strictly military targets⁸.

Infrastructure also acquires importance as a system and is closely related to operations under

development. Affecting port, energy, manufacturing or transport capacities will undoubtedly affect combat capacity in the Theater of Operations.

In this sense, the sinking of the ARA General Belgrano cruiser related to the strategic thought of reaching effects, which seems to be a tactical action, had a key relevance for land forces that operated on the Island, when transport by sea was effectively interrupted reaching, in this way, the logistic isolation effect desired by England.

Another example of the complex

8. Hastings Max. and Jenkins Simon. "La Batalla por las Malvinas". Editorial Emecé; Buenos Aires; Argentina; 1984, p. 253

group of systems that are part of war reality were the British attacks with Vulcan aircrafts⁹ using Shrike missiles¹⁰ over the surveillance and early warning radars of Puerto Argentino that counteracted a sensitive part of the defense system.

The operation "Mikado"¹¹ carried out by the British in the island of Tierra del Fuego was another evidence of effects required by the operational strategy and that exceeded the Theater of Operations.

The economic factor must not be set aside by planners as its incidence is always significant and, in war, it is the operational commander the one who should suggest the effects to be reached taking into consideration their concept or operational design.

Again, Malvinas shows us the importance of this field as economic embargoes made it impossible to get more Exocet missiles which would have been extremely important at the end of war¹².

Science and technology also have a key importance in the development of conflict and it is the operational design the one that sets the guidelines. As an example, we can remember the Exocet missile launching system prepared to be used as defense on the shores of Puerto Argentino and that had a successful verification seriously damaging the HMS Glamorgan frigate in the morning of June 12, 1982 in the final stages of the war.

Civil population of the island was consciously used to collaborate with the British war effort from the manager of the Falkland Company in Darwin who served as guide for the Parachutist Regiment 2 to the support given by the radio- electric network of the kelpers and vehicles and facilities

Science and technology also have a key importance in the development of conflict and it is the operational design the one that sets the guidelines.

in Puerto San Carlos and Caleta Teal, their logistic centers.

Foreign policy was not only used in international fora, but also in the habeas corpus submitted in Chile¹³ to get the rapid extradition of the pilots of the helicopter abandoned in Punta Arenas after a SAS patrol was sent to Isla Grande in Tierra del Fuego; here we can see how a tactical action is connected to the psychosocial, economic and foreign policy factors.

Our experience allows us to see how power factors that have an influence on national strategy have a specific influence on concrete facts of the operational design or operational concept of the commander of the theater; this is the reason why they have to be taken into consideration during the analysis in order to enhance action modes and operations lines.

CONCLUSIONS

War is complex by nature. At tactical level, it needs to be reductionist and understand that each battle has to be fought as if it were the last one and victory will depend on this. At operational level, it is necessary to be more holistic in order to understand all the systems that interact among them and to act accordingly and adjust the intensity of violence.

The planning method of the tactical level is different depending on the specific area of each Armed Force. While the Navy and the Air Force plan based on effects, the Army plans according to objectives. However, the planning method of the operational level, which is joint by nature, is carried out by operations based on effects.

It is necessary for the three Armed Forces to understand this planning system due to the necessary joint action.

In this sense, the general theory of systems is a favorable tool for the analysis to be carried out by the operational commander as it allows them to stand one step further and see the whole and, at the same time, analyze every part while looking at the implications of each action in the rest of the system or area in which the conflict develops.

The operational level is featured by its complexity. It has a lot to do with art and science but it is difficult to transfer the experience of previous successful campaigns as it has more to do with personality and character of the one who led it and the particular circumstances in which the facts occurred.

Therefore, it is not possible to set rules as to how to win or conduct a campaign because campaigns cannot be repeated. This is different from tactical procedures in which they can be reused in similar circumstances.

Patricio Justo del Niño Jesús Trejo
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9. British bomber for nuclear strategic bombarding during the Cold War.

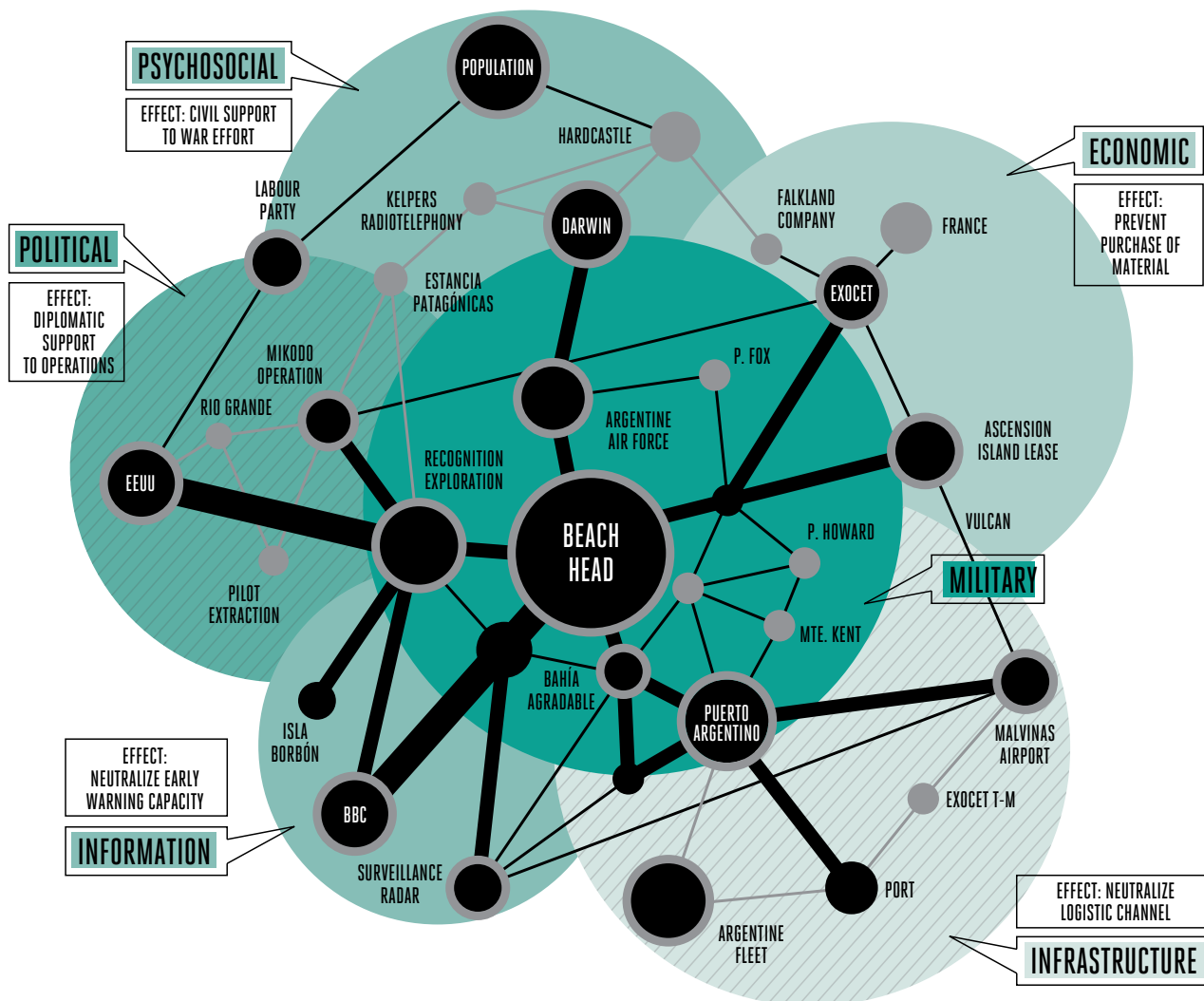
10. Anti- radar missile used by the British during the Malvinas War.

11. Operation planned by British special forces over the naval station from which the Super Étendard operated.

12. Woodward, Sandy, admiral; "One Hundred Days"; Editorial Sudamericana, Buenos Aires; Argentina; 1992, p. 236.

13. West, Nigel; "La Guerra Secreta". Editorial Sudamericana, Buenos Aires; Argentina; 1997; p.148.

SYSTEMIC MODEL OF THE BRITISH OPERATIONAL AREA DURING THE MALVINAS WAR



Source: Author

Military history, studied in a critical way, is one of the most useful tools at this level. It allows to analyze the performance of commanders in past campaigns and it gives us an insight on what the resolutions and consequences were.

War is chaos¹⁴. Initial planning must try to include all possible variations; intelligence in opposition will prevent our plan from being carried out.

Therefore, said planning must be as flexible and proactive as possible and interpreted as a cycle and not as a static and rigid timeline. Understanding this will allow to win the initiative once operations are launched.

The study of conflicts, origins, evolution, resolution and likely consequences must be approached by military leaders in order to arrive to proper conclusions. This must be only a tool and not a purpose in itself. It is necessary to prevent a particular analysis or planning methodology

from becoming a linear obstacle that hampers intellectual activity.

The method is tactical by nature and is tied to stereotypes. Planning, at this level, must be more logic than methodical and use the tools mentioned but it prominently depends on innovation and creativity of the military genius because the operational art appears there and this is what will, ultimately, lead to the success of the campaign.

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CRYPTOGRAPHY OF THE FUTURE

The technology developed by DLR offers possibilities
about the future of quantum key transmission

By Bernadette Jung*

DEVELOPMENT FOR CRYPTOGRAPHY

A successful experiment by the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) in cooperation with the Ludwig-Maximilians-Universität (LMU) in Munich has opened up new possibilities in cryptography.

For the first time, researchers have managed to transmit a quantum key from a fast-moving object. The quantum data was sent from an aircraft to a ground station via a laser beam.

Key exchange based on quantum mechanics is considered to be absolutely secure against eavesdropping. The quantum mechanical states of individual photons are used for the encryption; attempts at interception disturb the behaviour of the particles and so can be detected immediately.

However, quantum cryptography has only been put to limited use so far – the data is usually transmitted via glass fibre so that only limited distances can be bridged.

The current flight experiment now proves that the encryption technology can also be used with fast-moving objects and can be integrated into existing optical communications systems.

In future, quantum data might also be distributed globally via satellite in this way.

UNIQUE EXPERIMENT

The quantum key transmission experiment took place in Oberpfaffenhofen, using the optical ground station at the DLR Institute for Communications and Navigation and the DLR Dornier Do 228-212 research aircraft.

DLR was also responsible for flight certification and campaign planning.

The aircraft was fitted with a laser system for the experiment, combining a transmitter for data communication with a second transmitter for the quantum cryptography. The laser beam sent from the aircraft was received by the ground station, recorded with specially developed measuring equipment and analysed.

The detailed assessments have now been published in the journal 'Nature Photonics'.

The particular challenge with the experiment was directing the light signals precisely onto the ground station telescope. To do this, the researchers managed to achieve a targeting accuracy of thousandths of a degree while flying.

"We didn't know how well this would work; it had never been done before. But we were able to create absolutely stable reception with good tracking for several minutes. It was great to experience," reports Florian Moll from the DLR Institute of Communications and Navigation.

LASER SYSTEMS DEVELOPED IN HOUSE

The communication laser developed by DLR has already been tested in previous projects and consists of two units. The coarse alignment unit is outside, on the fuselage of the Do 228-212, where a small glass dome protects the rotating mirror lens. In addition to this, there is the fine alignment unit inside the aircraft.

A sophisticated sensor and very rapidly moving mirror ensure that vibrations from the aircraft are compensated for in a frequency range of up to 100 hertz. This is the only way the laser beam can be directed with sufficient accuracy. The transmitter is also used for optical tracking; that is, for automatically tracking the aircraft.



In the quantum key transmission experiment, a reference signal was also sent with the communication laser, enabling synchronisation between the aircraft and the ground station.

A group led by LMU physicist Harald Weinfurter developed the laser used for the quantum cryptography specifically for this experiment. Using this system, it is possible to generate extremely weak laser pulses and thus exploit the quantum properties of individual photons. This forms the basis for encryption technology that cannot be intercepted.

The laser source was successfully integrated into the DLR laser system for the experiment, with no special requirements. *"This shows that quantum cryptography can be an add-on for existing systems,"* says Sebastian Nauerth from LMU.

A STEP INTO THE FUTURE

Key distribution cannot be intercepted – today from the air to the ground, tomorrow the challenge will be from space to the whole world.

The current results open up new possibilities for quantum cryptography.

The conditions for the flight experiment and the angular velocity of the aircraft at the ground station were comparable with communication via satellite, so the researchers will be using the knowledge they have acquired in new work and future developments.

For Moll and his colleagues, the goal is ambitious: *"We obviously want to make our technology applicable for satellites as well."*



UNMANNED AIRCRAFT SYSTEMS

By Leonardo Arcadio Zarza



Unmanned Aircraft Systems (UAS) tend to be the eyes of the Armed and Security Forces and, additionally, with intelligence and recognition units as well as exploration and surveillance manned aircraft, they may be the perfect support to achieve information superiority.

INTRODUCTION

Talking about Unmanned Aircraft Systems is not something new today as all armed forces in the Latin American region are incorporating this technology and amalgamating their own tactics to the new horizons of remote exploration and surveillance of the operations area.

Being Argentina the eighth largest country in the world and with only 40 million inhabitants, Unmanned Aircraft Systems would be used in the military environment to contribute to the extension of the exercise of effective sovereignty, security, surveillance, civil protection, support

to the community and control within the framework of a defensive strategy as the value of human life is crucial. All activities that entail a high risk of execution due to eventual casualties in hostile operational environments, natural disasters, catastrophes or places with radioactivity should be carried out by unmanned systems.

What we know as Unmanned Aircraft Vehicle (UAV) is currently being referred to as Unmanned Aircraft System (UAS) as it is actually not only an aircraft, but a system, because of the following components, among others: Ground- Control Station, Sensor Operators, Unmanned

Aircraft Vehicle and Head of Mission.

In these lines, we will explain the proposal to incorporate this technology of Unmanned Aircraft Systems to the Argentine Armed Forces and to adapt the doctrine, especially the organizational culture, to the new abilities they may provide with.

UNMANNED AIRCRAFT SYSTEMS

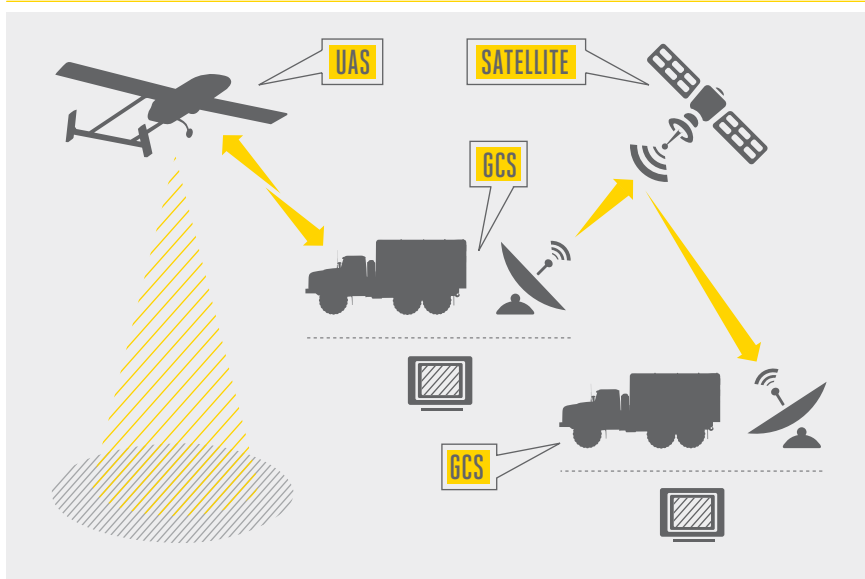
In the military environment, the NATO Standardization Agency defines it in its flight requirements for Unmanned Aircraft Vehicle (UAV), number 4671 (STANAG 4671) of the year 2009 as an aircraft able:

- a. To fly without a pilot on board and not to transport personnel.
- b. To sustain flight by means of aerodynamic forces.
- c. To be manned remotely or sustain autonomous flight following a pre- designed and scheduled flight profile.
- d. To be re-used.
- e. Not to be classified as a weapon or guided ammunition.

The ICAO Circular 328-AN/190 of the year 2012 defines the Unmanned Aircraft System (UAS) as: the aircraft and its related elements that operate without a pilot on board.

The operational concept is that the Unmanned Aircraft Vehicle gets the image of the target during the flight with multiple sensors that may be cameras, synthetic aperture radar or recordings in videos and it transmits

FIGURE 1. OPERATIONAL CONCEPT: UNMANNED AIRCRAFT SYSTEM



Source: Author

FIGURE 2. OPERATIONAL CONCEPT: GROUND- CONTROL STATION, AIR OBTAINING BOARD OF THE COMBAT INTELLIGENCE DETACHMENT 601 OF THE ARGENTINE ARMY OPERATING THE SANT "LIPÁN"



the information to a Ground- Control Station via data link in real or almost real time. It can operate in extensive operational ranges to get information: Line of sight (LOS) or Beyond Line of Sight (BLOS) with satellite aid (figure 1).

These systems extend the exploration horizon to the tactical units and provide with surveillance and protection to forces at all levels of conduct. It is necessary to classify and stagger the different types of Unmanned Aircraft Vehicle according to their performance, maximum takeoff weight and operational range.

As it was previously mentioned, the Unmanned Aircraft System is not only the aircraft, but a whole system that operates in a synchronized way with all its components to obtain information. Some of these components are in the Ground- Control Station (figure 2).

The location of the Ground- Control Station (GCS) and the place

for launching and recovering the Unmanned Aircraft Vehicle are important. These points will be permanent targets sought by the enemy.

USE OF UNMANNED AIRCRAFT SYSTEMS

Unmanned Aircraft Vehicles are not new. In 1915, Nicola Tesla introduced

Unmanned Aircraft Systems would be used in the military environment to contribute to the extension of the exercise of effective sovereignty, security, surveillance, civil protection, support to the community and control within the framework of a defensive strategy as the value of human life is crucial.

the concept of unmanned flight during a speech referring to an armed aircraft without pilot designed to defend the United States of America¹.

Nowadays, within the NATO, the use of Unmanned Aircraft System (Unmanned Combat Aircraft Vehicles – UCAV) has given rise to controversy. On the one hand, there are detractors that cause high collateral damages influenced by the comments of social media from the places where they are used.

On the other hand, those who use these Unmanned Combat Aircraft Vehicles (UCAV) state the opposite. They refer to these media as high precision technological instruments that fulfill missions for which they were programmed. Even specialists in neuroscience state that these robots would not violate human rights as easily as a soldier could respond due to fatigue as a result of the long combat or post- traumatic stress disorder². The Department of Human Rights of Columbia Law School, in the United States, refers to these exhaustion effects in human beings as an echo chamber effect³.

The use of these systems in Argentina would serve, among other things, to: support national, provincial, municipal security systems; border surveillance; maritime control and

1. U.S. Army UAS Center of Excellence; "Eyes of the Army"; US Army Unmanned Aircraft Systems Roadmap, 2010-2035, Fort Rucker - Alabama- Ed 2010.

2. Asimov, Isaac y Pryer, Douglas; "The rise of the machines"; Military Review; March - April 2013; p. 15.

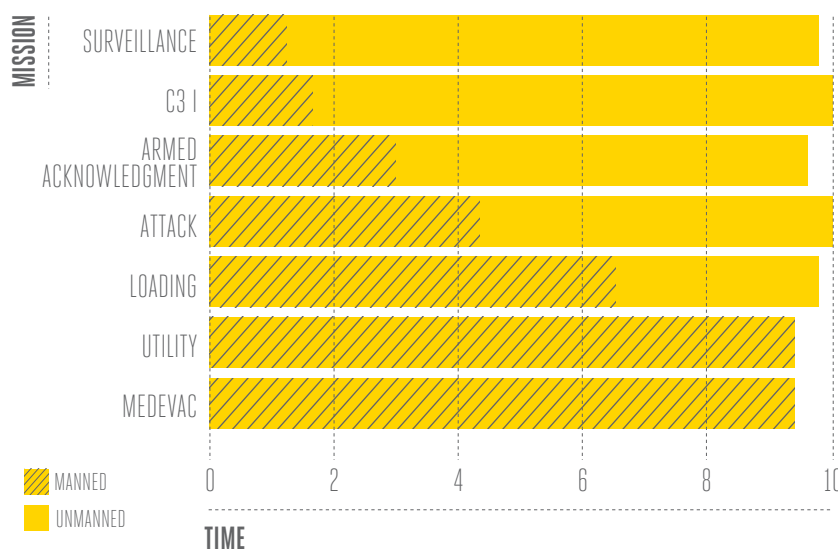
3. Amitai Etzioni; "The Great Drone Debate"; Military Review; March - April 2013; p. 3.

surveillance; soil fertility; shoal follow-up; control of the exclusive economic zone; surveillance and control of air space; damage assessment; nuclear radiation monitoring; detection of seats of fire and command and control in case of catastrophes.

In the military environment, for the short term (next 10 years), Unmanned Aircraft Systems will especially be used in: surveillance missions; Command, Control, Communications, Intelligence (C3I); armed recognition; attack and load. Instead, item transport missions and aerodynamic evacuations (MEDEVAC) will mostly be manned.

Anyway, care must be exercised in the use of these means with lethal effects as the social perception at global scale, after the results in Lebanon, Irak, Afghanistan and Pakistan has not been the best because of the collateral damage informed by the media. Also, during work meetings held between Argentina and Brazil, it was concluded that it is necessary to be very careful with respect to the names of these systems and it is preferred to refer

MILITARY USE - TRANSITION FROM MANNED TO UNMANNED - SHORT TERM



Source: U.S. Army UAS Center of Excellence; "Eyes of the Army"; US Army Unmanned Aircraft Systems Roadmap, 2010-2035, Fort Rucker - Alabama - Ed 2010.

to them as remotely piloted aircrafts rather than unmanned aircrafts. This supports the idea that Men are still the center of the system.

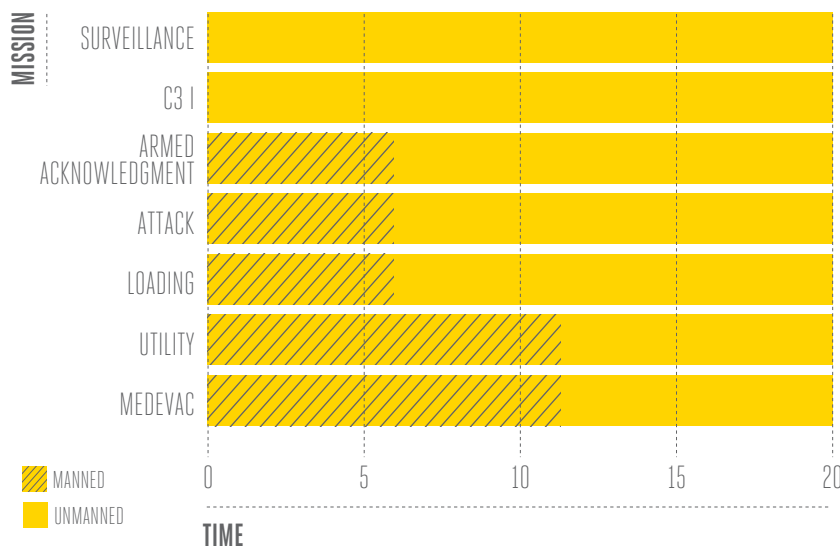
In the long term (next 20 years), the use would be greater in all areas,

both civil and military as this type of means would be enhanced and more accepted in technological, social and cultural terms.

It is necessary to acknowledge the fact that modern manned planes have guidance and navigation systems in which the pilot is often an observer and only provides data and input for the computers from which they monitor the plane since it takes off until it lands. This, obviously, does not mean that a human being is not necessary in the cockpit of an aircraft, but they could make decisions and turn to manual mode to fix any emergency or operation error in case of failure.

Nowadays, we have seen how first level military powers, and also Hezbollah have carried out military operations in which they used Unmanned Aircraft Systems. There are crews from micro Unmanned Aircraft Vehicles to get air images from multiple dispersed targets (swarming) to find targets in a very accurate manner and then defeat them with proper fire support systems. Also, large- sized Unmanned Aircraft

MILITARY USE - TRANSITION FROM MANNED TO UNMANNED - LONG TERM



Source: U.S. Army UAS Center of Excellence; "Eyes of the Army"; US Army Unmanned Aircraft Systems Roadmap, 2010-2035, Fort Rucker - Alabama - Ed 2010.



Advances in technology and artificial intelligence present unimaginable perspectives in which the difference between science fiction and real science is merely a question of time.

Vehicles are being used at strategic level by doing transoceanic flights with a high reliability level.

NATIONAL DEVELOPMENT

The Argentine Republic has historically been a pioneer in the region regarding cutting-edge technological developments. History has showed this and by the times of the *Triple Alianza* war against Paraguay, there were captive balloons for the purposes of exploration of land forces.

In 1912, the Argentine Army had an aircraft air unit and by the end of World War II, Pulqui was built in the country. In this sense, what currently happens with the Unmanned Aircraft Systems follows the same path in the Latin American region.

The Ministry of Defense of the Argentine Republic currently has some projects to develop Unmanned Aircraft Vehicles within the framework of the Argentine Robotic Air System which are able to be driven by companies that have an adequate know how in technology and space terms.

The Argentine Armed Forces have been developing projects of air means for information acquisition for several years, such as the Unmanned Aircraft Systems reaching satisfactory targets in the conceptual sense.

The Argentine Army has had for more than 15 years the Escuadrón de Aviación de Apoyo de Inteligencia [Intelligence Support Aviation Squadron] (a tactic unit of the Army Aviation) and the Compañía de

Obtención Aérea del Destacamento de Inteligencia de Combate 601 [Air Obtaining Board of the Combat Intelligence Detachment 601] (intelligence tactic unit) aimed at operating the system with the Unmanned Air Vehicle “Lipán”, of which version four (“Lipán” M4) of said design is available today.

The Argentine Air Force and Navy also have other projects such as the “Yarará” and the “Guardián”, among others.

This is why it is important to capitalize the national effort that has been made for several years with respect to this. The Ministry of Defense, through the Joint Board, has unified efforts and will use resources for these developments that will render social, economic, security and national defense benefits which will be quickly seen.

MILITARY USE: PROTECTING CIVIL POPULATION AND BRIDGING THE SENSOR- TRAITOR DECISION GAP

Current military operations are complex and care must be exercised

*In any military operation, the list of targets include a great number of **no- fire areas** (hospitals, hydroelectric plants, schools, monuments, prisons, etc.), these unmanned systems are the essential means to guarantee the respect for these coordination and control measures.*

specially with respect to non-combatant civilians. Unmanned Aircraft Systems are multipliers of combat power and, in particular, help in the decision of the different command positions by providing surveillance, early warning by reducing time between the detection of the threat and the opening of fire and reducing collateral damage.

In any military operation, the list of targets include a great number of **non-fire areas** (hospitals, hydroelectric plants, schools, monuments, prisons, etc.), these unmanned systems are the essential means to guarantee the respect for these coordination and control measures.

The era of information in real time, the advance of the Internet and

the execution of military operations with forces in non- adjacent areas require spaces that are free from forces to be controlled mainly with these means in order to have an efficient situation alert and exercise a proper command and control.

These systems are called Unmanned Aircraft Systems in which, although they can operate in an autonomous way, most of the times, the pilot is present on the ground or any other air or maritime platform.

Above all things, precision and prevention of collateral damage are required; if these requirements are not met, a manned system and the manned human criteria must be chosen.

It is necessary to unify the criteria of design and an open architecture to

permanently enhance these systems. Advances in technology and artificial intelligence present unimaginable perspectives in which the difference between science fiction and real science is merely a question of time.

TRAINING OF PILOTS REMOTE AIRCRAFT OPERATORS

It is worth mentioning that training is not only for pilots/ remote aircraft operators, which is only a part of the system, but also for operators of sensors, mechanics, Unmanned Aircraft Vehicles and heads of Mission.

Training Pilots/ Remote Operators is a real challenge. The three Armed Forces are already experiencing the tension in the teaching and learning process in order to acquire the proper skills in order to operate these systems in a secure manner.

Each Armed Force, similar to what happens with manned aviation, requires pilots/ operators with a general basic profile and, then, a specific characteristic that is particular to the operational environment of each force for the use of Unmanned Aircraft Systems.

The Argentine Army, for instance,

3. UNMANNED AIRCRAFT VEHICLES FIGHT SIMULATOR: TRAINING OF PILOTS/ REMOTE AIRCRAFT OPERATORS (VIRTUAL PHASE)



4. PRACTICE FLIGHT: TRAINING COURSE FOR REMOTE PILOTS/ OPERATORS OF THE ARGENTINE ARMY (REAL PHASE)



makes a distinction between remote operators (petty officers) and pilots (officers) of aircraft. Unmanned Aircraft Vehicles of smaller size for exploration and surveillance at sub-unit level, regiment and Great Combat Unit (Brigade) require intelligence operators, petty officers or civil staff. Instead, the ones of greater maximum take-off weight, which would be used at Great Battle Unit (Army Division), will need remote pilots that need the skills of Army aviator officers.

Training staff implies model aeroplane flight practice that may have a virtual phase (figure 3) based on simulators and a real phase with Unmanned Aircraft Vehicles on the field (figure 4).

On the other hand, it is also required to have basic theoretical knowledge on aerodynamics; air transit; meteorology; aeronautical engines; aeronautical laws; communications and electronics; performance; air security; human factors; basic instruments.

ADEQUATE LEGISLATION TO AVOID A MACHINE REVOLUTION

To begin with, it is necessary to mention that Unmanned Aircraft Vehicles are not missiles (they are different from this because of the purpose) nor spaceships (they operate in a different space, in particular, in air space instead of outer space although they may enter and re-enter). The aeronautical laws on the use of Unmanned Aircraft Systems are under development at national level because

they are also starting to be developed at international level.

Our Aeronautical Code will surely be timely updated. The operation of these systems is restrained to limited or segregated air spaces and is not shared yet with manned aviation, whether military or commercial due to air security questions.

It is worth mentioning that Unmanned Aircraft Systems are not conveniently regulated at international level in the air space, but unmanned

Leonardo Arcadio Zarza

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The real experience regarding the operation of Unmanned Aircraft Systems in Argentina is structured over the basis of efforts made by our aeronautical engineers, deep software knowledge, missile technology, aeromodelling skills, experience in the operation of drones of anti-air defense and the teaching process that is still based on learning by doing.

spaceships are regulated in the outer space with space laws.

However, in the United States of America and the NATO, there has been an advance towards operational integration in the military

environment of these unmanned systems with manned systems (especially helicopters and attack manned aviation) in the air space.

The Circular 328-AN/90 of the International Civil Aviation

Organization (ICAO) issued in April, 2012 sets forth the first regulations of these systems in the civil environment.

In the military environment, regulatory guidelines are being structured for the use of Unmanned Aircraft Systems in military operations. We are already seeing the need to have a specialized team of lawyers, both in the Ministry of Defense and the tactic units that order so with the purpose of guaranteeing an adequate system for obtaining targets and assessing damage.

Several questions remain in this environment which is a real legal uncertainty and society does not fully accept to see a plane landing

UAS. NATIONAL DEVELOPMENT: PAE 22365 - LIPAN - YARARA - CABURE - GUARDIAN - ADS PETREL JET



without a pilot. Certifications must be implemented for operators of these systems as well as for the airworthiness of aircraft, the modus operandi of insurance in the event of damage caused to third parties on land, among other things.

CONCLUSIONS

The saddest aspect nowadays is that knowledge science goes faster than society wisdom⁴.

The use of Unmanned Aircraft Systems in Argentina must be consistent with the leadership that has had this country in Latin America and the policy to turn the region into a peace zone.

Similar to what nuclear power used to be, the use of Unmanned Aircraft Systems gives benefits both in the civil and military environments. Development policy and strategy should be based on the human being as the center of the

4. Asimov, Isaac- Pryer, Douglas; op. cit.; p. 15.

5. Author's note

The use of Unmanned Aircraft Systems in Argentina must be consistent with the leadership that has had this country in Latin America and the policy to turn the region into a peace zone.

system and an adequate state policy with clear rules and operations that are limited by the total respect to International Humanitarian Law.

The real experience regarding the operation of Unmanned Aircraft Systems in Argentina is structured over the basis of efforts made by our aeronautical engineers, deep software knowledge, missile technology, aeromodelling skills, experience in the operation of drones of anti- air defense and the teaching process that is still based on learning by doing.

In the military environment, the purpose of obtaining deep target images from the air provides another perspective for the decision- making process, it aims at overcoming physical obstacles and bridging the “sensor- traitor” decision gap. These

Air Systems for the Acquisition of Information allow to extend the scope of exploration and surveillance of the tactical, operational and strategic maneuver facilitating the control of non- adjacent operation areas⁵.

The staff that acquires the basic skill for the operator of Unmanned Aircraft Vehicles needs to have a close relationship with the aeronautical culture. Afterwards, they must keep the skills in order to be authorized (basic minimum flight requirements).

Training of remote Pilots/ Operators must be achieved, in the short term, in all units of the Argentine security and Armed Forces, in state institutions and entities that require these means and in allied countries in the region.



SEMINARIO MALVINAS 2013

During the months of April and May and among the activities carried out in the country, a 4- day seminar was held about the South Atlantic Conflict in the headquarters of the Centro Educativo de las Fuerzas Armadas and the Edificio Libertador.

This academic activity was coordinated by the institutes that are part of the Centro Educativo and the Escuela de Defensa Nacional.

APRIL 4

Lectures referred to actions carried out by units of the Argentine Navy.

First, Captain Julio Angel Palazzo (Malvinas War Veteran, Retired), who performed as Head of Operations of the Destructor A.R.A. Santísima Trinidad, a vessel that had a significant role on April 2, 1982 in the execution of the “Rosario” operation, explained his experience.

After this, the Marine Colonels, Eduardo Miguel Brousson (Malvinas War Veteran) and Faustino Lavia, who, as Officers Cadets, were part of the Marine Battalion No. 1 and No. 2, respectively, made their speeches. These officers talked about their experience during the conflict.

After a break, the Marine Colonel (Malvinas War Veteran), Waldemar Aquino had the chance to talk and explained that, as Lieutenant Junior, he performed activities in Marine Battalion No. 5. He explained in detail all operations ranging from enrolment to their return to the continent.

To complement what Aquino has stated, Colonel (Malvinas War Veteran) Esteban Vigré Lamadrid who,

as second lieutenant of the 6th Infantry Regiment of the Army, was appointed to the Marine Battalion No. 5, talked about his experience.

Navy aviation was represented by Captain (Malvinas War Veteran) Roberto Curilovic, pilot of Super Etendard, an officer that took part in the operation that ended with the sinking of the Atlantic Conveyor.

At the end of the meeting, Rear Admiral (Malvinas War Veteran) Alvaro González Lonzieme, who was then member of the crew of the cruise A.R.A. General Belgrano talked about the events: setting sail to go to Usuahia; surviving at the sea; the search and rescue of those who are shipwrecked and the subsequent return to the continent.

APRIL 11

Meeting devoted to the operations carried out by the Argentine Army units.

Alejandro Nazar Anchorena, engineer, master in War History, analyzed the Darwin- Pradera del Ganso battle, documenting his lecture with pictures of the battle area that were taken during his research trip to the Island.

After this, Colonel (Malvinas War Veteran) Guillermo Lafferriere presented his lecture “A 30 años de la Guerra de Malvinas, nuevamente haciendo frente a los estereotipos”. In this lecture, he explained the natural trend to accept stereotypes as simple explanations to very complex events. Moreover, he explained the challenge that arms men face to take lessons that allow for a better understanding of the “war” phenomenon and its complex interactions.



APRIL 18

The Argentine Air Force talked about its participation in the conflict.

Brigadier Major (retired) Héctor Luis Destri, who was then Commodore and Head of the Malvinas Military Airbase, explained the actions carried out in order to keep the landing strip operational until the last day of battle.

Then, Commodore (retired) Miguel Angel Silva, who held the rank of Major was head of the “Malvinas” Air Control and Surveillance Squadron. As the person responsible for the air control radar on the Island, he listed the different tasks carried out for the installation and the procedures adopted in order to locate the British fleet as from the detection or loss of air radar contact.

To end the lecture of the Force, Commodore (retired) Gerardo Isaac, explained the operation carried out jointly with the Argentine Army against the HMC Invincible aircraft carrier when he, holding the rank of sub- lieutenant, was part of the A4-C Squadron.

MAY 2

The closing meeting was hosted by the Secretary of Military Issues and Strategy, Oscar Cuattromo, who highlighted the relevance of the event and its topics. He stated the need to include the study and analysis of “Malvinas” in the curricula of the schools of the Centro Educativo de las Fuerzas Armadas.

Afterwards, historian Federico Lorenz (IDES-CONICET) presented a historic- sociological perspective about Islas Malvinas in the Argentine history creating the opportunity to make an analysis that goes beyond the war event.

Authorities of the Ministry of Defense, the four Chiefs of the Joint Board, Generals, Admirals and Brigadiers were present during the closing ceremony.

At the end of this Seminar, Ministry of Defense, Arturo Puricelli, thanked the lecturers and encouraged to keep this academic activity in the need to acknowledge the courage of those who were involved and to deepen the study of the Conflict.

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DESCRIPTION OF THE DISTINCTIVE COAT OF ARMS AND HERALDIC MEANING

In the center, there is the emblem of the Estado Mayor Conjunto de las Fuerzas Armadas.

The background has a chess that shows the Military Art in white and light blue, the colours of the Argentine flag. Blue means justice, enthusiasm, loyalty and truth; and white means purity, integrity, obedience, firmness, surveillance and eloquence.



MISSION

“To train students in the exercise of conducting at Operational Strategic level and in the development of the functions of the Chiefs of Staff at the Operational Strategic and Military Strategic levels in the framework of joint and joint- combined actions in order to optimize the use of military instrument of the Nation and to train professionals interested in National Defense through the development of post-degree education courses, research projects and outreach activities”.

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VISION

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