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C O N T E N T S

RESTRICTIONS AND SPECIFIC REQUIREMENTS IN THE FIELD OF MOVEMENT AND TRANSPORTATION IN THE MILITARY (ARMY)

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Abstract: *The Romanian Army has to fulfill a set of specific missions and tasks as part of the National Defense system. Some of these tasks and missions have at least a component that refers to movement and transportation and others are based only on this activity. When it comes to preparing for a certain mission or task, the military personnel have to be extra careful to deploy only those vehicles that live up to the mission requirements and that are certified to be used for that purpose. The national and internal laws and regulations that put some order in the field of movement and transportation are not always optimized and can pose some problems to the military that are working towards success. Sometime laws are not being updated to correspond to the reality in the field and it can be a little too demanding and restrictive for the military organization to follow them. Having problems with aligning your organization with the laws in your domain can lead to delays and compromises that can endanger the mission and pose a threat to the organization. In this article we are going to analyze some of the restrictions and specific requirements related to movement and transportation domain and to identify were do problems and risks appear for the military. Moreover, we intend to provide some useful conclusions and solutions to this kind of problems.*

Keywords*: movement; transportation; obstacles, solutions, laws and regulations;*

1. INTRODUCTION

The military organizations, regardless of level, have to their disposal technical means and vehicles intended to execute their specific missions of movement and transportation. Some of these means are both specific to the military and of civilian usage. For the transportation of light, medium and heavy equipment and machinery, the military use most often auto-trans containers and trucks. For the execution of the necessary jobs and specific installations during the transportation process and for the management of the cargo and products there are used the common technical means and vehicles that were previously acquisitioned and integrated within the ranks of the military organization.

Specific missions of transportations that are executed vary in terms of the products type, the destination of the cargo, and the specific requirements during the transportation process. To get these jobs done, the officers responsible with movement and transportation and their allotted structures (regardless of the level) have to meet the specific requirements imposed by the national laws and regulations, by the internal laws and regulations (military ones) and by the international ones (imposed by the NATO and UE). When it comes to moving around, each type of cargo has its own technical requirements when it comes to moving it around, and the officers that have to organize and execute the process of transportation often find difficulties, restrictions and specific requirements that are not met by the civilian society.

In this paper we will provide a brief analysis of the particularities presented by movement and transportation performed with vehicles like *IVECO M320* trucks, IVECO Crossway trucks, Nissan Pathfinder, STEG platforms for movement and transportation, fuel and water tanks (with a range between 8000 and 30000 liters), cranes, bulldozers, and many more. These are examples of technical means that the military institutions are equipped with and are the most commonly used by the whole army. Other types of vehicles that can be included in the same analysis are the combat ones, like *PANHARD PVP 4X4*, *PIRANHA 5*, etc.

2. RESTRICTIONS AND SPECIFIC REQUIREMENTS IN MILITARY MOVEMENT AND TRANSPORTATION

Ammunition represents a specific class of supply that has very specific requirements when it comes to the transportation process, and the main cause for that is the high risk that it comes with it. According to the internal instruction manuals that the army has (O.M. 158 2014), the ammunition has to be transported in safe spaces and conditions, and the trucks have to be modified so that the exhaustion pipe be moved in front, under the drivers hatch. This measure is taken so that the risk of sparks that fly out the exhaust don't have a chance to land on the ammunition that is being transported. Evidently, these are not the sole measures that are being taken when you have to transport ammunitions and materials from the same supply class, but the measures that have to be taken for the wrapping and preparing the wares are not relevant to this paper because they don't impose problems to the movement and transportation officers.

Thanks to the modernizations that took place to the army fleet, the risk of sparks landing on the ammunition during the transportation process became dull, or at least negligible, both when it comes to impact and probability. The state-of-the-art vehicles that the military receives nowadays, straight from the factory, are equipped with modern engines that have EURO 5 or even EURO 6 levels of emissions (close to the maximum that there is), and the exhaust emissions are as filtered and as friendly with the environment as they can be when the car is not electric. When it comes to transporting ammunition, the military structures that have the task of doing so often face one problem: the laws that are still active in this field are not being aligned with the reality (O.M. 158 2014). Even if the modern vehicles don't present the risk of producing sparks in the exhaust, the law still requires the trucks to be modified as previously described. This thing is not possible, mainly because the new trucks are built in a way that will be most optimal and most efficient. As a consequence, there can be delays in delivering ammunition, mainly because the new trucks cannot be used for that purpose.

When it comes to transporting liquids (water and fuel), there are special restrictions that the transporters face: the necessity for the cars to be inspected and verified by a doctor and by trained technicians, of the kind of people that the Ministry of Defense doesn't train, neither employ (OMT nr.980, 2011). Even if the tanks used are common in the economy, the authorities have to verify each and every one of them, periodically, especially because the Army is an institution that serves the people. The missions that the tanks have to fulfill are often urgent and the necessity for formalities can often be a threat to the success of the mission and operation in general. Another problem is that this kind of technical means cannot always fulfill the specific missions that the Army has to accomplish. As a consequence, there is a need for aid and assistance from other type of troops and technical means, and these situations can be of risk for the military people.

When it comes to transporting classified documents and very sensitive products, there is a set of particularities that have to be met in order for the shipment to go as smooth as possible. The military has a lot of problems when it comes to this kind of shipments, mainly because the level of care and security required is too high in opposition to ordinary shipments that take place on a daily basis. The means of transportation have to be properly prepared and constructed (or modified) to be used in this kind of transportation missions (H.G. nr. 585, 2002). The military involved in a mission have to be well armed and well trained to fulfill it and the secrecy has to be kept at all times, mainly because there are implications for national security.

When we are talking about transporting troops in combat missions, the technical means that are used for doing so have to be prepared in order for the mission of transportation to be executed to minimal risks. The army fleet consists mostly of armored vehicles *PIRANHA 5* and *PANHARD* that were recently being delivered to the armed forces.

The armor this kind of vehicles must have is at least 6 mm thick on the inside and 13 mm thick on the outside (NATO AEP-55 STANAG 4569, 2016). The mentioned types of vehicles fulfill the requirements and have many other technical characteristics that support mission accomplishment. The point is that, for a specific type of transportation mission, one cannot use any type of vehicle because that would endanger the involved military personnel. As a result, the vehicles that do correspond have to be taken care of, certified and verified before every mission in order to ensure safety and reduce the risks.

When it comes to exploiting road infrastructure and terrestrial ways of transportation, the army has a series of problems and restrictions to overcome when trying to fulfill the usual missions of transportation. Everything, everyone, and every

type of cargo (ware) that takes a part in the process of transportation has to be carefully selected, prepared, packed and secured. The particularities come from the national set of laws that affect this field of economic activity and from the insufficient means at the military disposal. The laws state that each transporter has to ensure his cargo so that so no matter what the activity is (staging, reception, onward movement) everything has to go smoothly, with a minimum exposure to risk and a safe environment. The vehicles that belong to a convoy have to be assessed regarding height, width, total mass and the type of cargo that they carry in order to organize a safe transport and safe passage to the destination, with or without aid from other state-held institutions and/or private contractors (O.G. nr. 43, 1997). Two special requirements that we found (and the military often needs) are the special transportation authorization and project of transportation, this being part of the first, whilst being a different paper that goes with it. (O.G. nr. 43, 1997)

Analyzing the Government Order number 43 from 1997, we found plenty of requirements and conditions that have to be met in order to fulfill a transportation mission specific to the military. Those transports that exceed the legal limit permitted for a certain category of road, that endanger the works of road infrastructure (bridges, roundabouts, aerial passages, etc.), that contain a certain type of cargo or that have vehicles that exceed the maximum requirements for the maximum mass accepted on a vehicle are conditioned by certain permissions to take place. According to the law (O.G. nr. 43, 1997), the special transport authorization is required for transporting products that cannot be divided and have to be transported as a whole, but they exceed the mass that can be loaded on one of the vehicles axes. The army often needs to transport heavy machinery (tanks, flight machines, etc.) and those transports need this kind of authorization. The Project of transportation, an addition to the special transport authorization is meant to protect the infrastructure on the road when it comes to the maximum mass that it can hold and, by default, is also required for this kind of missions.

The Romanian Army cannot grant this kind of authorizations and, as a consequence the military officers that organize and coordinate the transportation process have to collaborate with civilian institutions that are part of the national civil administration or serve it. Also, when it comes to signaling and escorting this type of transports as well as coordinating it so that it does not damage the road infrastructure, the army has to collaborate with the National Police and private contractors that offer this kind of services (sometimes in exchange for money, which is also a constraint because it can add even more delays and can pose problems when there are misunderstandings).

So, when we are talking about real missions and exact situations in which the military has to transport heavy pieces of equipment (situation that make this kind of transports really "specific") the part of the military that has to take this task to fruition need to collaborate with the public administration and, therefore, there is a fairly high possibility for delays to appear and even put the whole mission (or task) at risk. Of course, the risks that can appear vary much on the type of mission.

This kind of transport would certainly need a special transport authorization and a project of transportation mainly because the whole mass of the cargo would exceed the 80-ton mark and even the 100-ton one (O.G. nr. 43, 1997). The cargo is represented by an object that cannot be divided and therefore has to be transported as a whole and the width could exceed the maximum approved of 3,5 meters (O.G. nr. 43, 1997). Also, the majority of infrastructural projects along the way would not be able to bear this kind of mass, especially if we are talking about the ones outside the capital. Regardless of the class of the road chosen as itinerary (modern road, renewed road or un-renewed road), this kind of cargo would certainly exceed the requirements of mass, width and height.

Another technical problem could be caused by the fact the maximum radius of the truck used (while loaded) would exceed some maximum radiuses of the turns along the way. As a result, there would be a need for a cop car contracted especially to escort the transport and a certain type of warning car to signal to the other participants of the traffic that the transport is of the special kind and extra care is advised.

3. CONCLUSIONS & PROPOSALS

As a conclusion, the movement and transportation domain has a multitude of particularities, restrictions and special requirements for the army mainly because the missions are very specific and need special approval, certification and extra care. Also, the internal rules and regulations pose some more restrictions and particularities for the military.

Moreover, even if the military has been able to take their missions to fruition in many instances, there is an evident lack of coordination between the reality that the officers and active personnel face and the rules and regulations that have not been updated. At the rate of modernization that we are moving today, there is a growing need for a change in the rules and, why not, for a change in the protocols so that the military would be able to execute their missions more efficiently.

Evidently, the military cannot be overlooked when it comes to respecting rules and regulations that are being imposed nation-wide. Even so, we believe that even if the whole military organization has to adhere to the rules, the protocols that have to be followed can be updated and adapted to the needs of the organization so that they do not pose a risk (or even a threat) to the fulfillment of the missions. Once the updates in the legal department are initiated, a response has to be triggered from within the military so that the missing capabilities for organizing special transportation missions can be brought within reach, without the need for collaboration with other structures.

These being said, we recommend and propose that the military movement and transportation structures take the necessary actions so that the legal provisions in this domain be modified and completed according to their needs. Moreover, we believe that the level of cooperation between the military structures that execute movement and transportation missions and the ones that coordinate and monitor this kind of missions should be improved, in order to avoid or diminish the existing risks.

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4. NATO AEP-55 STANAG 4569, Protection Levels for Occupants of Logistic and Light Armored Vehicles, 2016;
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CHALLENGES REGARDING THE DIGITALIZATION PROCESS IN THE FIELD OF MILITARY EDUCATION

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Abstract: *Education is a very important part of each person's evolution, because through it we become intellectual, rational people, being able to act in different fields of activity in a responsible way. Military education is a fundamental part of training, is responsible for initial training and continuous profesional development, and represents the biggest investment of the Army in human resourse development, thus increasing the performances of military structures. Nowadays the accent is on digitalization and everything around us is digitalized and therefore education has to take a new course. With this article we aim to raise awareness about the educational proces, both in the civilian and military environment, to change the way of thinking about it, to stop the outdated methods of teaching and learning, and implement innovative, more efficient ones, by informing the population about the process of digitalization, what it means, what it provides, how it helps in the field of education and the advantages and disadvantages that come with it.*

Keywords: *digitalization; education; tehnology; military environment; development; training;*

1.INTRODUCTION

Nowadays, the most important resource that we humans need is time. Of course, we all know that time is money, so this means that we must make efforts and find innovative ways to make its use more efficient, without wasting it. We are aware of the education system features, both the civilian one and the military one. Thus, we found that education has not made much progress compared to 50 years ago and schools have remained with the same outdated methods of teaching, as well as of learning. We believe that a change should happen as soon as possible and we need to be part, we, the pupils and the students, both military, as well as civilians, of an academic environment as up-to-date as possible according to our needs and expectations. So, we believe that this can happen by implementing digitalization.

2.MILITARY EDUCATION

A fundamental component of training, military education is responsible for initial training and continuous professional development and represents the Army's most important investment in developing human resources and increasing the performance of military structures. The duty of military education is to train officers, warrant officers and petty officers with professional skills in line with the requests and needs of military structures, in accordance with the qualities that are specific for military occupations, with the potential to become creative, innovative personalities, determined to achieve performance, generate value and to take responsibility for their military career. (*Military educational system.*. Source: [online] Învățământ militar - D.G.M.R.U. (mapn.ro))

The system of professional training of military personnel is structured on cycles and educational levels and includes pre-university study programs: high school and post-secondary; university and postgraduate study programs; continuous professional training programs, career courses and improvement/specialization courses, carried out in military education units and institutions and continuous professional training at non-university level.

The basic content of higher military political education consists of fundamental studies of social sciences, military pedagogy and military psychology, as well as the organization of party and political activity among the troops. In recent

years, the education system has evolved, but at a very slow pace, without showing much progress. The pandemic made us realize at a national level that we need a reinterpretation of institutional structures, especially of the educational one. Although technology has evolved enormously and is accessible to a large part of population, we have all seen what it means not to use it to its full capacity, the most affected being those who participate in one way or the other in the educational process, from teachers to students and students to parents. In the military field, the challenges have been even greater, as military training was mainly affected, for which there were no methods that would make it possible to convey the specific subject matters online. The problem that has thus surfaced is the inability of the educational system to adapt to the pandemic situation, which makes it impossible to conduct typical classes and implicitly the need for new, digital methods, through which education can be done at a distance and be accessible to all. Thus, the pandemic was the necessary impulse for the implementation of digitalization in the educational system. Before the pandemic came, there was a certain digitization, through which information was easier to get from teachers to students and vice versa. However, this did not make it possible to interact without physical contact, but it was just an easier way to transmit information, for example through the memory stick. That is why an upgrade is needed to bring more opportunities and easier effective ways through which education can take place. That is digitalization. (Matt Church, (May, 2017), *The Evolution of Education.* Source: [online] How the Education System Has Changed in the Past Twenty Years - Advocate Staffing).

3.DIGITIZATION & DIGITALIZATION

Digitization, digitalization and digital transformation, are a confusing trio that people often misuse. Digitalization is misinterpreted and associated with digitization. That is why IT outsourcing companies are very important in the digital transformation process. They understand best how to do digitization and digitalization, paving the way for further digital transformation. In addition, they come with expertise in creating enterprise software that is so vital for digitalization. For this reason, implementation needs to be accelerated. For a more accurate view on these concepts, we will explain what digitization means and how it differs from digitalization and digital transformation.

Digitalization means transforming interactions, communications, relationships, business functions, and business models into (more) digital processes, which often come down to a combination of digital and physical systems (such as omnichannel customer service, integrated marketing or industrialization of production and manual operations, electronic services, and so on). The digitalization of public institutions involves the use of information and communication technologies aimed at improving the provision of information and services. We live in the era where the word digitalization is found in many areas of society. It is almost on everyone's lips. From banks, producers and merchants to entertainment and more recently to public institutions designed to serve the needs of society; we are becoming more and more virtual. For more than 2 years now, the whole humanity has been changing its relation to social life, differently than in previous years. Affecting the most important social segments, this generalized crisis is due to the Covid19 pandemic. (Maria Madalina Dinu, (2021), page 3 *Study on the impact of the form of education in the online environment of the students of UMF Craiova.* Source: [online] CCO (umfcv.ro)) Military educational institutions have had to change many objectives and goals in order to be able to integrate today. Change also comes with a psychological tension at the level of each member of the group-segment in which it takes place.

Digitization is a procedure by which data in analogue format is converted to electronic format, essentially creating a digital image or digital form of a report, object, photo, audio material or signal. Nowadays, digitization of data takes the form of binary digits, processed by a computer or other procedures. More specifically, it is the conversion of a material from an analogue source into a numerical form. Digitization is quite important for information processing, storage, transmission, because it allows information to be coagulated. It also allows data to be obtained and distributed, propagated without being reduced and to be translated into new formats when necessary. Digitization is the most favorable method for storing information for organizations anywhere in the world. The advantage of this procedure lies in the speed and accuracy with which the information is transmitted, without being degraded in comparison with the analog form. Digitization is done in two steps: discretization and quantization.

The difference between digitization and digitalization is that digitization cannot take place without digitalization. While digitization involves

transforming analogue data into digital, digitalization uses digitized data and changes the way interaction happens in different areas, creating new digital revenue streams with the help of digital technologies. Digitization refers to the optimization of internal processes that lead to cost reduction, while digitalization is a strategy that once implemented, reshapes the entire development strategy. (Vladimir Ionescu (September, 2019) *Electronic Catalog and Virtual Library – two projects funded by the Ministry of Communications and Information Society.* Source: [online] Catalogul Electronic și Biblioteca Virtuală – două proiecte finanțate de Ministerul Comunicațiilor și Societății Informaționale - CursDeGuvernare.ro).

4.ADVANTAGES AND DISADVANTAGES OF DIGITALIZATION

Like any reform, the digitalization of education attracts both pro opinions, which support its implementation, and opinions against, people who are not satisfied with this idea. Therefore, we will analyze each form of education, namely, online and classical education and we will draw conclusions in order to make the right choice.

Classical education is based on the presence in a classroom of pupils/students and of a teacher responsible for transmitting specialized information. The strengths of face to face learning are: information is transmitted and received more clearly due to physical visual interaction, the student is not disadvantaged if he does not have a good internet connection or laptop/tablet/phone performance as well as the higher concentration of the student/student, not being distracted by the phone, tablet or other gadgets. But these advantages enter into a strong antithesis with the weaknesses of the classic method. It is hard that in a class with an average of 25 students, there would be harmony and often conflicts appear, for various reasons, also, those who are more interested in learning can be pulled back by colleagues who make noise, thus a class with many people is not the most favorable environment for learning. Also, due to the co-existence in the same class of several people, in the case of viruses, they are transmitted very easily, just as it happened in the case of Covid19. Besides these, the increasingly unmotivated and disinterested teachers do not stimulate their students and do not instill in them the desire to learn and to know.(Pop Cristina Bianca, (January, 2019), topic 2 *Digital Education - Advantages and Disadvantages of Using New Technologies.* Source: [online] Educația digitală - Avantajele și dezavantajele utilizării noilor tehnologii by Pop Cristina Bianca (prezi.com))

A 2016 INS study shows that nearly 30% of children up to the age of 18 dropped out of school, 10% more than in 2014. The reasons for this situation are multiple, but one thing is certain, and that is that these are some disappointing percentages that reinforce the idea that we need a change. Therefore, a solution to combat these figures is the transition from physical to electronic format through digitalization. (Viorel Iulian Tanase, Ruxandra Victoria Paraschiv (2020), page 1 *Digitization, Digitalization And Digital Transformation.* Source:[online] V.I. TANASE, R.V. PARASCHIV, Digitizare, digitalizare si transformare digitala.pdf (institutuldefilosofie.ro))

By implementing an online learning environment, time is in favor of students as well as staff, because they no longer have to waste valuable time on moving to the institution, but can stay in the comfort of their own home and with a high degree of privacy. Due to this, the stress to which both students and teachers are subjected is reduced, so the performance on both sides is high. Also, with more time at their disposal, teachers can improve their teaching methods, making them more attractive, thus stimulating students and connecting them with the subject.

Besides these advantages, digitalization includes other benefits to the country's economy, which no longer has to use so many resources to make paper, which protects the environment, increasing the quality of the air we breathe. Of course there are some disadvantages, such as spending a high time in front of screens, the possibility of losing internet connection or virus networks, but they are in the minority of all the advantages and benefits it brings.

5. THE BARRIERS OF DIGITALIZATION

Data from a European study Eurobarometer, from 2020 showed that the barriers of digitalization are: uncertainty about future digital standards, lack of financial resources, obstacles caused by regulations, lack of skills including managerial ones, problems with IT security, lack of IT infrastructure and internal resistance to change. How these barriers affect digitalization in Europe and especially Romania will be shown in the following statistics, that were made by Eurobarometer in the first half of 2020. These

European statistics were made to further clarify where Romania is situated and how it evolves on its way to digitalization and which barriers are the toughest to pass.

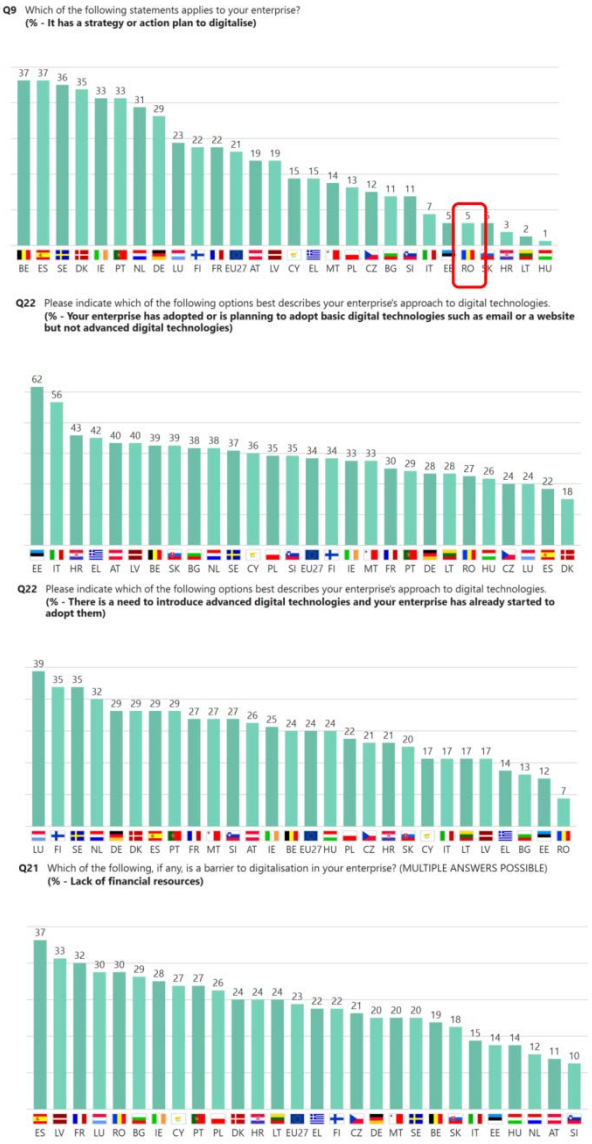

Fig. 1 [6]

So, we notice that Romania does not have a specific plan of digitalization and it has not adopted any advanced methods. Also, the financial resources that are necessary are a really big problem. Therefore, education has to suffer because of this situation and digitalization in this field is even a harder job, as the provided financing for it is low. In military education, especially, there is no focus on providing new and inovative ways of teaching and learning due to the old thinking that all has to remain the same. But, we are optimistic and hope that this is going to change and the process of digitalization is going to quickly take place in military education, and not only.

6. NETWORK COMMUNICATION AND ATTRACTIVE METHODS OF EDUCATION

When we speak about the digitalization of education, we do not only think about the online classes or the tests that teachers give on a platform, but we can also think about the fact that the classes that are done face to face can be done in a much more efficient way. One way to make them more efficient would be: the presence of interactive whiteboards, which greatly facilitates the work of students and teachers, because they would not waste time by wiping the board and would not use so many markers or chalk, so it would be a much lower consumption; students could learn more easily with the help of courses in ppt or word format, because teachers can only transmit through them the essentials, using pictures, videos, tables, and students would not lose their fovud, being seized by much and boring information, being much easier for them to follow what is important without loading their memory with useless things.

Communication is a dynamic process being the basis of social interaction without which man cannot exist. (Maria Madalina Dinu, (2021), page 5 *Study on the impact of the form of education in the online environment of the students of UMF Craiova.* Source: [online] CCO (umfcv.ro)) Online communication takes different forms for people to have access to information. We can list some of them: blogs, videoblogs, podcasts, vodcasts, forums, social networks, discussion groups, instant communication, events, online stores. Because we have a special context, determined by a state of social and medical protection, we have developed ways of formal online learning. In the present pandemic situation, a large part of our activities have moved their development through the alternative channels of the online environment. We can think about increasing the level of stress among the population dependent on the system in ensuring social needs (employees, pupils, students, teachers, etc.). (Maria Madalina Dinu, (2021), page 6 *Study on the impact of the form of education in the online environment of the students of UMF Craiova.* Source: [online] CCO (umfcv.ro)).

7. THE E-LEARNING PLATFORM, A STEP FORWARD TOWARDS DIGITALIZATION

As “Carol I” National Defense University bachelor students, we believe that the

implementation of digitalization would bring great benefits in the field of education. We talked about both the significance of digitization as well as that of digitalization and, at this point, in this institution, there is a certain digitization measure through which we, the students, we have access to the materials necessary for academic training. An example of digitization is the transmission of materials through a memory stick that the teacher downloads, being received, in principle, by the head of the class, who passes it on to all students. It is an effective method, to some extent, but it would be much easier if all these materials were loaded on a platform.

An online learning platform for students of military educational institutions is an integrated set of interactive online services that provide teachers, military students and others involved in education with information, tools and resources to support and improve the delivery and management of education. A good e-learning platform is focused on the one who uses this platform, transforms the entire idea of learning into a pleasant, immersive experience and makes it easier for users to adapt to the new challenges in terms of virtual education. For this, the platform must be structured on several divisions, so that it is easy for the user to access the type of service he needs, namely: education, communication, administration, research, staff, support.

This platform allows military students to upload the working materials (homework, work tasks, projects), organization on classroom structures and collaborative work. It allows students to learn remotely, to manage learning activities. For students this platform will be a space that encourages the creation and sharing of free educational content, which can be used by any person who has access to the platform. Access to the platform will be made through an id (the student / teacher will create an id using his/her own email address) and through his/her own password chosen according to the characteristics chosen by the educational institution.

In the "Education" compartment there should be different spaces, where there would be textbooks/ppt presentations/bibliography related to each subject, themes/projects of students, information related to the school situation of students, more precisely an online catalog that can be accessed by each student with his/her credentials, being visible only feedbacks and notes, thus avoiding discrimination and situations in which some students may feel demeaned. They would feel more motivated with the help of this platform because the materials would be much more relevant, the courses would be better organized, and they could get involved much more and more easily.

Many studies have shown that students find it much harder to express their face to face opinions, being restrained for many reasons, such as self-distrust, fear that what they will say will not be good enough or that they will be judged for what they believe. Therefore, it is very important that this platform contains a compartment, namely "Communication", where students can communicate with their teachers, be they military or civilian personnel, discuss the resolution of tasks or to inquire about the content of their work, and last but not least to talk to other students, to get to know each other better, to make friends, or to discuss issues related to a particular task.

Through the "Administration" department, military students will have access to certain information regarding the classification in the schedule, the teaching curriculum and will be able to find out what teachers they will have during the semester or the academic year. Students will be able to upload reports for granting permits, consents, etc., also students can choose through this platform what kind of food to eat at brunch (if they want to eat diet food, lent food or regular food), but they will also be able to communicate if they lack a certain piece of equipment. Through this compartment students will be informed if there will be any missions or camps in the near future.
If they have to look for information for certain projects or topics or want to participate in certain competitions, students will be able to find out this information from the "Research" department. They will be able to take an interest in certain missions and will be able to do research in the field in which they are located.

In the "Support" compartment there is an essential service that must be made available to students as well as military and teachers - a psychological service. For students it is very important because they can speak openly, receive advice and encouragement to develop self-esteem, to say what they think without fear and even if they are judged not to take everything too dramatically, but to try to be objective, ideally to learn something and try to correct their flaws in the future, if necessary, without blaming themselves or believing themselves inferior.

8. CONCLUSIONS & ACKNOLEDGMENT

In conclusion, after many years of stagnation, the education field needs an upgrade to improve its quality and that can be made through digitalization which is a very eficient way because of its benefits like saving time, protecting nature, easier comunication and stimulating students to bring out the best in themselves. Thus, they will become more interested in studying and when they end their time in school school or university they will be very well prepared in their specialization.

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MULTIMEDIA TRAINING SUPPORT, AS A MODERN TOOL OF TROOP TRAINING METHODOLOGY

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Abstract: *The following text will be describing use of multimedia support in military training. Specifically, benefits and disadvantages of using multimedia support in field training. By multimedia support is meant video, created especially for "field training" in first year of studies at the University of Defense. Method, used in this work is experiment. In this experiment there are three major measured sections, motivation, training results and memory. All measured against control group. Data, gathered from the experiment will be presented later. From the preliminary investigation is evident that there is increase in motivation which manifests in students training results. Multimedia technology are creating major part of your lives if we like it or not. This work is aiming towards approvements in transmission of information. Visualization of the enemy and crating more complex operation environment.*

Keywords *(max.5): multimedia, field training, modern, motivation, memory*

1. INTRODUCTION

The development of communication and information technologies evident in all branches of human activity. Currently it becomes a massive tool for pedagogy as well. For the current generation of students aren´t these technologies nothing new and since long they became part of their lives. They encounter visualized advertisement, a lot of popular and scientific programs at every step and they become an important influencing element in their lives.

If the pedagogy is to be able to provide effective teaching methods, it´s necessary to make use of multimedia technologies to their maximum. The goal of this research to detect impact, significance and effectivity od the video which was prepared and presented as a background for the education of the students from the first year of University of Defense. This video aims to clarify the activities, importance, and background of military-political development of enemy forces that will affect them during their training in the form of extras.

This multimedia support aims to modernize the transmission of information, combine verbal and visual expression, increase the motivation of the students, and visualize the general information about the purpose of the training, the opponents, their own units, and the general awareness of the main content of the exercise. To give all of this to the students in an interesting and educational form which will bring their active participation and personal interest in the training and will lead to the successful completion of the training by a control exercise. From this point of view are the information in the video on a personal level to awake the interest and motivation of the students. The purpose of the cinematic nature of the video is then to approach the students and help to fix the knowledge from the preparation in the field with the positive motivation. The expertise of the video is set up to provide certain insight to military matters and at the same time to be understandable and easy to get for the first-year students.

The aim of the subsequent research is to determine the impact of the audiovisual technique on the training, motivation, and memory of the students as well as the impact of the audiovisual processing of the enemy and general situations. The contribution of this to the final training of the unit was measured on the control exercise between control groups. Finally, how the audiovisual processing contributed to memorizing the points of

the general situation measured by tests and compared with the control group to which the written speech was only read.

2. MULTIMEDIA TRAINING SUPPORT, AS A MODERN TOOL OF TROOP TRAINING METHODOLOGY

2.1 Motivation. An important element of the educational process is motivation to learn.[1] The use of multimedia technologies has an impact on motivation and motivation on learning. “According to Vodák and Kucharčíková, the willingness to improve knowledge, abilities and skills affects the effectiveness of education and motivation is significantly influenced by the value that participants attach to learning activities in relation to work and possible career development.” [1, s. 191] Motivation has significant impact on students and the results of their work. Based on this we can assume that the students need to be motivated to reach better results and improve their skills.

Multimedia technologies have significantly changed the role of the educator. Therefore, the videos, animations and presentations can become the dominant source of information. The educator can take the role of a guide or mentor and by his activities rely on multimedia prepared for the purpose of passing on the information. [2]

The television educational program (video program) has for its visual auditive influences great perspectives. For its bigger application a better functional connection between program creators, program producers and their users (teachers) are needed. [2, s. 108] Autor of the publication expresses here the opinion where he attaches a potential to the educational programs on the condition of very close connection between creators, producers and users. Information is passed to the subordinates uniformly thanks to the educational program. By this the educational programs fulfill the entitlement for necessary information which needs to be issued to the subordinates. As the contracting authority the commander self chooses which information he wants to pass on (audio) and which to display (video). Consequently, can be the request, in ACR, submitted to the competent department, which could act in the role of creator of the audiovisual processing. The end users are the soldiers themselves to whom the information for complementing of the overall situation could be presented and the commanders, who could by help of such product better explain the situation to the soldiers, introduce it and allow them to better understand the consequences of the operation.

The didactic relevance of experiental learning express an approach that is based on the ability of human memory to absorb information whose perception is associated with more intense emotions. This method is also called “experiential pedagogy” The main content is the experience of the individual which has impact on his behavior. [3] Experimental pedagogy is based on the fact that a person acquires the best the knowledge, skills or experience that he tried or experienced first-hand. [3, str. 204] Based on this statement we can conclude that a stay in the Březina training area combined with multimedia technology can contribute to acquisition of knowledge, skills and experience. Especially if it´s associated with sufficient motivation of the student. The own experience appears to be beneficial learning tool. If this experience is complemented with intense emotional expression the learning process should be amplified. This is what the video used in this thesis tries to aim for. The purpose is to draw the participants into the action and transport the information about the enemy to the personal level by using the visualization.

A certain type of course is the so-called Outdoor training. This type of course represents activities where a group is exposed to physically demanding tasks in a natural environment. This environment thus creates certain demands on the participants, both physical and psychological. Such courses are associated with the term Outward Bound. This term comes from old maritime English and describes the moment when the ship leaves the port. The term for the international educational organization Outward Bound comes from this term. The first school was founded in Great Britain in 1941, during the war, and still has a tradition of more than sixty years. Its original purpose was to train young sailors. Under training conditions were the young sailors able to “try out” the critical situations that took place at sea. In this way it contributes to the expansion of their physical and mental resilience. Kurt Hahn (one of the two founders) worked with two principles. [3]

- One can do much more than one thinks
- Few people realize what can be achieved through teamwork [3]

This attractive and effective method caused that after the war the Outward Bound rapidly transformed into a civilian form and spread to a number of countries and still works. [3] This text and type of teaching was first created for was conditions that are very similar to the conditions

we encounter in military exercises. Its success has led to its transformation to civilian sector, but this transformation can take place back from civilian castor to military purposes. It can be used as a cornerstone of experiential pedagogy in which it is expedient, although very suitable to use multimedia technologies. Firstly, due to the modern concept of was where digital technology is an integral part of future conflicts. Secondly as simplification and savings. The enemy, his elements and doctrines can be presented through video and do not have to be modeled physically what could be very complicated. In civilian life the television is one of the elements from which we learn about general events through audiovisual processing and his can be applied to the military environment as well. However, it can be deducted from the following text that the audiovisual processing itself serves only as a support for the training. It cannot exist on its own and it is necessary to link this support with real events in military training.

For the maximum effect of each outdoor course five basic prerequisites must be met. [3]

- Authentic experience

It is a cornerstone. It´s created by using of different model situations and games, which however have the real nature and character of a potential event. They are a real picture of the functioning of individuals and entire groups in a normal work environment.

- Reasonable length

Sufficient length is essential to handle these steps. It should be sufficiently motivating but manageable. Determining a specific time depends on the nature of each particular course.

- Social group and nature

No formal structure. From this it is possible to deduce the problem in terms of implementation for ACR environment. However, in this environment the characteristics of individual course participants and entire groups are best displayed.

- Group analyzes

They are the key phase of the learning process in the course. They help participants in the process of generalization and transfer of subjective experience into practical usable experience. [3]

2.2 Experiment.

Methodology:

Obtaining results is divided into three areas. The impact of video can manifest itself in three areas, both positively and negatively. These areas are training, motivation and memory.

Training:

The main component of the survey is the impact of audiovisual support on the unit's training. The video itself can intervene in several areas of the human psyche, but the purpose is to find out how this interaction will affect the achieved results. Based on the results is possible to consider whether and what are the video benefits and whether it can be processed by the units in order to strengthen the unit's training and achieve better results.

The evaluation of the achieved results will take place at the end of the exercise during the control training exercise. The determination of the achieved level of training at the unit will take place within the comparison of the measured results of the control exercise with the control group, which will not train with the support of audiovisual shots. The measurement will take place according to the methodological sheet at the final control exercise in the field, where participants are scored for the range of activities they have learned and which they should master at the end. It is primarily a matter of managing the reaction to a strong and weak enemy.

Motivation:

The second evaluated area is the motivation of the course participant. This will be measured by a questionnaire survey directly on the participants after the training. The results are going to be compared via the control exercise for the participants directly. The correlation between these data would mean a ratio in motivation and achieved results. If the correlation is not proven, the influence of the used audiovisual means on the given individual can be deduced from these data if the video is distracting or motivating. If this correlation with the results is not reflected, it would mean that the video acts only in a motivating way, which has no demonstrable effect on the results of the control exercise.

Memory:

The last measured area will be the effect of the audiovisual aid for the participants. After the presentation of the video and after the presentation of the combat order, the students will be divided into three groups. The first group receives only a complete combat order matching the content of the video and the first group also represents the control group. The second group will receive a complete combat order corresponding to the content of the

video and supplemented by a multimedia projection. The last group will receive a simplified combat order, which will summarize the most important points of the video and will be supplemented by a multimedia projection. Then we find out the results by testing that indicate the amount of information that the tested group received. These results will tell us about the nature of the used video, whether and what effect it has on the trainee. In all cases, the video is accompanied by a combat order. The video itself does not aim to replace the information from the combat order, but to develop it. In this case, the multimedia tool serves as a modern means of supporting training.

The results should show a quantitative increase of the received information compared to the traditional transmission of information. These data compared to the time and financial costs of multimedia will provide the basis for calculating at what cost and time can increase the performance of soldiers in terms of learning. This will provide a basis for quantifying the success of the video compared to the cost. This data can be used to correlate results with other areas.

If agreement and increase are proved in all three areas, it can be assumed that multimedia support has an impact on soldiers' training. It is necessary to compare the costs of a video because of the price and consider if is the price acceptable for the increasing results. In the case that agreement is reached only in some areas, the conclusion depends on the specific results. If there is no agreement in any area, we can say that multimedia support had no effect on the training. If we come to negative values. We can say that multimedia support is undesirable and acts as a disruptive element in the training of troops.

3. CONCLUSIONS & ACKNOLEDGMENT

In the preliminary investigation, a relatively sharp increase in interest in training was found, as well as a partial increase in training results. According to an expert observation it is estimated an increase in interest of 30%, which was reflected in the improvement achieved in the final score by 10%. These estimates have been made by training leaders who can compare the situation before and after the introduction of multimedia support. Exact results have not yet been achieved, as detailed measurement with research is in the implementation phase. However, this pilot survey identified the impact of this support on training. The final results will be delivered in the form of a presentation.

Multimedia technologies permeate a wide range of human activities today. Their importance is growing, so we should ask ourselves questions, how can we use them to make training more effective? The following work should answer this question. From texts by various authors, we can find out in which areas this multimedia support affects and how it is likely to manifest itself in the use of audiovisual training support. Based on this, you can build the hypothesis that multimedia support will have a significant impact on training. In the preliminary investigation, this hypothesis is amplified and its position seems to be correct. However, whether the experiment itself or its results will be confirmed will be shown.

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APPLYING AI FOR MILITARY CLASSIFICATION TASKS THROUGH UNIVERSAL MACHINE LEARNING WORKFLOW

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Abstract: *Artificial intelligence is a branch of science that wants to solve the complex problems of the human brain. This characteristic is made by AI through information gathered from human beings and put in math algorithms in a friendly way for the viewer's interface and for the computer's processor. It solves problems that can usually be solved by any person, or almost any person, but in a different manner. This branch is associated sometimes with psychology, cognitive processes, philosophy or biology. All of them combined with IT results Artificial Intelligence. This project uses Artificial Intelligence to find different targets on the sea or in the air and to make a classification of them with the help of a premade database.*

Keywords*: intelligence; machine learning; neural networks*

1. INTRODUCTION

I will present to you what and why we call "Artificial Intelligence" like this. My first thought on this term, a long time ago, was that there was nothing to interest me in the matter, and maybe this is what you think too right now. The thing that made me curious was the actual discovering how artificial intelligence is involved in our life day by day. It is already known that there are a lot of robots that "live" with us day by day. If you did not know until now, some of them use artificial intelligence from the moment you turn them on and maybe even after you turn them off. When I discovered that Artificial Intelligence could be used in so many ways, the first thing on my mind was "How can I use it?" Of course, there are a lot of areas where AI can help us, but I have chosen the military area because there are a lot of benefits we could draw from this kind of technology.

2. THE TEXT OF THE PAPER

2.1 Data collection. This project works at the moment with targets that are on the surface of water or in air. They are discovered by cameras from drones, airplanes, helicopters or even from personal footage with a fairly good camera. There are a lot of sources for images and photos even for information that should remain a secret because, nowadays, you cannot keep anything secret if it is important. Let's talk in the language of engineers.

2.2 Universal ML Workflow

2.2.1. Define the Problem and Assemble a Dataset

Problem = classifying the naval and flying targets based on type (multiclass classification)

Dataset collection = OSINT

Label images based on their type

The problem at hand is trying to build a model that is able to recognize different types of naval ships and aircrafts. The model could then be easily implemented on different hardware devices able to capture new images and classify them, which would speed up the process that is currently performed using manual labor. The advantage of using AI and more specifically, the Machine Learning branch, is that given a big enough dataset of images and their specific labels, a model could be developed to recognize the particular features that distinguish the different types of naval ship or aircrafts by "learning" them from the provided dataset.

2.2.2. Pick a Measure of Success

Accuracy -> the model tries to get the best value for accuracy = # of correct predictions divided by the # of total predictions

In order to check how well the model performs, we could just simply count how many predictions are done correctly by our model out of the entire provided dataset.

2.2.3. Decide an Evaluation Protocol

Divide the entire dataset into

I. Training dataset (60%)

II. Validation dataset (20%)

III. Testing dataset (20%)

Because the purpose of the model is to be able to recognize not only the already known images, a validation dataset will be used. Its role is to make sure that our model doesn't only learn features specific to the provided dataset, but features that could be applied on new images as well.

2.2.4. Analyze and Prepare your Data

I. The model cannot process directly the images

II. Take the raw data and transform in into an appropriate input for the model

III. Appropriate input = vectors of pixels (lists of pixels)

We have the RGB database. This base has values from 0 to 255 for each one: Red, Green and Blue. These values differ from image to image and they can be 0,0,255 (for blue) ; 0,255,0 (for green) ; 255,0,0 (for red) for a clean masterpiece to see the exact color for the model. After that, you combine the values and you have to find the most appropriate color name that already exists, because we can't create new colors. For the moment, there are 140 different colors that describe RGB with high precision. After discovering the colors, for the input we need vectors of pixels with the list of pixels, because this is how AI works, almost like the human brain.

2.2.5. Develop a Model that does better than a Baseline

Under development - first attempt will be using Convolutional Neural Network

The main approach would be building a model composed of stacked convolutional layers that have the role of extracting the features specific to the provided images. A dense layer would be used in the end after flattening the outputs from the previous converted layers in order to ease the classification process.

3. CONCLUSIONS & ACKNOLEDGMENT

In conclusion, this project aims to help Romanian Armed Forces in the process of improving its technology and its standards. Being in NATO and in the European Union, we have to update our allies requirements. I think that our generation can make the difference between an old military technique and a new one. The key in this step is ensuring the continuous learning process to which we have to adapt as professionals. All we have to do is to discover what is new and how it works.

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EFFECTIVENESS OF CHAFF

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Abstract: *The supply of consumables on the battlefield as it has been proven from time to time is very great as they can become lifesaving in danger situations. This is why consumables will continue to be in the spotlight for some time to come, which applies to all types of electronic countermeasures such as noise interference systems and mechanical countermeasures.*
This paper deals with the area of self-protection of entities that own and use electronic countermeasures, focusing on the factors that influence the effectiveness of chaff. Describes the chaff layout. In particular, reference will be made to a general framework on consumables, and then the chaff project developed in the context of this paper will be presented.
The software that will be presented in this paper can be used directly for the preparation of consumable programs for the self-protection of aircrafts and helicopters and be used directly by the respective air force units.

Keywords*: Chaff, effectiveness of chaff, consumable programs for the self-protection.*

1. INTRODUCTION

1.1 Consumables remission systems

Consumable electronic countermeasures (expendables) fall into the general category of passive and active electronic countermeasures (ECM), which include all the means that act separated from their operator, in order to mislead the hostile systems (radar, IR guided missiles, etc.). They are easy to use, relatively cheap and are usually consumed when engaged in battle - their carriers can be ships, aircraft, vehicles and even shore bases which can be damaged in a variety of ways.

The first involvement of consumables was made during the Second World War by the Allied air force. Specifically, on 24-25 July 1943, more than 40 tons of chaff were dispensed during the bombardment of Hamburg (740 B-17 bombers), resulting in the complete confusion of the German air defense radars. These countermeasures are standard low-cost electronic warfare equipment for both warships and aircraft, while their technology closely monitors the corresponding technological development of radars and IR seekers.

A radar can be jammed by an active or a passive countermeasure. Chaff are the most popular and the most used passive anti-radar countermeasures. The above belongs to the group of defensive consumables and is the main defense for radar threats. They are the cheapest and most effective consumables.

2. FEASIBILITY AND NECESSITY OF ADDRESSING THESE THREATS

Specifically, they are defense mechanisms used by military aviation to avoid reconnaissance or even attack by enemy air defense systems. Consumables can be used against both airborne and ground-based air defense radars. Countermeasures are very important for any airborne platform that is exposed to danger, as in a prone situation any time dealing with radar threats can become a lifesaver. In short, consumables give time to pilots to "escape" the threat, but the major disadvantage of this category of countermeasures is that they are consumable.

Fig. 1 F16 *dispenser*

The enemy prefers to strike from a distance to avoid any harm to its own. The greater the distance, the safer its systems are. Modern weapons are designed to reach targets at even greater distances and to cover such distances at ever higher speeds, so as to reduce the time for an effective defensive response, thus increasing the probability of success of the weapon. Weapon systems have sufficient precision of targeting over long distances, this is ensured by electromagnetic sensors that accurately detect and locate targets over long distances, thus allowing accurate bombardment and accurate missile guidance to the target. Thus, countermeasures are used either to create an apparent situation where the radar has a false picture of what is actually happening in the airspace and thus achieves the concealment of certain intruders who infiltrate the airspace or to provide self-protection to aircraft. Chaff belong to the RF band and flares in the IR zone, they provide "safety" without any signal transmission. As has already been mentioned a seduction is succeeded through the concealment of the real target.

Consumable systems are used because they are cheap compared to electronic interference systems. Since most parts of consumable absolution systems are mechanical, their maintenance is easy and the average time before failure (MTBF) is long. On the other hand, electronic interference systems do almost all the work using electronic sensors that are quite difficult and expensive to maintain. In conclusion, consumable systems are a good alternative to electronic interference systems when it comes to cost and maintenance concerns and can become life-saving if used with the right schedule and tactics.

2.1 A few words about chaff

Chaff is a very inexpensive and effective solution for deceiving RF threats. They are dipoles made of aluminum with a small diameter and a length of $\lambda/2$, because in this particular length the maximum movement of electrons is achieved and as a result the maximum reflection is achieved. They are released in packages and each package contains dipoles of different lengths to cover all the frequencies of the enemy system that the carrier may face. During their launch, they form large "clouds" of reflective surfaces (RCS), which, although they will increase at first, will soon disappear. When the aircraft dispenses chaff in a large number of packages, a cloud will form, making the aircraft temporarily undetectable by enemy radar and as a result also safe. The two main types are aluminum foil and aluminum-coated glass fibers. Although they can still be used, aluminum foils are no longer manufactured.

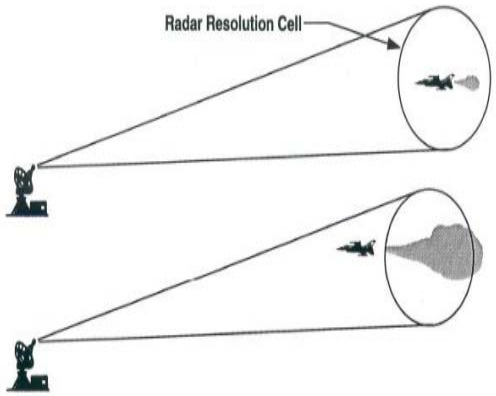

Fig. 2 Entrapment of Chaff

2.1.1 Chaff arrangement

The highlights of the chaff are the detonator, the piston and the load (the dipoles). The detonator is responsible for activating the piston. The piston is responsible for ejecting the load by breaking the lid at the end.

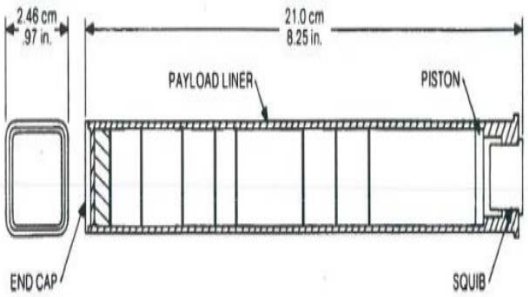

Fig. 3 Chaff layout

The function of chaff is to reflect the radiation from the enemy radar that hits them, so that the radar releases the target and traps them. Decoys

have the same philosophy, except that they can be either active or passive as opposed to chaff which are passive in general.

Chaffs can be used in several different situations which will be mentioned below. It is in these situations that their feasibility on the battlefield is highlighted.

Deception: In this type, the target tries to create many false targets away from the actual target by distributing consumables, so that the radar cannot locate the real target and spend its time and energy on the produced false target.

Distraction: The target develops a cloud of chaff in order to send a false echo signal to the radar, this is done before the phase where the rocket is launched and enters search mode. In this way, the radar system can be tricked into "considering" that the real target is the generated cloud from the chaff and completes the impingement in false target.

Sorting: In this method, a very large and extensive cloud of chaff is created between radar and target due to the extensive return of echoes from this cloud, the detection performance and the clear range of the radar are reduced.

Seduction: The goal of this type of use is to break the radar lock by creating a large cloud of consumables in the radar analysis cell, then the goal must be taken out of the radar analysis cell.

Saturation or confusion: Many false targets are created near the target by the use of clouds from chaff, so that the probability of a false target increases for the radar, as it identifies these clouds as false targets on the radar screen this method is generally applied when the distance between radar and target is large.

2.2 Suppression of threats

Aircraft combine these countermeasures with maneuvering techniques, thus increasing their chances of survival. An effective defense of aircraft against a missile therefore lies in the use of these various techniques together including the experience and skill of the pilot. Also depending on the measurement of the target's capture and the capability of the threat, the difficulty of avoiding possible attack by the enemy is defined. It is therefore important that the pilot understands the effectiveness of these countermeasures individually and as a group through simulations, to use them effectively in practice.

2.3 Conditions

The FAA (Federal Aviation Administration) has placed strict restrictions on the use of consumables such as chaff, flare, etc. used within zones controlled by air traffic control radars and navigation systems. For air traffic control and flight safety, the FAA has set restrictions on the locations, altitudes and/or time periods within which certain types of consumables can be used.

2.4 Chaff effectiveness

In order to achieve their purpose, they must be fully deployed in the radar resolution cell (RRC), which is a three-dimensional space in which all objects appear as an indication on the radar. In addition, their RCS must be larger than the RCS of the means of transport they protect. Once fully deployed, either an aircraft or a helicopter must leave the RRC to achieve its release from radar[Break Lock (BL)]. Of course, in order to be able to fully develop and achieve break lock, the defending aircraft must remain constantly in the same RRC. That's why it's wise for an aircraft to fly along the maximum dimension of the RRC. In conclusion, the sooner the chaff are deployed, the easier it will be to extricate themselves.

As already mentioned, chaffs are dipoles made of aluminum which have a very small diameter and a length of $\lambda/2$ where λ is the wavelength of the emission radar. They are launched into "packages" ($\approx 10^6$ dipoles) and are used only once. They are an easy-to-use and inexpensive solution to deal with older-tech radar radar threats and have reduced efficiency on modern PD radars.

Then we see an example with a specific length and number of dipoles. From the following we conclude that a certain wavelength also works at the harmonic frequencies of the radar as for e.g. 3,6,9 etc.

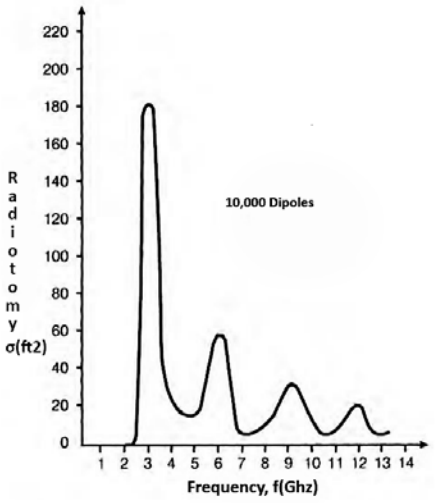

Fig. 4 Radio dissection and operating frequency

As we see in the next graph due to the fact that inside a chaff there are different wavelengths which create RCS at different emission frequencies, it follows that a cartridge is effective in a frequency range.

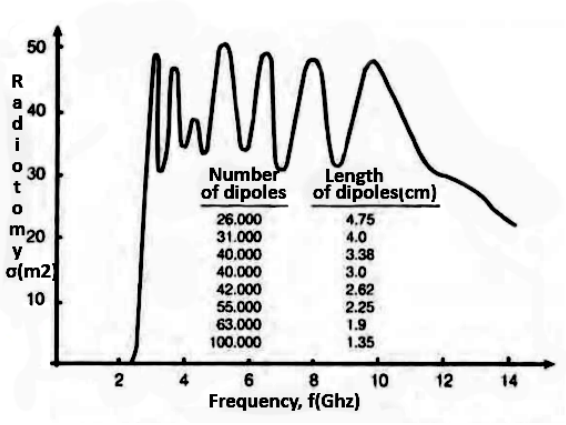

Fig. 5 Radiotomy and operating frequency

We conclude that the effectiveness of chaffs depends on the cutting length of the dipoles and their number respectively. So within a cartridge there are many different lengths so that they are effective for different radar threats.

2.4.1 Principle of operation

As already mentioned the objective of chaffs is to fully develop them within the RCS. Then the radar is trapped by the chaff and the aircraft must be taken out of the RRC. The parameters for chaff to be effective are the maximum RRC, the movement time of the aircraft within the RRC, the RCS of the aircraft, the growth rate of the chaff, and the RCS of the chaff within the RCC.

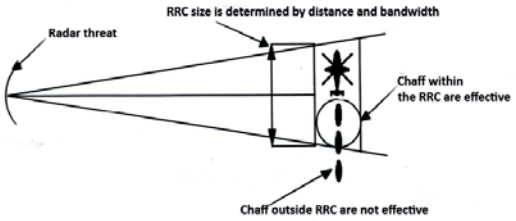

Fig. 6 *Target movement within the RRC*

2.5 Chaff effectiveness program

The program was developed within the framework of the present dissertation with the aim of extracting the correct chaff program and at the same time calculating the angle of rotation during the remission maneuver if necessary. The computational formulas were taught in the course of electronic warfare. The design was done by cadet 4rd Menelaou Mario. It is worth noting that no special program was used to layout the user interface and everything was designed with code writing. Finally, the language used is the python programming language.

2.5.1 Purpose of the program

The purpose of the program is to calculate and extract the chaff program to be used by the operator in case he is in the prone situation. The pulse width of the antenna, the Beamwidth of the antenna in the direction of maneuver, the compression of the pulse if any, the distance from the threat (in space) are inserted into the program, the mean RCS value and the average maneuvering speed. The program calculates and prints after specific operations the number of chaff packets (BC), the time of remission of chaff packets (BI) and the escape angle to be performed by the operator during the remission of the chaffs. The correct program and the appropriate remission maneuver mainly achieves the full deployment of chaff in a shorter period of time and thus it is easier to extricate the target.

Further details about the programme will been shown at the presentation.

3. CONCLUSION

This study is crucial for the air force as the information provided on threats and how to deal with them can ensure the required security in the conduct of operations. In particular, the chaff program gives the way in which they should be distributed so that they are effective. In addition, the escape angle is automatically calculated during the chaff remission maneuver. Finally, it is the duty and responsibility of each operator to know the way and the remission tactics so that the consumables become effective and therefore life-saving.

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THE THREAT POSED BY MODERN UAS, ILLUSTRATED BY THE WAR IN NAGORNO-KARABAKH

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Abstract: *In this publication I wanted to present an overview of unmanned aircraft through the Nagorno-Karabakh war. The ever changing technology and warfare requires knowledge of these systems and how to defend and prepare against them. In this paper, among other things, an evaluation of the event, a presentation of the systems used and possible defensive measures are presented with reference to future warfare. It also looks at the financial implications of incapacitating drones and the threat they pose to civilian areas.*

Keywords: *Nagorno-Karabakh, unmanned aircraft system, air force, loitering ammunition, anti-aircraft gun*

1. INTRODUCTION

The Nagorno-Karabakh war took place between 27th September and 10th November 2020 between Armenia and Azerbaijan. It was considered a territorial war in which Azerbaijan gained control over at least 5 cities and a part of the Iranian border line.

The war caused a great deal of media coverage on military technology, as the Armenian Armed Forces suffered very high and disproportionate losses in terms of military technology and human resources. From this outstanding figure, one can conclude that we are talking about a kind of asymmetric warfare, but not in the usual form.

By destroying or capturing more than 4 billion US dollars worth of military equipment, Armenia has lost, without wishing to exhaust the list, more than 287 tanks, 7 S-300 surface-to-air missile systems (SAM), 67 infantry fighting vehicles, 5 SU-25 ground-attack aircraft and nearly 3,000 soldiers. In contrast, the Azerbaijani Armed Forces suffered negligible losses in terms of armoured vehicles. Most of the Armenian Armed Forces' losses were caused by the Turkish-built Baykar Bayraktar TB2 medium-altitude, long-range unmanned combat aerial vehicle (UCAV). In addition, other military equipment, both small and large unmanned aerial vehicles and loitering ammunition, were also involved in the conflict.

2. THE ROLE OF DRONES IN COMBAT

2.1 UAS capabilities. Most of the damage suffered is due to air-to-ground missiles and loitering ammunitions. Unmanned aerial vehicles (hereafter drones) have played an important role in aerial combat operations since the early 21st century, but in the conflict I have studied that they caused exceptionally high losses to the Armenian Armed Forces. Initially, drones were used for target designation and in a reconnaissance role [6]. At that time, drones were the size of a conventional aircraft. Today, however, these devices can range from small drones of less than 15 kilograms to several thousand kilograms, and vary greatly in their use, range and capabilities. The main flagship of unmanned aircraft system (UAS) was the General Atomics MQ-1 Predator US drone, which was introduced in 1995 as a combat drone.

Drones should be detected, identified and intercepted or destroyed in the conventional sense in the integrated air defence system. There is a need to prepare for the mass emergence of drones in theatre of operations as their relative ease of use and low cost make them an alternative to more expensive aircraft, which is generating their rapid proliferation. If these conditions are not considered with the above mentioned criteria, in that case, the presence of these drones in the theatre of operations, like in the Nagorno-Karabakh war,

could be decisive.

2.2 System that used in the conflict. The Turkish Bayraktar TB2 combat unmanned aerial vehicle Medium Altitude Long Endurance (MALE) is a medium altitude, long-range, Intelligence, Surveillance and Reconnaissance (ISR) and armed attack mission aircraft capable of carrying and delivering a payload of 150-kilograms or 4, air-to-ground laser-guided missiles. The drone can be controlled by the operator or autonomously according to a pre-programmed plan, making it more difficult to interfere (EW).

The Skystriker manufactured by Israel's Elbit Systems, is a cost-effective, long-range, precision loitering ammunition. The Skystriker can detect and destroy targets of its operator's choice, even completely autonomously, using a 5 kilogram explosive charge housed in the drone's fuselage. A critical advantage is its silence, small size and flight altitude, making it difficult to detect.

The Orbiter 1K is also a loitering ammunition that upon activation destroys a target by striking it. It is a lightweight system capable of delivering 3 kilograms of explosives. It is capable of fully autonomous mission execution or, in the event of missing a target, of landing by parachute and using airbags.

2.3 Threats on the theatre. The challenge posed by the drones listed above is how to detect and destroy them. It is necessary to mention that I would like to highlight specifically the air defence capabilities in the theatre of operations. That said, there are further questions about air defence and drone destruction in areas where there is essentially no conflict. There is an increasing threat from unmanned aircraft that are appearing in strategic locations such as nuclear power plants. In an area where conflict and the appearance of these assets are expected, there is a chance to prepare and executing effective counter drone operations. However, in an essentially peaceful environment, where a small-scale drone attack could affect the environment in a completely unexpected way, it could lead to a fatal disaster. Therefore, some countries are restricting drone activities. In such areas, it is almost impossible to defend against these drones, as most countries do not yet have the regulations and resources to deal with this type of threat.

2.4 Options of anti-drone activity. Drone avoidance in theatre of operations needs to be considered from several perspectives. Its visibility depends on its size, design, propulsion, speed and altitude. The area of use has the greatest influence on the destructibility of a drone. If it is only used for data collection, i.e. surveillance or reconnaissance, its size may not be close to the size that an air defence system could effectively detect and destroy. Furthermore, the unit cost of these assets is in many cases much lower than the air defence asset itself, which they are required to destroy.

In many cases, regular surface-to-air missiles developed against conventional aircraft - such as the S-300 or the AIM-9 air-to-air missile systems - are not effective against small loitering ammunitions. By way of comparison, the purchase price of a Skystriker drone is estimated at USD 130 000, while the missile of an S300 missile system costs approximately USD 1 000 000. Further questions arise as to the cost-effectiveness of an LPWS (Land Phalanx Weapon System) integrated into a CRAM system, capable of firing approximately 75 rounds per second at a cost of approximately USD 27 per round, and thus capable of firing USD 2 000 worth of ammunition per second, against such a target.

The air defence capabilities of the Armenian Armed Forces are mainly based on the post-Soviet SA-3 and SA-4 air defence missile systems, which are no longer able to meet the challenges of the 21st century. Consequently, they are not capable of providing adequate air defence. In addition, integration is a fundamental pillar of air defence capability, which is already present at all levels, from the tactical Man-Portable Air Defence System deployment to the integrated air defence system, and ensures air defence. If these requirements are not met, high casualty rates must be calculate on and consequently the conflict becomes asymmetric and the concept of a regular warfare changes. The SA-3, a two-piece surface-to-air radar-guided missile system, was introduced in 1961. The SA-4 was introduced in 1957 as a single-stage radar-guided surface-to-air missile system. They also have a 9K333 Verba anti-aircraft missile, but do not have self-propelled anti-aircraft gun, which would be a cornerstone of the air defence capability against drones.

2.5 Importance of electronic warfare. The destruction of combat drones by kinetic energy may be the most obvious solution for countries that do not have the resources or technology for electronic warfare. Electronic warfare, on the other

hand, is also an indispensable element of air defence, the lack of which can lead to very high inefficiencies. The early detection of enemy assets could let you down as they are time-sensitive and approach surface units at high speed. In addition, there are several cases where the effectiveness of drones can be reduced by electronic warfare, such as tracking the location of the operator, jamming radio communications between the drone and its operator. For example jamming the Global Navigation Satellite System (GNSS) signals, which can result the drone being unable to determine its exact location leading to the loss of asset.

3. CONCLUSIONS

A whole new era in air warfare, surface and air-to-air operations has dawned with the advent of new small and medium sized unmanned aerial vehicles. In terms of both price and capability, they have already surpassed those in use in regular air warfare. This represents a new challenge for all countries, one that cannot be ignored, with potentially fatal consequences. Developing air defences is not an option, but a mandatory pillar. It is necessary to develop a completely new air defence capability and doctrine against these means. The huge losses experienced in the Nagorno-Karabakh war are probably only the beginning of an era where, if air defence capability is not properly developed, similar levels of losses can be expected. Regardless of this fact, I do not think that the advent of drones will completely change the balance of power between countries. In the future it is likely that high-powered laser illumination will provide the solution to this type of threat as it allows for more cost-effective operation.

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THE ROLE OF THE ENGLISH LANGUAGE IN TERRORIST PROPAGANDA

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Abstract: *Terrorism represents an unlawful and strategical use of violence to achieve political, ideological or religious desideratum of a group or organisation. The concept of terrorism is widely known. Even though the term was earliest coined in the 1st century, the political experts are still discussing about it at the moment. The following article analyzes the role of the Internet in shaping the language of terrorist propaganda, the reasons why, as a global language, the language of 'the enemy' becomes the linguistic expression of choice. It provides an overview of English-language magazines, Internet articles and video materials, but also an interpretation of great terrorist leaders' discourse, regarding vocabulary and semantics.*

Keywords: *terrorism; ideological desideratum; Internet; English; propaganda*

1. INTRODUCTION

The terrorist movement is one of the most common topics in the actual international political and ideological context, being a considerable fear of the globally major state actors. Admitting the existence of terrorist groups starting from the Ancient period, the concern about their evolution is amplifying, as the warfare technology is constantly developing.

An important remark about the frequency of terrorist attacks during the past century can be highlighted, considering the fact that the violent extremist actions multiplied as the mass-media expanded and English was adopted as the supreme international language. The purpose of the movement is to accomplish the aims by increasing the number of the sympathizers. As the technology is developing, the means of the terrorists to expand and promote their ideology are evolving and adapting to actual international issues. The Internet and the use of English language are the main instruments applied for dissemination of propaganda. The extremist groups find inventive manners to gain popularity among the young generation, but also among conservative people who share their ideology, religion or political desideratum.

This paper intentions to represent an analysis of the reasons and methods for and by which the terrorists use the English language in their propaganda. Their knowledge is mandatory to intercept the upcoming violent attacks, to diminish their number, but also to combat large-scale terrorist movements.

2. PROPAGANDA

The propaganda represents a systematic effort to spread an information or an ideology which manipulates a mass of people in order to become a sympathizer of a party, an organisation or a group.

2.1 Use of the Internet

Mass-media is the most actual and efficient mean to disseminate information and to easily manipulate. It includes social networks, virtual messages, articles, presentations or audio-video files. Internet has the largest range of information which promotes the freedom of expression, one of the fundamental human rights, protected by International Law. Even if there are strict regulations about the types of content which users are allowed to post, to write or to highlight on the Internet, like sexually explicit content and racism, the terrorists adapted to network requirements and started to transform their violent message into a suitable one for the media.

Propaganda purposed for potential or actual supporters is focused on the specific three stages: recruitment, incitement and radicalization, spreading messages conveying pride and dedication to an extremist and violent aim (United Nations Office on Drugs and Crime, 2012:3-7).

2.2 The importance of using English language

English is one of the most important international languages. Even though some linguists do not consider it as the most influent, it is the official language in 67 countries and 27 non-sovereign entities. Modern English is considered the first global 'lingua franca', especially for international relations and organisations, including the UN and NATO. In the military field, knowledge of the English language is mandatory in order to communicate with the foreign members of another country's military or with people in general. Considering the agreements and regulations between the military and the civilians, for example, the aviation standard phraseology and procedures, established by International Civil Aviation Organisation, the importance of this language is clear.

2.3 An analytical overview of Islam's English-language magazines

The main purpose of English-language magazines is the spread of messages to Muslim audiences, especially for those who live in the West, either Europe or the United States. One of the magazines which rapidly gained popularity in the 2010's was Al-Qaeda's 'Inspire'. It had a section which offered detalied operational advice in a diverting way, with articles such as 'Make a bomb in the kitchen of your Mom' (Ingram, H.J, 2018:6).

The following Islamist magazines are analyzed in this paper: 'Islamic State News', 'Islamic State Report' and 'Dabiq'.

'Islamic State News', or ISN, published in 2014 in 3 Issues, promotes IS's political and military capacity and efficacy, but also the western threat, the violence and cruelty the Europeans and Americans manifested against Muslims. This magazine brings out to the light the politico-military activities' diversity, but also the scope of their control areas. The language register is important to be remarked, as the editors use a casual style and common words (Ingram, H.J, 2018:7).

'Islamic State Report', or ISR, makes the transition from informal, casual register to the formal and authoritative one. It contains considerably shorter articles, primarily based on detalied strategical aspects and operations. The publishers followed marketing techniques to fascinate readers, using eye-catching pictures, colors and fonts. Furthermore, the ISN and the ISR present economy and agriculture aspects, such as: 'Farmers reap the rewards of their harvest by giving zakah' (Ingram, H.J, 2018:8). Zakah represents a practice where Muslims give 2.5% of their wealth for charity aims. The Muslims donate this amount of money because they consider wealth as a loan from Allah which has to be given back. In their culture, this practice purifies souls by not being greedy.

'Dabiq' has 15 published issues with articles based on thematic diversity. The magazine applies manipulation recurrent methods consisting of articles which appeared several times in essential sections written in each issue. 'Dabiq' has a similar format to 'Islamic State News' and 'Islamic State Report', using pictures and brief articles that capture the central subjects of which readers have shown a real interest. One of the sections that has been regularly published in 'Dabiq' is 'Wisdom' - excerpts from the Quran or hadiths related to key themes (Ingram, H.J, 2018: 11).

2.4 What do the terrorists pursue?

Nowadays, 27% of the Earth's population speaks English as a first or second language (Anoop, N., 2017). This percent also represents the category of the worldwide population that has access to mass-media and uses it constantly. It is almost one third of all people in the world which can read, listen and see terrorist propaganda disseminated online. This is the main argument for the process of translating the great leaders of the terrorist movement's speeches from Central Semitic languages family like Arabic, Assyrian or Syriac, to English. Thus, the process of recruitment and radicalization can quickly gain popularity among young generations, effortless to influence due to their characteristic energy and restlessness. The terrorists groups' desire is to 'globalize' the movement, to gain more and more sympathizers who can militate for their ideology or their political aim, but, moreover, to create a global Islamic caliphate (Meleagrou-Hitchens, A. & Kaderbhai, N., 2017:13).

In this regard, the US Government, concerned by the attempts of Al Qaeda and its global affiliates to recruit more Americans and Western Europeans, the State department started an online campaign to combat extremists' intention of recruiting English speakers. Texts and images are posted by analysts who speak Arabic, Urdu and Somali on websites frequented by jihadists. Their

purpose is to create emotion and to discourage affiliation to any violent terrorist group (Schmitt, E., 2013).

3. AN ANALYSIS OF TERRORIST SPEECHES AND DISCOURSE

3.1 Type of speech

The terrorist manner of speaking and writing includes common, ordinary words, accessible to all English speakers. The leaders of this group do not look for highly educated people, but for the ones with reduced financial possibilities and resources, who can be easily manipulated. Terrorists go in search of poor people, human beings who lost their hope, their will to live. The aim of these groups give those people a purpose to live or at least a reason to fight for and to change their statute (Nicholls, P., 2017).

The technique the terrorists frequently apply in their oral speeches is the embellishment of the language in order to enhace persuasiveness. This method habitually involves the repetition of the promises that would be fulfilled by their cause, exaggerations and abusive phrases (Omozuwa, V., 2010).

3.2 Word register

Propagandists' speeches include a common register of nouns, including their three subtypes, depending on the message supposed to be verbally transmitted: concrete, abstract and collective (Lund University, 2011). Most of them consist of words from the casual linguistic register, using terms of political and military stylistic register which outline the cause they're fighting for: 'campaign', 'warrior', 'enemy', 'economy', 'operation theatre', 'siege' (Nordquist, R., 2019). The terrorist movement also prefers to strike the sensible and labile side of human nature by bringing forward words like 'oppression', 'slaughter', 'kill', and, of course, 'terror', which serve to the incitement to hatred.

4. THE FIGHT AGAINST THE SPREAD OF THE TERRORIST MOVEMENT

4.1 NATO's mission

NATO, as in North Atlantic Treaty Organization, is the central contributor to peace and security on the international stage. Its democractic and peaceful values forces it to get involved in military and diplomatic conflicts, particularly in situations which may affect the values of the Member States.

The organization engages in defense operations, such as Peacekeeping or Resolute Support Missions, especially in Muslim countries, exposed to terrorist risk. The widely-known suggestive example is the International Security Assistance Force, followed by the Resolute Support Mission in Afghanistan.

The International Security Assistance Force was a multinational military mission in Afghanistan from 2001 to 2014. Its primary goal was to train the Afghan National Security Forces (ANSF) against the means of the terrorist movement which increased in the early 00's, but also to assist Afghanistan in rebuilding key government institutions to face the extremist danger. The aim was to build professional, independent and sustainable forces that were able to provide security to the Afghan people throughout the country. The responsability for Afghanistan's national security was gradually transitioned to its own forces starting from 2011 to 2014. The Resolute Support Mission began in 2015 as a noncombat mission aimed at advising and training Afghan security forces to provide long-term security to the country. The mission is still ongoing at the moment with over 10.000 military personnel from NATO Member States, considered from 2015 till February 2021.

The western manner of thinking of the soldiers who leave to Muslim countries in NATO missions represents a factor which may affect the spread of the terrorist propaganda. Their purpose is to fight against the violent manifestations, either physical or verbal. In addition to tactical and strategical training, military personnel is well-prepared to distinguish the false information, the fake news disseminated online, but, moreover, is a good English speaker. Soldiers going to Islam's countries also have the noble mission to protect the civilians from misinformation, by communicating with them about the real situation happening in their own country. This may influence the amount of terrorist information received and believed by civilians.

Fig. 1 International Security Assistance Force & Resolute Support

4.2. What can civilians do to diminish the effects of terrorist propaganda?

It is not only military's duty to combat the terrorist movement and its propaganda, but also the civilians'. It is every private citizen's responsability to have knowledge about the actual international context in order to protect himself and all the people around him, regardless of race, nationality, religion or political preferences.

Furthermore, to have knowledge about what propaganda means and how its effects can be diminished is a necessity considering the manipulation practiced in all areas that make up the current lifestyle.

As regards the effects of propaganda and how to reduce them, it is important to learn how to identify it. Specialists consider the following means: 'stereotyping', 'virtue words', 'deification', 'band wagon', 'distortion of data' or 'weak inference'.

The terrorists frequently use these methods to gain sympathizers. They change the circumstances in which an attack organized by their groups took place and make it appear that the aggressors are in fact the real victims. For example, after the 9/11 attacks in the United States in 2001, Osama bin Laden, the leader of Al Qaeda, recorded a message: '*This America, God struck it in its heart and destroyed its biggest buildings, so we have to thank God for that. America was filled with terror from the north to the south and from east to west. What America is living through today is nothing compared to what we have been living through for decades. Our nation has been living for more than 80 years with this kind of oppression. Its people are being killed and slaughtered and its religious symbols attacked but nobody listened or responded. But now God blessed a group of Muslims and opened His doors before them, so they were able to destroy America and I hope God will exalt them and welcome them in His heaven.'*

From a semantic perspective, religious terms are generously used (*'God', 'religious symbols'*), speculating on the 'holy deeds of Allah'. Bin Laden cleverly and strategically uses the term 'God' instead of 'Allah' to persuade Christians to plead for their cause. He describes the reasons why the Muslims sacrificed themselves, including the 'moral' arguments of the attack, which are, in fact, the jihadist point of view regarding the Islam's relations with the United States ('*But now God blessed a group of Muslims and opened His doors before them, so they were able to destroy America')*. To outline a devastating, violent and oppressive image of America's actions against Muslims, the leader makes use of megalomaniacal and hyperbolic expressions ('*God struck it in its heart and destroyed its biggest buildings')* in order to create emotion and amplify the empathy for the '*killed and slaughtered*' Islam's people ('*Our nation has been living for more than 80 years with this kind of oppression')*.

This manipulative message is one of the first proofs that extremist groups distort dates, events and circumstances for accomplishing their political desideratum.

The most important action people all around the world can do to reduce the amount of false disseminated information is to gain pieces of knowledge in every domain it is possible to do so. An informed person is an intelectually strong person who can dissociate truth from falsehood.

Civilians can and must support the military in this fight against one of the greatest threats of the 21st century, the creation of a global Islamic caliphate.

5. CONCLUSIONS & ACKNOLEDGMENT

As the mass-media and the propaganda techniques are evolving, owing to technological development, it is inevitable that the terrorist leaders constantly adapt and achieve inovative methods to practice manipulation and uncertainty.

Nowadays, knowledge of English language is commonplace. As more than one third of the world population understands, speaks and writes in English, everyone can have something to say in changing the course of contemporary politics. Both military and civilians can counteract the effects of mass-media propaganda the terrorist movement uses at the moment, by raising awareness of false information and mass-manipulation.

It is essential to discover the phases of the radicalization process and to anticipate next moves, in the interest of quashing a 'terrorist era', notwithstanding its current expansion.

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EFFICIENT LEARNING

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Abstract: *A major role in today's survival run is played by our capacity to learn and adapt to each situation. The author of this research paper reviewed books and articles, along with internet resources on processes of learning. This paper illustrates the importance of knowing how the human brain and memory works, its needs of sleep and nutrition, also presenting types of memory which are engaged in learning. Some couples of advice are conferred to handle, understand and memorize voluminous materials. A short analysis was made to observe a diverse group of students at a military academy by evaluating their response to learning related questions. The emphasis is on academic performance rather than military instruction and training.*

Keywords *(max.5): learning; brain; memory; information*

1. INTRODUCTION

Evolution through natural selection it was that manner by which Charles Darwin explained species metamorphosis – in the succession of the generations - to adapt to the changing demands of the environment (Frantțuzan, 2020). Human beings are considered superior to the rest of mammals. They have a remarkable capacity to adapt, which is vital in order to survive. This capacity is determined by the ability and the willingness to learn something new every day.

Everybody has a different style of learning. Some people need less time, energy and effort for the purpose of reading, understanding and memorizing a material, while others need more resources. I like to think of myself that I am an intelligent and perspicacious person, but I am also aware of the fact that I need a longer period of time to understand properly all the information.

As professor Chris Park said in his research titled "Engaging Students in the Learning Process: the learning journal", students who actively engage with what they are studying tend to understand more, learn more, remember more, enjoy it more and be more able to appreciate the relevance of what they have learned (Park, 2003).

Being acquainted with mysteries of the brain and memory such as ways in which these operate; knowing how to help your brain by giving to it a sufficient amount of sleep, nutritious food, hobbies and avoiding bad habits will improve anyone's life.

2. BRAIN AND MEMORY

2.1. The human brain. On an average situation our brain consumes 20 percent of the entire body's oxygen and energy even though its weight is just 2 percent of the body mass. This high rate of metabolism is remarkably constant despite widely varying mental and motoric activity (Raichle, 2002).

The brain is composed of 73 percent water; in case of dehydration by 2 percent, you may suffer from attention disorders and irreparable damage might appear.

The brain reaches maturity somewhere near age 25 and researchers states that it encompasses roughly eighty billion of nerve cells.

Our brain has an unlimited capability to absorb information; that is why it will never get overloaded. Most neurologists consider that all the information that our brain has ever stored does never get lost, but are buried somewhere deep between other memories or thoughts, from where these are not very reachable. This does not mean that it is impossible to remember those, some higher concentration effort does help at bringing out something that was learnt in the past.

Novelty is part of things that keeps our brain permanently interested and curious. It searches at

all times for unusual, unexpected, interesting and new things. For this reason, the brain stores only information which is significant and ignores those which are usual and boring for it (Eccles, 1973).

It is not efficient to learn something word by word and it is also exhausting. When we try this thing, we are able to notice that our brain will keep the information only for a short period of time. It is true that main ideas will remain in our memory for a longer period of time. Researches like the one made by Neimark, Edith, Slotnick, Nan S. & Ulrich, Thomas in 1971, titled "Development of memorization strategies" proved that after six months our brain is able to recall only 21 percent of an material that we learnt and it recalls 60 percent of main ideas.

2.2. Types of long-term memory. Cognitively speaking, the learning process consists in forming an internal model of the external world. Based on lived, seen and perceived experiences, our brain builds in the interior a model so abstract that it can be reused in a new context. We distinguish two types of long – term memory, namely explicit memory and implicit memory. Explicit memory also known as declarative memory is the conscious one. This type of memory is responsible with retrospection of notions, former experiences and factual information (Ullman, 2004). Moreover, explicit memory incorporates semantic memory in which is collected factual details, and episodic memory which stores personal experiences.

Implicit memory, also known as procedural memory, dates back to the beginnings of humankind. This type it is learned and used automatically. In cases of danger or threats it affects thoughts and behaviors (Schacter, 1987). Some activities that are performed with help from the procedural memory refers to unconsciously functions such as skills, like knowing how to tie one's shoe, remembering how to ride a bicycle or getting dressed, eating, drinking water, without even thinking about those actions.

2.3. Impact of sleep. Our brain is an impressive machine, it works all the time and during the night it is more active than during the day, which is why it needs to sleep, eat, and rest properly.

Sleep's main purpose is to revitalize the body and brain in order to be prepared for daily activities of the following day. During the night sleep, connections between nerve cells of the brain are strengthened, which is a significant part in the process of learning and memorization. Everybody has a circadian rhythm and our bodies work after its biological clock. *Suprachiasmatic* nucleus of the hypothalamus regulates numerous physiological operations such as cognitive performance, sleep, temperature, and hormone release, there is also located the circadian clock (Fig. 1), (Moore, 2002).

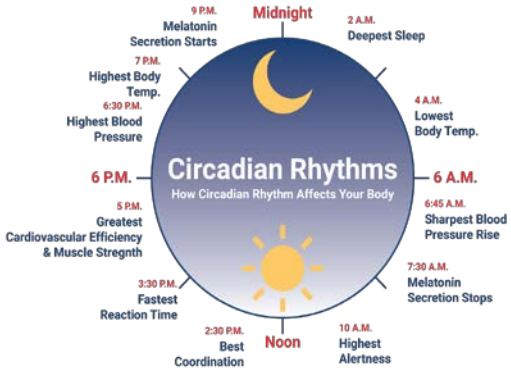

Fig. 1 Circadian clock

Sleep occurs in a series of cycles that take about 90 minutes each. In a normal night, we may go through four or five cycles, each one perhaps a little different from the previous one, with some stages missing or lasting for a shorter or longer period (Roenneberg, 2016).

3. EFFECTIVE MEMORIZATION

3.1. Progressive reading. Famous author Peter C. Brown states in one of his books titled "Make It Stick: The Science of Successful Learning" that "mindless repetition does not build memory" (Brown, 2014). Learning something word by word is ineffective and forcing yourself to do that will only lead to retaining the information for a short period of time and it is very possible to not fully understand the concepts presented.

When approaching a new material, it is essential to read the whole text first, just to get familiar with notions and to separate these into items that you find interesting, that you like or do not and to notice things that seem difficult or easy from the big idea. A second reading of the material should be approached slowly and with more focus. The main purpose of this step is to recognize fundamental ideas, theirs meaning and ways in which these are correlated. A pencil and a piece of paper are truly useful at a third reading for making the summary of the material. This summary consists of the main and secondary ideas, definitions contained in the text, pros and cons from a personal point of view and conclusions.

Progressive learning method will be considered successful only if the recapitulation of the material is made; a stage which consists of rereading, reproduction of the material without looking at it, and repetition of the last step but after a few hours.

3.2. Fragmentation of the material. This method is used when the material that needs to be studied is very ample and it is correlated with the method presented above.

The material must be fragmented into chapters, subchapters or topics so that each section represents a logical unit. Sectioning the material by number of pages will not have long-term results but will only lead to a forced and short-term memorization, because it is much more logical for our brain to learn a whole section or two, than to memorize only half of a section (Dunlosky, 2013).

First of all, when you approach a voluminous material, it must be entirely read, slowly and carefully, in order to identify or get used with the topic and the possibilities of dividing it into sections. Every section will be memorized using the "Progressive reading" method, noting that before starting a new section, the ones already covered should be reviewed.

3.3. Taking notes. The schematic form of main ideas is encompassed in notes; these should be written on a notebook or on a worksheet in order to organize the information better and to make the process of assimilation and memorization of it easier (Ward, 2003).

When it comes to notes, every person may have a personal style of taking them. Some of these techniques can be effortlessly incorporated in anyone's learning schedule and are represented by:

a) numbering the main ideas;

b) highlighting keywords by underlining or circling them;

c) using drawings, diagrams, sketches or arrows for an easier understanding of the material;

d) using colors in order to highlight ideas, concepts, personal opinions or definitions;

e) using abbreviations.

4. INDIVIDUAL SURVEY

To support my work, I made a survey on a various group of 50 students of the "Henri Coandă" Air Force Academy belonging to different study years and distinct specialization. The principal purpose of this survey was to take a close look on how students organize and manage their resources especially regarding the courses and the exam period. It had a total of 9 questions containing multiple choices, checkboxes answer and also a linear scale with a 1 to 5 option.

First of all, I wanted to see the level of students' satisfaction, on a scale from 1 meaning not satisfied at all to 5 meaning very satisfied, regarding the academic results until now. A majority of 31 students were content with their results, also a significant part of 12 students were very content about their accomplishment. A smaller part of students confirmed that some improvements could be made in terms of increasing results (Fig. 2).

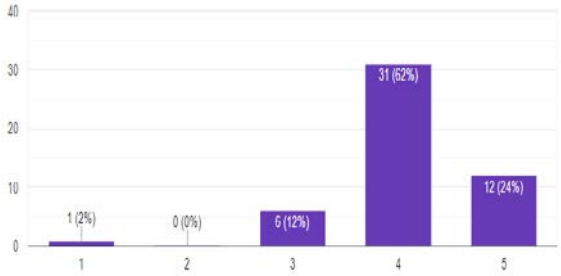

Fig. 2 1 to 5 scale on how content are students with their academic results

When asked about their way of preparing for exams, students' approaches were a bit divided. Only 2 students admitted that they tend to learn the whole semester bit by bit. Another part of them prefers to prepare for exams a few days before taking them. The majority, meaning 36 students, states that they approach every discipline differently, depending on the volume of information and the difficulty of it.

Another thing that I wanted to observe was the way students handle materials that are longer. They were given to choose between "divide the material by number of pages" or "divide the material into chapters / subchapters / topics". A small number of 7 people chose the former one, and an overwhelming number of 43 students chose the latter.

Coincidence or not, according to these percentages, the number of students that were not so satisfied with their results it is the same as the number of students that usually divide their longer materials by pages instead of logical units.

The next chart resembles students' willingness to take notes during courses. 42 students responded affirmative to this question and 9 of them responded negative. The total responses were 50, but one student selected both variants, meaning that he is taking notes for some disciplines and does not for others (Fig. 3). Among the note-taking techniques I mentioned in this paper, the most used

by students are: the use of diagrams, drawings, figures, sketches and arrows; followed by using abbreviations; and the third most selected option was using colors (highlighters).

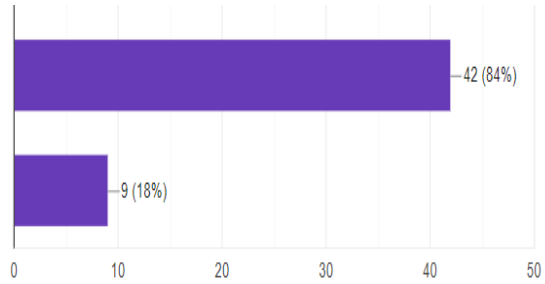

Fig. 3 Yes or no response to taking notes

There were two questions regarding the degree of difficulty when it comes to learning something that students find interesting and likes versus a discipline for which they have little interest.

On the first question, a number of 14 students said that it is very easy for them to learn when they are attracted to that respective discipline, so does other 16 subjects but with a drop of difficulty in it. The rest of 20, think that they need a considerable amount of resources whether they like the subject or not.

The results are completely different when it comes to learning a subject that students are not interested in. A majority of them, meaning 41 respondents, said that it is more difficult for them to learn at a discipline that they do not like. These confirms the aspects presented in the paper in connection with the involvement of students in activities that would increase their interest and curiosity.

5. CONCLUSIONS & ACKNOWLEDGEMENT

Some overall conclusions were made, after reviewing books, scientific researches, online resources, followed by studying a survey performed on students at a military academy, in a continuous training and development, with exams and verification tests which they have to take every semester. Moreover, these students who have chosen this path certainly want a prosperous and successful career, for this reason they must be able and willing to learn every single day.

Life changes way too fast for us to ever stop from learning. It is even more important to know how to learn effectively so that information will be absorbed properly and used to increase critical thinking and problem solving abilities.

After analyzing the results of the opinion assessment grid, I used them to attest that the way in which we prepare for exams affects our academic results, and I also used them to confirm what other scientific researchers have already studied about this psychological topic.

The efficient process of learning can be obtained through various methods including those mentioned in this paper. My only hope is that whoever reads these lines which I wrote and documented about, will be able to improve their way of learning a little, like I did. Thank you for reading and for being part to the beginning of my research journey.

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HOW CIVILIANS PERCEIVE THE MILITARY PERSONNEL

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Abstract: *The present essay reflects several series of common thoughts or beliefs, but some of them may not accurately present the reality. Nowadays a multitude of preconceived ideas that involves army forces whether visible and invisible appear among those who have little or no knowledge of this subject. Overall, there exist varied and nuanced perceptions of military personnel, with elements of hero, victim and villain dominating in different questions. Soldiers still have a strong hero narrative, as seen by their high rating. According to polls, army is a source of national pride.*

Keywords: *beliefs; reality; perceptions; military; pride.*

1. INTRODUCTION

Today, the field of defense and national security is one of the pillars of a strong democratic society. Given that the political situation in Europe is becoming increasingly tense and the settlement of diplomatic issues is becoming increasingly complicated, public opinion must be in favor of state institutions.

In a world of hybrid warfare, public trust in public institutions is an asset in the fight against misinformation. In this study, I aimed to show the opinion of civilians regarding military personnel.

2. SOCIAL REALITY AND INDIVIDUAL PERCEPTION

2.1 The perception of reality vs social construction. The phenomenon of perception of reality has long been debated from the perspective of separating the object of perception from its subject. Thus, perception was nothing more than the simple transposition of the real object into an image object, a process by which the perceived reality became a faithful copy of the objective reality.

The result of the perception or the image object, located inside the individual would be similar to the real object, located outside the perceiving subject. According to this hypothesis, the perception of a real object by an infinite number of individuals would generate an infinity of images of the object, in relation to each other. If we generalize this hypothesis on several real objects, we come to the conclusion that there will be an infinity of images of the object, perceived by each individual. The situation is only hypothetically possible, because the model of transposing reality-object into a faithful copy by perception into reality-image is hindered by the following barriers:

1. We consider that all individuals are equal in terms of reality or belong to a homogeneous group of individuals (spatio-temporal and socio-temporal). Although they start from the same place, individuals see reality differently, so its representations will be individual.
2. In the case of perception on the same object, the identity of the object images presupposes the existence of the same degree of perceptual transparency. In reality, individuals are not just lenses through which the image of reality is projected from the objective plane to the subjective plane. They play an active role in perception, and the perceived information is selected, categorized, interpreted and integrated into the frame of reference of each individual.

According to the above hypothesis, the fact that the reality we actually know is not the reality itself, but a representation of it, a reality recomposed and integrated in the frame of reference of each of us, then it would mean that each individual has his own representation of reality, which is actually the only reality he knows. The individual does not live in isolation.

He is in constant interaction with his peers, and the referential criteria are assimilated and mastered. In this case, if there is a similarity of the referential criteria of the subjects, then there is also a similarity of their representations about the reality subject to perception or the reality itself.

The referential criteria are cognitive and evaluative schemes, norms, values and symbols, stereotypes and prejudices, cognitions and representations, in general everything that becomes a landmark in the interpretation and structuring of information about the object of perception. They are nothing more than pre-established frames, found in the individual and collective consciousness, through which information from the external environment is decoded and integrated into the subjective plane of representation about the world. As Serge Moscovici said in Social Representations, no mind is free from the effects of a precondition imposed by representations, language and culture. Thoughts are made through language, they are organized according to a system that is conditioned by both representations and culture. The individual sees only what the implied conventions allow and remains, at the same time, unaware of the presence of these conventions.

2.2 Stereotypes. In social psychology, the term stereotype is defined as the over-generalized belief about a certain category of people. Stereotypes are generalized because it is assumed that a certain stereotype is valid for each person in the category, individually. While such generalizations can be helpful when it comes to quick decisions, they can be misleading when applied individually to each person. Stereotypes encourage prejudice and can occur for a number of reasons.

Stereotypes sometimes arise from the need to save cognitive resources. Stereotypical knowledge means that an individual is seen through the prism of the stereotype associated with his category and opposes individualizing knowledge.

Individualization is a process that requires a lot of cognitive resources and a lot of time, while stereotyping is a much more efficient process in terms of speed and ease of execution, and saves more cognitive resources.

Consequently, stereotypes appear unconsciously and apply to certain categories of individuals. Through the study I did, I wanted to see how the civilian population perceives the personnel working in military institutions.

2.3 Details about the questionnaire. For this questionnaire I tried to find people of all ages, so it was completed by individuals aged between 14 years old and 69 years old, the majority being aged between 20 and 29 years old.

The questionnaire had twelve questions about stereotypes about the military, but also about the importance of their occupation.

Following the study, we noticed that the military is attributed stereotypical qualities related to the attitude of superiority (44.1% answered more, 26.5% answered a lot), authority (35.3% answered more, 26.5 % answered very much), organization (27.3% answered more, 66.7% answered a lot), responsibility (29.4% answered more, 64.7% answered a lot) and seriousness (42, 4% answered average, 21.2% answered more, 15.2% answered a lot).

Despite this, I was surprised to find that the military is not seen as unsociable (63.6% responded very little, 21.2% answered little).

When asked about the military job, the subjects considered it honorable (20.6% answered more, 70.6% answered a lot) and demanding (58.8% answered a lot).

Regarding the military, the subjects considered that they bring pride to the country (73.5% responded a lot), make an important contribution to society (20.6% answered more, 61.8% answered a lot) and that the armed forces are important for Romania (82.4% answered a lot).

3. CONCLUSIONS & ACKNOLEDGMENT

In conclusion, the stereotypes to which the military is subjected are largely positive and related to the profession of being a military man. This brings the military pride, social validation and respect from society.

I, personally, am proud of my decision to join the military and be part of this institution that is protecting our country.

The author takes full responsibility for the contents and scientific correctness of the paper.

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SURVIVING AGAINST THE ODDS - THE SIEGE OF JADOTVILLE - REALITY AND DEPICTION

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Abstract: *This paper focuses on the differences between the historical reality and the cinematic account of an incredible Irish battle. In addition, it describes how the decisions of senior United Nations officials influenced history and a company's legacy.*

Keywords: *Jadotville; UN; peacekeeping; peace enforcement; humanitarian aid.*

1. THE UNITED NATIONS MISSION TO THE CONGO

1.1 The Essential Historical Facts. The early 1960s were one of the most dangerous periods of the Cold War when the world was one step away from total destruction. In 1961, apart from the construction of the Berlin Wall and the Bay of Pigs Invasion, an equally dangerous situation had developed in the Congo, which had global ramifications.

On June 30, 1960, after 52 years of colonial rule, the Congo declared its independence from Belgium. Nationalist riots soon followed, and the country soon erupted in racial violence, which prompted the Belgians to deploy their own troops to the former colony to safeguard their citizens, refusing to remove its soldiers until the safety of its citizens could be guaranteed. Unfortunately, The Belgian intervention only made the situation worse: amidst all the chaos, on July 11, 1960, the province of Katanga, a mineral-rich province of the country, seceded from the rest of the country, under the rule of self-appointed president Moïse Tshombé, a former businessman turned ruthless politician, having the support of Belgium, an Anglo-Belgian mining company: "Union Minière du Haut Katanga" and a large contingent of Belgian and French mercenaries. Besides the mercenaries, Katanga relied on its gendarmerie which was comprised of locals initially organized and trained by Belgium and subsequently, by the mercenaries.

Katanga was a global source of minerals, including large quantities of diamonds, 10% of the world's copper, and 60% of global cobalt supplies. Most worryingly for the UN, the province produced almost half of the metals needed for Western military equipment and was also the location of numerous uranium mines, which were crucial for the manufacture of nuclear weapons, and as such its breakaway was seen as detrimental to the country's economy. The atomic bombes constructed and used by the United States of America during World War II also had uranium that originated from those mines; in which case France, Britain and the U.S. had vested interests in the area, therefore, the province gained global interest. Furthermore, the mining companies supported Tshombé, because they considered him the perfect cover, for their plans to continue making huge profits in Katanga despite Congolese independence.

In response to this massive crisis, Patrice Lumumba, the Prime Minister of the Congo, petitioned the United Nations for the removal of the Belgian troops, and replacement with an international peacekeeping force. The U.N. Security Council passed United Nations Security Council Resolution 143, adopted on July 14, 1960, and to that effect ordered peacekeeping troops to the country. This was U.N.'s first peacekeeping mission and was named "Opération des Nations Unies au Congo", more broadly known by its abbreviation: "ONUC". Years later Conor Cruise O'Brien, the personal representative of the United Nations Secretary-General to Katanga stated that

"by sending troops to the Congo in 1960, the United Nations averted, or helped the major powers to avert, an occasion of international war" (Whelan, 2006:33).

By 20 July 1960, 3,500 UN peacekeeping troops had arrived in the Congo from Ethiopia, Ghana, Morocco, and Tunisia. Upon U.N.'s arrival, the first contingent of Belgian forces left the country. After several reassurances that U.N. contingents would arrive in sufficient numbers, the Belgian troops left the country by 23 July, as United Nations forces continued to build up. By 31 July 1960, ONUC's strength had grown to over 11,000 with troops arriving from countries such as Norway, Ethiopia, Sweden, Ireland and India. The U.N. Secretary General Dag Hammarskjöld stated there would be no troops from any of the great nations or from any countries that had an interest in the crisis that was occurring.

Despite the U.N.'s intervention with troops, unrest persisted. Therefore, Lumumba requested U.N. troops to suppress the secession of Katanga, but the U.N. forces were not authorized to proceed under their mandate and hence refused. As a consequence, Lumumba requested aid from the Soviet Union which put him in conflict with Joseph Kasa-Vubu, the president of the Republic of the Congo, and with Mobutu Sese Seko, chief of general staff of the army.

Subsequently, he was arrested together with two of his collaborators Maurice Mpolo, Minister of the Interior, and Joseph Okito, president of the Senate, and transferred by airplane to Elisabethville (modern Lubumbashi), the then capital city of secessionist Katanga. President Tshombé and his cabinet decided on how to deal with them: execution by firing squad. The sentence was carried out on 17 January 1961, their bodies were afterward dissolved in acid.

In response to the Katanganese actions, U.N.'s Security Council increased ONUC's numbers and approved a resolution on 21st February 1961 to start pushing the mercenaries out of the country and to prevent the outbreak of civil war, by taking all appropriate measures, including the use of force, if necessary. A report from the officer in charge of the United Nations operations in the Congo reads: "…urges that measures be taken for the immediate withdrawal and evacuation from the Congo of all Belgian and other foreign military and paramilitary personnel and political advisers not under the United Nations command, and mercenaries" (Whelan, 2006:30).

At its peak, ONUC numbered over 19,000 troops, which were largely led by India, Ireland, and Sweden. Therefore, the mission has been considered, up to the present day, to be one of the largest U.N. operations in both scale and operational purpose having been conducted with extensive military capabilities.

1.2 Rum Punch.

In 1961 foreign personnel, mostly of Belgian origin, about 500 persons, was to be found still administering the Katangan army (Whelan, 2006:30). On the 24th of August 1961, the President of the Republic of the Congo, Joseph Kasa-Vubu, enacted Ordinance No.70, which provided the United Nations with a new mandate and the legal authority to expulse of all non-Congolese officers and mercenaries serving in the Katangan forces, not under a contract with the central government. Up until this point, ONUC had to use negotiations as a means to an end. The ordinance also enabled the troops to use force if necessary, hence the U.N.'s mission changed from peacekeeping to peace enforcing.

The man in charge of ONUC's operations in the region was the Secretary-General's Irish deputy to Katanga, Conor Cruise O'Brien, a civil servant with no military experience. He, together with his staff, planned and supervised the operation to remove the growing influence of the foreign leadership of the Katanganese military; operation that was code-named "Operation Rum Punch".

Rum Punch was launched at dawn on 28 August 1961, when U.N. soldiers, under the command of Irish general Sean MacEoin, occupied without spilling of blood, the strategic zones of the Katanga, such as the gendarmerie headquarters in Elizabethville. The operation was considered a partial success by the U.N., as ONUC forces managed to arrest and repatriate approximately 73 foreign personnel of the Katangese Armed Forces (the gendarmerie) and disarm the Katangan gendarmes (Pakenham, Kennedy, Spierin, Hickey, Dillon, Campbell, 2021:106); yet, unfortunately, many of those who had been repatriated returned to Katanga and organized the gendarmerie to resist further United Nations approaches in the province. It has been stated that "some of this foreign personnel were white mercenaries and veterans who had learned their trade in Algeria as well as through serving with such forces as the German SS" (Whelan, 2006:31).

1.3 Morthor.

Following the success of Rum Punch a new, more ambitious operation was being developed; one that meant to end Katanga's bid for independence from the Congo by pushing the mercenaries out of Katanga and overthrowing

Tshombé's government. It was codenamed "Morthor", the Hindu word for "smash" and had the covert support of U.N. Secretary General Dag Hammarskjold.

The operation commenced on 13 September 1961 through a co-ordinated and simultaneous assault across Elisabethville. The troops that were mainly involved were the 35th Irish Battalion, wich fought alongside Indian and Swedish ONUC contingents. Unfortunately, the mission went terribly wrong: Katanga fought back. The gendarmerie's forces had been underestimated and as a consequence 13 UN troops were killed as well as approximately 200 Katangese civilians. Furthermore, the Katanganese forces resisted the attackers just long enough for Tshombé and his officials to flee Elisabethville.

The U.N. now had a major international incident on its hands which it was ill prepared for in order to deal with the consequences - the disintegration of the peacekeeping mission was at stakes. Hammarskjöld could not admit the truth of having authorized Morthor. Therefore, the entire actions of that day had to be covered up: the U.N. stated that its troops had acted in self defense and had been first fired upon by Belgian-led Katangese para-commandos and Gendarmerie. In contrast to the U.N.'s official statement a telegram from the Irish permanent mission to the United Nations stressed the fact that ONUC forces had opened fire first. Be that as it may, the world was kept in the dark, Ireland included.

The relationship between Dublin and the U.N. Secretariat worked reasonably well since Ireland became a member in 1955, yet in reality the U.N. cared little about Ireland and was only interested in its troops. The Irish Department of External Affairs was being kept in the dark by the United Nations regarding what was happening on the ground in the Congo, as the U.N. Secretariat had no real intention to provide an exact report. Although O'Brien and lieutenant general MacEoin had senior roles in ONUC, there were no Irish diplomats on the ground and Ireland's nearest embassy was in Lagos, Nigeria - 1,800 kilometres away. The only effective channel of reliable communication throughout the entire Congo crisis, that was open to Dublin was via Frederick Boland - Ireland's ambassador to the U.N. in New York. To that extent, Boland managed to dig out the truth by asking senior UN official Ralph Bunche whether Morthor had been a local initiative or had been ordered by the secretary-general. Bunche replied: "well, not exactly ordered – but authorized. We gave them the green light" (Dignam, O'Halpin, Speller, 2016:114). This meant that Hammarskjöld did in fact, authorize Operation Morthor on 10 September 1961, but allowed O'Brien to act on his own initiative, in order to exercise plausible deniability later, had Morthor gone sideways. Thus, the secratary general knowingly and fatally deceived U.N. member states, including Ireland, as to U.N.'s true intentions in Katanga.

This degree of lack of cooperation, together with the underestimation of the Katanganese gendarmerie's capabilities are the main reason for the counter actions that followed. Actions seen as Tshombé's revenge which materialized itself in a full-scale attack on an Irish company ill-deployed 110 kilometers/70 miles north-west of Elisabethville, in the heart of enemy territory.

1.4 "A" Company, 35th Battalion, Irish Army.

"A" Company, of the 35th Infantry Battalion was part of the Irish Army ONUC contingent. The company consisted of 156 service members out of which 10 were commissioned officers and 44 were non-commissioned officers. The company commander was commandant Patrick Quinlan and the company's senior NCO was company sergeant Jack Prendergast. The 35th Infantry Battalion deployed from Ireland to Elisabethville, Katanga in June 1961(Pakenham, Kennedy, Spierin, Hickey, Dillon, Campbell, 2021:104).

"A" Company's personnel consisted of inexperienced, mostly young soldiers who had never fired their rifle on the field of battle. Furthermore, 95% of them had never left Ireland before, peacekeeping was a new concept in the early 1960s and everyone was eager to join and go to Africa. There were no exact explanations given to the young soldiers regarding the U.N.'s strategy and the Irish mission into the Congo, except for the fact that there was trouble and they were being sent to sort it out as peacekeepers. Nevertheless, they were told that they were not going out to war.

One of the officers, lieutenant Noel Carey, recalled that they had poor intelligence about the Congo – they had to lay out school atlases for they did not even have a map of the country: "Our knowledge was nil [...] the people who briefed us said that we would see lions and elephants. We never did and we were also told that it would be peaceful and it certainly wasn't!" (Garner, October 2017:1)

One thing was certain: although they did not know anything about the mission itself, nor had any prior overseas service, everybody volunteered. When asked in an interview what he knew about the Congo before deployment, veteran Tony Dykes responded: "Absolutely nothing" (Garner, November 2017:1). It was the idea of adventure that drove everybody.

The Irish Army's lack of experience was reflected by the poor equipment that it provided for its soldiers. The infantrymen wore really heavy WWII Irish Army uniforms, carried outdated weaponry, and were issued out only UN blue helmets, which were actually just the liners for the helmets. ASEMANARE The American airmen who flew them to Elisabethville laughed at their old uniforms

In breakaway Katanga they were going to fight against the Katanganese gendarmerie which was considered to be a formidable opposition, as veteran John Gorman later recalled in an interview. The Katanganese security force was considered to be a militia that was made up of local tribesmen and was commanded by white mercenaries. The mercenaries, nicknamed "mercs" by the Irish, were mostly former Belgian and French officers and NCOs - battle-hardened veterans of World War II and colonial conflicts. The native population referred to them as "les affreux" ("the terrors"). The gendarmerie took orders down a very loose chain of command and was operating according to the political agenda of the Katangese state.

Upon arrival, The Battalion's first weeks in Elisabethville were relatively quiet, though tension in the city increased throughout August and "A" Company was soon kept busy: it took part in operation Rum Punch. The men had been assigned to take over the gendarmerie headquarters in Elisabethville and arrest all the mercenaries; a mission which they successfully accomplished. It was believed that the "mercs", that had been captured and repatriated, returned to take their revenge, Gorman stated: "If they did leave, they were back in action twice as quick to start what ended up being the battle at Jadotville" (Garner, September 2017:2).

Exceptional leadership was the core value that defined the commissioned and non-commissioned officers of "A" company, from the beginning until the end of the mission. John Gorman stated that: "We took guidance from the older people and saw that they weren't afraid, so we weren't going to be afraid either. It was their first time as well, but their leadership was just excellent" (Garner, September 2017:1). The company's most astonishing leadership example was the commander himself: Comdt. Pat Quinlan, whose remarkable skills would be of great use during the battle of Jadotville (a mining town - modern Likasi), and afterwards.

1.5. Forces previously deployed to Jadotville.

Before "A" Company's deployment to the mining town of Jadotville, a composite group of a Swedish company and the Irish "B" Company, 35th Infantry Battalion, under Swedish command had been sent to Jadotville to guard against a potential uprising against the European population. The task force was known as "Force Mide" and was to be stationed for two to three weeks in Jadotville from 29 August as part of operation Rum Punch. Its true purpose was to remain in Jadotville and show the European population that ONUC forces were on alert and present in the area.

Jadotville was a thriving copper mining town with a mixed population of both natives who worked as miners and a substantial white community of engineers and merchants. Both communities were broadly in support of Katangan independence, while the white population, in particular, sought to preserve their commercial interests. Thus, on arrival, the contingent was told by the representatives of Jadotville's European population that they were unwelcome in the town. Even so, the atmosphere was relaxed with B Company digging in only as necessary for basic security and setting up tents without going into an operational situation. Some officers even stayed in a hotel in Jadotville itself.

Assessing the precarious position and considering that the mission no longer had any objective for there was no chance of an uprising against the European population, the contingent's commander ordered the return to Elisabethville on 2 September; having been reported that "Situation tense in town – orders to return to Elisabethville" (Pakenham, Kennedy, Spierin, Hickey, Dillon, Campbell, 2021:107). Furthermore, John Gorman, a veteran of "A" company stated in an interview regarding Force Mide that: "They wanted to leave because of the hostility towards them so they were taken out."

As an unfortunate consequence the Belgian Foreign Minister, Paul Henri Spaak, sent an angry telegram to the UN Secretary-General on 2 September complaining that the European population of Jadotville was now unprotected, reason for which he intended to evacuate it. In view of the panic aspect of such an evacuation

ONUC command was asked if the stationing of UN troops in Jadotville could be reconsidered.

This hastily made decision had not been thought through thoroughly and had been taken in order to please a civil servant. Poor choices have poor outcomes – it might have been believed by the Belgian authorities that their citizens were in dire need of protection, when in fact U.N. troops were clearly not welcome at all.

1.6. The "A" Company's deployment to Jadotville.

On 3 September 1961 "A" Company, 35th Infantry Battalion was sent in lieu of Force Mide to the mining town of Jadotville 70 miles northwest of Elisabethville. The order to send troops back in Jadotville came direct from UN HQ in New York. The story went that Union Minière (the copper mining company) mines in Jadotville would be closed if their European workers there were not protected. On their way in, the Irish had not been provided with adequate transport for themselves and their equipment and as a consequence, they were forced to leave a part of their ammunition, arsenal - their heavy mortars, for instance -, and supplies behind, in Elisabethville. Swedish transport was highly superior and up to date compared to theirs. This was one of the indications that they weren't in a state of military readiness. John Gorman later stated "We were underequipped and unprepared. Everything we had was WWII equipment except for the FN rifles. We went to the Congo with Lee Enfield .303 rifles and issued with FN rifles out there. That's all we had: a few anti-tank guns, one or two 60mm mortars and Bren and Vickers guns" (Garner, September 2017:2).

The location of the company's compound had been chosen by the United Nations and had been previously occupied by Force Mide. It contained villas rented by the organization, which were scattered along approximately one mile off the road which led into the town -approximately 2.5 kilometers away - and to Elizabethville – approximately 70 kilometers away. Along the road, there was a bridge at Lufira that connected Jadotville to the road that led to Elizabethville, it was of tremendous strategic importance, for it was the only way to reach Elizabethville.

The situation in Jadotville was challenging. Private Tom Gunn recalled that the Katangese were constantly patrolling in front of them, up and down the main road from Jadotville to Elisabethville in jeeps surveying their positions and getting a general view of where the company was deployed. On a reconnaissance patrol towards Jadotville, a group of men led by Lt Carey was stopped and forced to turn back by a company of well-fortified mercs'. It was noticeable that they were preparing for a forthcoming attack, as they positioned their machine guns facing the U.N. compound which was only down the road. Comdt. Quinlan was told by the Bürgermeister to get out of Jadotville, as their presence was not wanted. Pat Quinlan soon understood the reality on the ground and contacted the battalion and said, "Look, we're not wanted here, there is no rioting. Should I withdraw?" (Garner, October 2017:2). Unfortunately, he was ordered to stay where he was. Therefore, due to the hostile situation, they found themselves in, Comdt. Pat Quinlan ordered his men to start digging trenches and foxholes around their encampment as there was no true form of cover above the ground and as it was part of the unit's standard operating procedure: the defense of the company's headquarters. The trenches were dug only at night so as for the gendarmerie not to be aware that the Irish were preparing any positions. In addition to that, the soldiers positioned their foxholes among thick bushes which would give them essential, life-saving concealment during the following siege. They also burned the high grass in front of the dugouts in order for the soldiers to have a clear line of sight and to limit the enemy's ability to camouflage its movements.

1.7. The siege.

On the early morning of Wednesday, 13 September 1961, the majority of "A" Company was attending Mass and left their rifles outside when the gendarmerie came up in trucks and fired at them. Fortunately, Sergeant John Monaghan wasn't at Mass, but outside the church shaving. He came out with a towel around his neck, jumped into the Vickers machine gun trench, and fired a couple of bursts over their heads. Consequently, they turned their trucks around and rushed out of there, but then a couple of hours later "all hell broke loose" (Garner, September 2017:2). It was the beginning of five days of intense combat that would last until the 17th of September.

Lt Noel Carey had been the duty officer on the 12th and had heard a lot of rumors from the natives who had been working for them that there was every possibility of being attacked. At 7.00 am, before the assembly for Mass, he received a message from headquarters that Operation Morthor had taken place in Elisabethville and had been

successfully accomplished. He immediately informed Quinlan. Up to that point, astonishingly enough, the commandant was unaware of Morthor's existence and thus, unaware that the sudden gendarmerie attack had been justified by that opreration; reason for which the Katanganese had engaged into open warfare the company then surrounded by 2,000 mercenaries and gendarmeries.

This lack of cooperation and coordination has been considered by the veterans U.N. incompetence at its finest. They had been sent there underequipped, unprepared and for political reasons. In spite of that, the ONUC command didn't even bother informing its officers in the field regarding an ongoing operation, in order for them to have their guard up. They had been sent to Jadotville as part of an operation, that the company commander didn't even know they were part of. This overconfidence in the success of the operation and almost condescending attitude of the ONUC command towards the gendarmerie's true fighting capabilities are the main reasons for the massacre of Irish troops that might have happened, had commandant Quinlan not taken preventive measures.

1.7.1 Day 1 (Wednesday, 13th September 1961.

After the small firefight in the morning, there was a 2-hour halt, during which Quinlan had received intelligence that the enemy was expecting reinforcements and preparing to launch a major attack at 11.30 am. Meanwhile, he ordered that all available containers be filled with water as he began to realize that they might be in for a long stay. Later that day the water supply was turned off by the gendarmerie.

During the day, the Irish broke up a number of other attacks from different sectors at long range. Commandant Quinlan's plan was to break up all attacks at long range and as far as possible, in order to prevent the enemy from getting too close o the compound into the thick bush surrounding the Irish positions. Meanwhile, many white townspeople also assisted the attack and it was reported later that many white people from the town took up arms and attacked the Irish position (Whelan, 2006:50).

At this stage, the gendarmeries and mercenaries began taking heavy casualties and, therefore, started using dirty tactics. Veteran John Gorman recalled in an interview that: "At one point, they asked for a ceasefire to pick up their dead and wounded and our company commander granted that. He said that the ceasefire would be for four hours, but as soon as they had their dead and wounded picked up, they started firing again so they broke the ceasefire" (Garner, September 2017:1). They opened fire instantly on the Irish positions without warning. This continued all through the night and into the early morning.

The Irish commander stated that the phone line was used as a means of carrying out psychological warfare on the peacekeepers. Each night the enemy would ring and ask for immediate surrender or face dire consequences. The telephone connection would have been broken earlier in the week except that the Irish commanders were playing for time and hoping for reinforcements. With that being said, the Irish were highly motivated from the start of the battle, because they had great leadership. John Gorman recalled: "We were with our officers and sergeants, but we were only young. I was only 19, but the older sergeants were brilliant. They looked after us, and we looked up to them. They placated and calmed us down, and we jumped into our foxholes. It was the first time that anyone had fired a shot in anger. We heard the bullets whizzing across, but I felt confident because we knew we were in good hands" (Garner, November 2017:2).

1.7.2 Day 2 (Thursday, 14th September 1961).

A Fouga Magister jet plane belonging to the mercenaries bypassed the Irish positions multiple times a day and dropped two bombs and strafed the positions with machine-gun fire. Veteran Noel Carey later stated in an interview in regard to the plane attacks that it was a real morale dropper: "We had to work very hard on morale to try and get some of the lads together because it was probably the biggest shock we had" (Garner, October 2017:2). Everything else could be countered, yet it was pretty scary as one could not tell where the plane would come next from. Every time it bypassed the compound the soldiers tried to hit it with everything they had. Eventually, at some point during the fighting machine-gun fire from armored cars managed to hit it and put it off for 2 days. Afterward, the jet always attacked from very high altitudes, out of the range of Irish rifles, delivering inaccurate results.

At 5.00pm two white mercenaries, were captured and interrogated by the Irish. It was reported that the men had just come from President Tshombé's residence where he had told them that an Irish Company had been taken prisoner at Jadotville and were to be held as hostages by Katanga. This lends credence to the theory that the

United Nations troops were ordered into a pre-planned trap.

During the night of Thursday to Friday, approximately eight to ten attacks were carried out on the Irish positions by about sixty enemy soldiers. As soon as these groups came within range of the Irish weapons they were broken up by devastating fire from armored cars, mortars, and machine guns.

The Irish casualties at this stage were as follows: on the morning of Wednesday 13th Private Reidy had been shot in the leg. On Thursday 14th Privates Tahaney and Gormley were caught by an aerial bomb, Sergeant Hegarty was injured by a mortar shell which had landed within a few yards of him as he was visiting his platoon and Private Manning was shot in the shoulder.

1.7.3 Day 3 (Friday, 15th September 1961).

On Friday, the Company commander received word from Katanga Headquarters that heavy reinforcements were coming, the following day, on Saturday morning to their aid via the Lufira Bridge. Large convoys of enemy troops were observed on Friday night and Saturday morning moving towards the same bridge. The Irish soldiers engaged those convoys with mortar and machine-gun fire from their armored cars and managed to inflict quite some damage, reason for which the route that led to the bridge was blocked for some time.

Conditions in the Irish trenches were described by the Irish commander as follows: 'The men were fed between 20:00 hours and 21:00 hours daily because it was dangerous to cook during daylight hours. The cooks made a kind of warm stew and biscuits and defended their trenches during the day. Tea and biscuits were again served at 04:00 hours in the trenches. During the remainder of the time, the men had to survive on bottled water. The thirst was the greatest enemy as the men were all day under the sweltering heat of the trenches. The excitement, fighting, and lack of sleep consumed a lot of water. By Friday the water we had was stale. By Saturday it was almost putrid and on Sunday what was left made the men sick. There was a grave danger of disease due to burst sewers from bombed buildings and flies swarming everywhere" (Whelan, 2006:43). There was minimal food, water and equipment, ammunition and little time to sleep due to constant fighting. At one point Commandant Quinlan said, "We're going to be in trouble. Don't shoot until you see the whites of their eyes" (Garner, November 2017:2). John Gorman described his experience in the trenches as follows: "When nightfall came, our company sergeant Jack Prendergast would come round with a bucket and spoons. He'd give you one or two spoons and I remember him saying something to me that I'd never forget, 'Well young Gorman, this is your first dish in a trench,' which was true. That was the way we carried on for five days" (Garner, September 2017:3).

1.7.4 Day 4 (Saturday 16th September 1961).

During the fourth day, the fighting had become so tense that the chaplain, Joseph Fagan started giving last rites in the trenches, which was a frightening thing to say the least, for they were expected not to survive. Gorman recalled: "He was a lovely man, but when you see somebody giving you the last rites in the trenches you think, 'Well, this is it.' But thankfully it wasn't" (Garner, September 2017:3).

A helicopter arrived at 9.00 am with a re-supply of water which would scarcely be enough for twenty men. As it came closer to the compound the camouflage on lt.'s Carey trench flew off. Landing the helicopter among the constant firefight was an incredible feat which was achieved by two pilots, namely a Norwegian, Lieutenant Bjorn Hovden, and a Swedish Warrant Officer Eric Thors. Nevertheless, the entire struggle had been for nothing as the helicopter was eventually destroyed by enemy fire and the supplies which had been brought were useless: the water cans brought had been previously used to store diesel and no one had bothered to clean them before filling them with water. Even if the cans had been clean, they would have been enough for only 20 men.

The battle continued for the entire day. The Irish delivered concentrated fire and as a result, large numbers of enemy troops had been injured and many had died of wounds, this was realized later when their bodies were discovered in the bush surrounding the compound. Such devastating and concentrated was "A" Company's firepower that the white mercenary officers employed a cruel tactic in order to keep their contingents in battle: they were shooting at their own men who were retreating from the Irish fire, in an attempt to get them to return to the battlegrounds and attack the compound again.

Two main relief attempts were mounted to try and reach the surrounded "A" Company at

Jadotville. The first attempt occurred on the 13th and 14th September and the second on 16th September 1961. The first attempt comprised of Iris hand Swedish troops who attempted to cross the Lufira bridge and came under fire from the front, from the right, and from the left. They retreated and had other several attempts of taking the bridge which failed. The second attempt that was made comprised of Irish, Swedish, and Gurkha troops with engineer, signals, and medical elements. They too came under fire from a much superior force from the east of the road, next from the west, and then from the front. The Fouga Magister jet unopposed by any other aircraft or effective ground fire was harassing the column and killed three Gurkha peacekeepers and injured another five. The small force realized that forcing the bridge during daylight would be impossible without serious air support and a battalion of soldiers. Flanking was unfortunately not an option as all other crossing points had been demolished. The troops had no other option but to return to Elizabethville.

By Saturday night, after days of constant fighting, "A" Company was running extremely low on supplies and ammunition and its men were sleep-deprived. Quinlan had been consistently radioing for help and reinforcements but the two U.N. columns sent to relieve them had not managed to reach them. They had no more cards to play: they were totally surrounded, isolated and with no relief troops coming to their aid.

Pat Quinlan had agreed to meet with the mercenary officers to discuss cease-fire terms on no-man's land, in spite of having no support from his U.N. superiors and later that evening he held a meeting with the other officers. The platoon commanders said, "We think we can fight on", but Quinlan, reluctantly, had to make the decision to agree to a cease fire in the light of no food, no water, practically no ammunition and no transport to take them back 70 miles. None of the lads wanted to surrender, yet nothing more could have been done as further action would have resulted in the complete annihilation of the unit.

1.8. Cease-Fire and Aftermath.

The terms of the cease-fire included that dual supervised patrols were to be executed by the Irish in cooperation with the gendarmerie, their safety would be guaranteed, and that the soldiers could keep their weapons. These conditions were written into an agreement but this and many of the others were broken. As they got out of the trenches the following day that was it: they had to lay down their rifles, and were taken to a huge gendarmerie military base where they were kept in captivity for over a month. The enemy later reneged on the cease-fire, proclaiming that the Irish had to surrender. They also reneged on the conditions of the agreement.

"A" company returned home before Christmas of 1961, after a grueling captivity. It had bravely withstood against a far superior force, for five straight days of intense fighting with little to no sleep, having outdated equipment and no prior experience, being outnumbered by a factor of 20 and still managed to inflict 300 enemy casualties and more than 1,000 wounded on the enemy side while suffering no casualties and only 5 wounded. Be that as it may, the incident was viewed as a failure and embarrassment by the U.N. and the Irish military and thus, everything was covered up and all the soldiers were branded as cowards and nicknamed "Jadotville jacks". Tony Dykes stated that "upon return some military rumor went around saying that we left waving our white shirts back in Jadotville" (Garner, November 2017:4).

Their story of bravery would go on unrecognized for over 40 years until the early 2000's when a government enquiry was commissioned which after analyzing the facts cleared Quinlan and "A" Company of any charges of soldierly misconduct at Jadotville. The siege was acknowledged as one of the most wrongfully forgotten battles in Irish and U.N. military history, and surviving veterans were belatedly honored. Unfortunately, commandant Quinlan did not get to live to see this public rehabilitation as he had died in 1997. He had been highly respected by his soldiers as a great leader for he always made the right calls and brought everybody home safe and sound, "Quinlan promised the families when we were going out that he would bring every man home, and he did. He was an outstanding guy" (John Gorman). A British brigadier general later read the book "Siege at Jadotville" and stated, "My God, if he was in our army he would be at the top rank and when he retired he would have been knighted".

2. ANALYSIS OF THE MOVIE COMPARED TO THE ACTUAL EVENTS

The movie "The Siege of Jadotville" is a fair depiction of the true events that took place during the 1961 U.N. mission to the Congo. It has managed to restore the honor, to popularize the story and legacy of the Irish unit's heroism. With that being said, there are a couple of key

differences and similarities which I intend to exploit in the following paragraphs.

The compound of "A" company is depicted in the movie as being situated in a completely open field with almost no vegetation around it, which in reality is not a completely fair depiction of the real encampment which actually had thick bushes and high grass around it. Why is this aspect important? Well, the issue of having or not concealment can quite literally represent the difference between life and death. Furthermore, in the movie, the trenches are depicted as being dug during the day, not during the night. They also do not and have any sort of concealment on top of them, which they had in reality through the form of dense vegetation and bushes atop of the trenches. The main difference which must be understood here is that concealment does only conceal one from enemy fire, whereas a cover also protects one from enemy fire. This is one of the main reasons for which everybody managed to survive during the siege: they were very well concealed and the enemy did not know precisely where to shoot at. In the movie, the soldiers are depicted as having no concealment above their trenches, to my mind, this is done for dramatical effect, since, in reality, one of those 2000 mercenaries might have shot and killed at least a couple of Irish soldiers, had they been so in the open. This was confirmed by private James Tahaney during a later interview: "covered from sight, it is not covered from fire, so we had to dig down to get cover from fire" (Pakenham, Kennedy, Spierin, Hickey, Dillon, Campbell, 2021:115).

The encountering of troops also slightly differed. The depiction presents the men going to Mass in the morning, with only one sniper being on guard duty. When enemy troops started approaching the Irish compound, the soldier warned his comrades by shooting the bell from a nearby bell tower. While this created a very entertaining scene, the reality slightly differed: the company was indeed at Mass besides sergeant John Monaghan who was shaving that morning. He was the one who first engaged the gendarmerie and mercenaries.

The entire movie revolves around the fact that the Irish were overwhelmed by the superior numbers of the Katangan gendarmerie. A fact which is completely true – according to the official military reports of the battle the number of enemy troops in the region was approximated to 2,000, meaning the ONUC forces were outnumbered by a factor of almost 20. Be that as it may at most during an attack against "A" Company at any one time was a company level force involved (circa 150 gendarmes and mercenaries), with a battalion-level force (circa 650) located in the terrain surrounding "A" Company, and with smaller section and platoon level attacks taking place to test "A" Company's defenses, sometimes simultaneously, seeking weak points to infiltrate. Those who maintain that "A" Company was attacked by thousands of soldiers at once need only to try to imagine how to place such an attacking force within the limited geographical area of "A" Company's compound; it was an unlikely scenario. To this extent, multiple veterans commented on the topic. Private Michael Greene recalled that "four or five maybe would come at us at a time and we'd fire at them and they go back or be shot" (Pakenham, Kennedy, Spierin, Hickey, Dillon, Campbell, 2021:103). As Lt. Noel Carey put it: "3,000, no, no, that's ridiculous, and I mean that's the one thing that I am always fearful of, the exaggerations that go on at times about the enemy" (Pakenham, Kennedy, Spierin, Hickey, Dillon, Campbell, 2021:103).

As a viewer, one is thrown directly into the battle without sufficient prior knowledge of the actual context and the actions that lead to the Irish presence in Jadotville. Although, this may, still, be excusable as the movie is after all entitled "The Siege of Jadotville". At the same time, the movie ends abruptly without actually depicting the aftermath. This is unfortunately something that could have been insisted on a bit more. Keith Uhlich from the Hollywood Reporter states: "The final scenes are also way too rushed, condensing the Jadotville siege's outcome into a few quick shots and some hasty voiceover that essentially boils down to, 'We were captured. Then we were freed!' Would that our current armed conflicts were as easily resolved."

Another shortcoming of the movie was the overall character development of the men of "A" company. The film revolves mainly around commandant Quinlan and his actions. This can't be necessarily condemned as Pat was the man in charge of everything, the leader who succeeded in bringing back home his entire company safe and sound. Furthermore, the movie did a great job of presenting him as a just man who knew what he was doing at all times. Nevertheless, the only other characters who appear on-screen and are known to the audience are company sergeant Jack

Prendergast, sergeant Hegarty, captain Donnelly, and sergeant Joyce. Behind The Lens states: "The shortcoming of Jadotville, however, is in the overall character development of the men of A-Company. We want to know these men. Why do they want to be a UN peacekeeper? Why do they want to go to The Congo? Who are they? Who are their loved ones? How is this brotherhood built and training developed that kept every single one of the Irishmen alive over the course of this five-day battle against hundreds? The film cries for more personalization of each of the men – especially since so many are still alive today". This is probably due to the fact that the narration had to focus on individual narrations and choose just a couple of characters to develop, in which case the commander would have been the obvious choice.

One thing which the movie manages to correctly emphasize was the poor manner in which the ONUC command managed the entire crisis. Keith Uhlich stated: "Good intentions only take us so far, of course. Whenever Smyth moves away from the battlefield, the film is on shaky ground, with the near-comical scenes involving Strong's (the actor playing Conor O'Brien) cowardly subordinate a real low point." The one person who had been held responsible by the veterans for what had happened before and during the siege is the Secretary-General's Irish deputy to Katanga, Conor Cruise O'Brien. Doctor O'Brien was a civil servant with no military experience, therefore, he had no place in command of the troops on the ground fulfilling a military man's job, as he had no idea of what he was doing. Although lieutenant general MacEoin was officially in command of the troops, he was obliged to closely follow O'Brien's orders.

3. CONCLUSIONS & ACKNOWLEDGMENT

ONUC was U.N.'s first peacekeeping mission with a significant military component. Yet, this cannot be considered a valuable excuse for the poor decisions of ONUC's command and its lack of proper intelligence which led to the unsuitable placement of "A" company in Jadotville and the siege that followed. The siege that took place here was borne out of extremely complex political circumstances and concluded in cover-ups at the highest levels. Nevertheless, the actual facts about the five-day battle are remarkable. None of the 156 members of A Company were killed during the siege and the UN troops managed to inflict 300 casualties on their numerically superior enemy. By any measure, this was a remarkable feat of arms. In spite of these facts, both the Irish Army and the U.N. covered up the incident and veterans from Jadotville were unfairly made scapegoats for decades afterwards. By and large, today, thanks to the efforts of some of the veterans and the cinematic representation of the battle, the siege is now recognized as one of the most heroic and wrongfully forgotten stories in Irish military history.

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FUTUROLOGY – FORECASTING FUTURE

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Abstract: *This paper aims to give an insight into Futurology, the science assigned with predicting future, based on patterns and other techniques. In this respect, this paper comprised information such as, definitions, a short history of Futurology, futures techniques, examples of iconic futurists, along with their publications, and a short analysis of their prediction's accuracy. Moreover, in this paper, our personal approach regarding this discipline can be found, more precisely, a short opinion on the future prediction's impact in the military domain.*

Keywords: *Futurology, study, predictions, pattern, futurists*

1. INTRODUCTION

From shamanic rituals to horoscopes and weather forecasts, predicting future has always been an area of interest for people. Therefore, as time went by, everything related to future predictions got an umbrella term, which is Futurology.

The reason we chose this topic consists in the fact that even if future prediction may seem a little bit surreal, it is actually science, and its importance is growing fast lately. This is why we deemed it proper to explain it thoroughly in this paper.

2. THE TEXT OF THE PAPER

2.1 Futurology – Definition. History.

In order to have an aerial perspective upon this topic, it is necessary to define it and know its roots.

Therefore, Futurology would define as an interdisciplinary study, that supervises various trends or technological furtherance, in order to explore and predict things, such as, how people will live and work in the future, what could change or continue in the future, etc. Futurology is normally considered to be a branch of Social Sciences and an extension to the field of History. However, some people are still debating whether this discipline is an art or a science, and actually describe it as "pseudoscience".

The field of future studies is generally focused on long-term futures, in which the concept of plausibility becomes the main nucleus.

Regarding its origins, people still argue, meaning that a fair few believe that this search for patterns of social change go back to 125-90BC, more precisely, to Sima Qian.

Nevertheless, other people consider that the founder of future studies is H. G. Wells, with his publication from 1901, named "Anticipations of the Reaction of Mechanical and Scientific Progress Upon Human Life and Thought: An Experiment in Prophecy", which anticipated what the world would be like in the year 2000, regarding women seeking greater sexual freedom, the existence of a European Union and even the defeat of German militarism.

Furthermore, in the middle 60's, future studies emerged as an academic discipline, this way creating the first generation of futurists, such as, Herman Kahn, an American Cold War strategist, Bertrand de Jouvenel, a French economist and Dennis Gabor, a Hungarian-British scientist.

In 1967, two organizations were founded: World Future Studies Federation (WFSF) with the sociologist Johan Galtung as its president, and the World Future Society, with the publisher Edward Cornish as its president. Later, in 2002, the Association of Professional Futurists was founded, and gathered more than 400 members, all sharing the same purpose: proving the value of strategic foresight and future studies.

Also, several universities adopted doctoral programs and master's degree programs related to Futurology. For example, in 1969, the first doctoral program on the Study of the Future was founded at

the University of Massachusetts; in 1975, a Master's degree was founded at the University of Houston-Clear Lake; in 2010 the Free University of Berlin initiated a master's degree program in Future Studies, and so on.

In the next part of the paper, we are going to take a closer look at the methods of approaching such a complex discipline by authors.

2.2 Futures Techniques.

The field of future studies is generally focused on long-term futures, in which the concept of plausibility becomes the main nucleus. It has to be emphasized the usage of the plural term, "futures", which suggests one of the fundamental principles of future studies, namely the fact that there are multiple alternatives of future.

In the matter of methodology, the practitioners employed a large number of different approaches, models and methods, in both theory and practice. Most of them are inferred from other academic or professional disciplines, such as Social Sciences, History, Geography, Physics, Chemistry, Astronomy, Mathematics, Statistics, Computer sciences, etc.

Futures techniques may be seen as "frameworks for making sense of data generated by structured processes to think about the future".

At present, the general method of future studies has been reduced to the name "three P's and a W", which is explained as possible, probable and preferable futures, plus wildcards (low probability, but high impact events, whether they are positive or negative).

However, there are a lot more methods and techniques used by futurists, most of which are mentioned in the publication "Futures Research Methodology", such as Causal layered analysis, Horizon scanning, Scenario method, Future history, Monitoring, Cross-impact analysis, Futures wheel, Trend analysis, Morphological analysis, Theory U, etc.

For example, Cross-impact analysis, is a methodology which purpose is to help establish how relationships between incidents could impact resulting incidents, this way reducing ambiguity in the future. Trend analysis refers to collecting information, in order to discover a pattern, which is furthermore going to be used as well in predicting future.

Following, there are going to be presented a small number of iconic futurologists and their most important publications, along with a short analysis of their prediction's accuracy.

2.3 Iconic futurologists and publications.

One of the most brilliant and innovative publication is "To-Day and To-Morrow", from the 1920s, which is comprised of more than 100 books that predicted things as space stations, wind power, artificial bombs, wireless internet and even mobile phones. These books signal the beginning of the modern futurology.

Archibald Low (1888-1956), English consulting engineer, research physicist and author of more than 40 books, predicted in the book named "Wireless Possibilities" (1924), the mobile phone, saying: "In a few years' time, we shall be able to chat to our friends in an aero plane and in the streets with the help of a pocket wireless set".

J. B. S. Haldane (1892-1964), British scientist, predicted, in the book named "Daedalus, or, Science and the Future", some scientific discoveries, in several branches, such as Physics, Chemistry and Biology. For example, he predicted faster travelling, better communications, the development of synthetic food, the use of wind power, genetic modification and even *ectogenesis*, which was his term for growing embryos outside the body.

However, not all predictions made in the past are accurate or have been fulfilled in the present.

For example, Oliver Stewart (1896-1976), stated in "Aeolus, or, The Future of the Flying Machine" that British craftsmanship would conquer over American mass production, based on the invention of the autogiros, a small aircraft that had both a propeller and a freewheeling on top. Anyway, flying boats disappeared in time, as airliners became bigger and longer range, and as more airports were built.

Dora Russell (Black), (1894-1986), proposed in "Hypatia, or, Woman and knowledge", a rousing feminist volume from 1925, that women would be paid for household work. Still, this has not come to pass either.

Ernest Betts (1895-1957), stated in 1928, in the publication called "Heraclitus, or, The Future of Films" that : "The film of a hundred years hence, if it is true to itself, will be saying more than ever". Nonetheless, the movie "The Jazz Singer" appeared soon after, as the first "talkie".

Now that examples of both accurate and inaccurate predictions have been presented, let's present Futurology from the military perspective.

2.4 Futurology in the military.

Our personal approach to this paper consists in assumptions, regarding Futurology's role in the military.

For example, every military operation plan is based on different future predictions about the enemy, extracted from a variety of behavior patterns, that are used in creating different scenarios.

Also, in the military scientific domain, it can be used in predicting future technologies, in matter of weapons and equipment. Furthermore, this information can be used in different ways.

3. CONCLUSIONS & ACKNOLEDGMENT

In conclusion, the value of Futurology cannot be denied. We believe that in time, the study of this discipline will become more common, as it will pe known widely.

We strongly believe that this science is extremely important, based on two reasons: first of all, from the military point of view, anticipating the enemy's moves represents the basic of any military operation, and second of all, Futurology may help society avoid a variety of conflicts.

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AUTODESK FUSION 360 SOFTWARE IN THE CINEMATIC STUDY OF THE AIRCRAFT'S SINGLE POINTER ALTIMETER

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Abstract: *An airplane needs to be operated with maximum performance and the flight instruments make it possible, especially when flying long distances. Manufacturers provide the necessary instruments, but to use them effectively, pilots need to understand how they operate. Unfortunately, the figures and schemes can only show the minimum and maximum range of motion for each element, so pilots and engineers have trouble understanding the mechanism by only visualizing the schemes. This is the reason I elaborated this article.*

Using Autodesk Fusion 360 software, I constructed step by step the single pointer altimeter. In this article, I present to you how a simple cinematic scheme and a few conditions are more than enough data for building a 3D functional and accurate single pointer altimeter and I will show you step by step how I have done this. The main purpose of using this modeling software is helping people around the world to better understand how a flight instrument is built in order to understand how it operates.

Keywords: *aneroid capsules, flight instruments, altimeter, cinematic scheme*

1. INTRODUCTION

Understanding how flight instruments operate is necessary for pilots in order to establish a safe flight. Unfortunately, visualizing the cinematic schemes is the only way they can understand the mechanism, a problem that in some cases can lead to misunderstandings of the motion.

Using Autodesk Fusion 360, this is no longer a problem. In this article you can see, step by step, how a 2D cinematic version of an altimeter can be materialsed into a 3D completely functional single pointer altimeter, on a scale of 1:1, but first let me introduce you to the topic.

2. FLIGHT INSTRUMENTS

Altitude, airspeed, vertical speed, heading and much more other crucial information in flight are all data about the flight situation of that aircraft. These are provided to the pilot due to the instruments in the cockpit, also called flight instruments. By allowing the pilot to fly the aircraft in level flight, they improve safety, without a reference outside the aircraft such as the horizon. Visual flight rules (VFR) require an airspeed indicator, an altimeter, and a compass or other suitable magnetic direction indicator. Instrument flight rules (IFR) additionally require a gyroscopic pitch-bank (artificial horizon), direction (directional gyro) and rate of turn indicator, plus a slip-skid indicator, adjustable altimeter, and a clock. Instrument meteorological conditions (IMC) can be very dangerous, so they require require radio navigation instruments for safe and precise takeoffs and landings. In this project I will talk about the construction of a simple altimeter, also called the single pointer altimeter, but first I want to introduce you to the idea of an altimeter and its main purpose.

2.1 The Altimeter

An altimeter is an altitude flight instrument used by pilots and it is also used by mountaineers, skydivers and many others. The flight instrument's main purpose is to tell its human user how elevated from sea level he is at that moment. It performs this operation using a barometer by measuring the local air pressure. The altimeter is a basic instrument required for all aircraft to be certified. It measures atmospheric pressure and displays it as altitude in feet, meters or kilometers. Since it is the average reference level for most oceans, this altitude is called average sea level (NMM) or (MSL) Mean Sea Level. The weight of the column

of air which extends vertically upwards from the point to the outer limit of the atmosphere is the main factor that affects the pressure at a point. The higher an aircraft is flying, the sorter is the column of air above it and consequently the lower is the atmospheric pressure at the aircraft.

These being said, the greater the height, the lower the pressure, so by measuring the pressure the altimeter measures height. Unfortunately, the temperature of the air at the surface and the temperature lapse rate in the air above vary considerably; this affects pressure. The situation is also complicated by high and low pressure weather systems which produce pressure differences in the horizontal plane. Furthermore, the relationship between pressure and height is not a linear one, so that calibration of the altimeter scale is not a simple matter.

2.2 Constructive Versions of the Altimeter

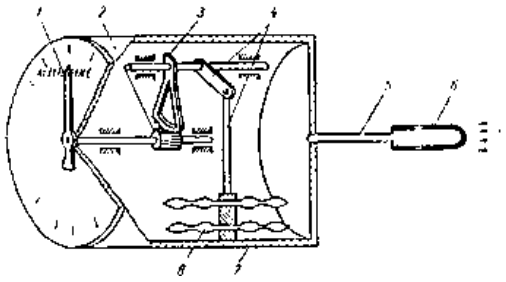

Fig.2.1 The Single Pointer Altimeter

Due to the dependence of atmospheric (static) pressure, the problems of measuring altitude are reduced to only measuring pressure.The dial of the device is calibrated in kilometers or meters. The device housing is connected to the static pressure intake port, so as the altitude changes, the pressure also varies, and the aneroid capsules are deformed by setting in motion the mechanism of the instrument and the pointer.

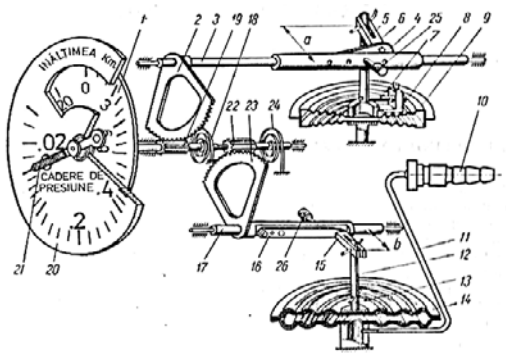

Fig.2.2 The two pointer altimeter

Barometric altimeters usually have a more complicated construction than the one shown in Fig.2.2. In order to be able to accurately use it, for the indications of the measuring range (0... 30 km) the instrument is equipped with two indicator needles and two ladders on the dial. One of the needles performs a full rotation at the altitude variation by 1,000m and the corresponding scale having divisions with the value of 10 m. The other needle rotates by 10 to 20 times less, indicating the altitude in km.

3. THE CINEMATIC SCHEME OF A SINGLE POINTER ALTIMETER

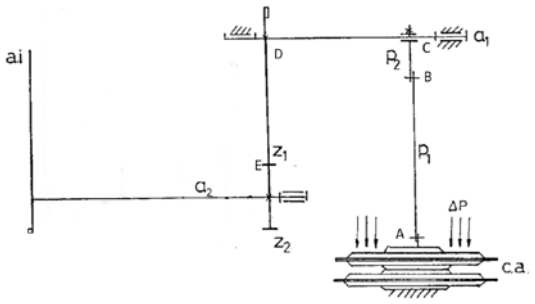

Fig.3.1 The cinematic scheme of the single pointer altimeter

c.a-bank of aneroid capsules	$a_1 \ldots a_2$ –shafts
Δp-pressure	z_1- toothed sector
p_1 , p_2 –levers	z_2 - pinion
a.i-pointer	A….E-cinematic couplers

In Fig. 3.1, I present to you the cinematic scheme of the single pointer altimeter. First element of the mechanism is the bank of aneroid capsules, rigidified on the lower side and linked to the altimeter body. Due to the action of pressure (Δp), the bank of aneroid capsules deforms on the upper side. There we have a linear strain- *f*, a deformation which is linked to the rotation coupler *A*, bonded to the lever - p_1.Total elastic deflection is taken over by the lever mechanism p_1 and p_2 (sliding-block linkage).The linear strain of the bank of aneroid capsules is multiplicities and transformed into an angular deformation of the shaft(a_1).

Due to the toothed sector-pinion gear, both elements having a tooting of face, this angular deformation is multiplicities and linked to the next shaft (a_2).On the second shaft-a_2, the toothed sector-pinion gear amplifies the movement because the pinion is mounted on the second shaft of the altimeter. On the other extremity of the second shaft, the position of the pointer is modified due to a pressed fit.

4. USING AUTODESK FUSION 360 IN THE CINEMATIC STUDY

Fusion 360 is a 3D modeling, CAD software platform for product design and manufacturing. Autodesk Fusion 360 is the only tool that connects the entire Autodesk development process into a single CAD/CAM/CAE platform. It provides all the support you need in advancing your engineering and manufacturing skills. Its main purpose is:

- design and engineer products to ensure aesthetics, form, fit, and function.
- reduce the impact of design, engineering, and PCB changes and ensure manufacturability with simulation and generative design tools.
- directly edit existing features or model fixtures with the only truly integrated CAD + CAM software tool.

In this project I want to show you how Autodesk Fusion 360 can be used to properly build a cinematic mechanism. Because this software allows you to do almost everything related to 3D modeling and design, I want to use it in my study of cinematic mechanism of the single pointer altimeter. To do so, I need to follow the numbered steps from below.

1. First things first, the material of aneroid capsules is the first thing I have to consider when building the mechanism because due to their deformation the entire movement is set in motion. Using the specialty literature, the table A1.6 of [4] or [1] [5] [6], the best material for the bank of aneroid capsules is the beryllium bronze, due to its good electric conductibility and high quality corrosion resistance.

2. Every material has its own mechanical characteristics, and every mechanical characteristic has also its own range of values. Because I virtually build the entire mechanism, I can choose the maximum capability for every mechanical characteristic.

3. The profile of the aneroid capsules is not a very important step, because all three versions have similar properties, but it has to be done. I have to choose a sinusoidal, trapezoidal or triangular profile. Because it is not an essential step, I will choose the easiest to build profile, which is the triangular one.

4. The accurate dimensional parameters of the aneroid capsules are necessary in this study, because if they do not fit in the optimal range, the entire mechanism will be a malfunctioning one because of more or less sensitivity than normal which will eventually lead to wrong indications by the pointer. The main dimensional parameters that have to be calculated and assumed to the aneroid capsules are shown below:

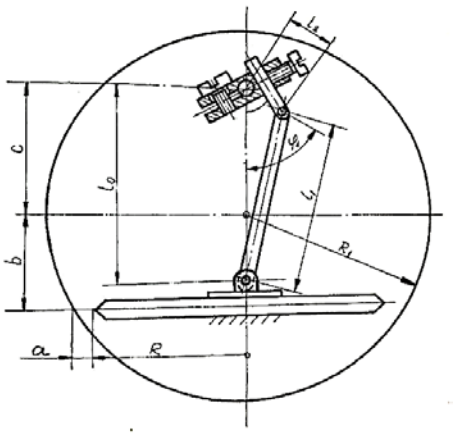

Fig. 4.1 Dimensional parameters of the aneroid capsule and levers mechanism

Dimensional parameters are calculated according to a set of conditions, but because the main purpose of my study is showing how Autodesk Fusion 360 can be used to 3D model a cinematic mechanism, I will skip some stages that evolves the step by step calculus of parameters and below I present you my results of the optimal dimensions. These are not the only optimal dimensions, because they only represent one of many more optimal possibilities. You can determine completely other dimensional parameters using the specialty literature [1] [5][6].

Following step by step the conditions and mathematical formulas from the specialty literature [1][5][6], these are the dimensional parameters I chose for my bank of aneroid capsules.

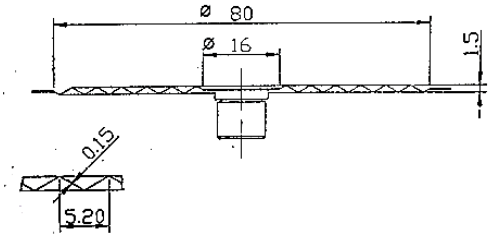

Fig. 4.2 Dimensional parameters of the aneroid capsule

Using the option ‘’CREATE NEW SKETCH” followed by the option „SHOW SKETCH DIMENSIONS, I created on a scale of 1:1 the exact same profile of the aneroid capsule resulted from my previous mathematical calculations (Fig.4.2)

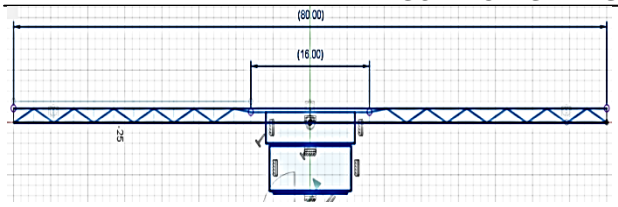

Fig. 4.3 Dimensional parameters of the aneroid capsule in Autodesk Fusion 360 software

As we see in Fig. 4.1, the motion of every component is limited to a certain boundary, even if we talk about linear motion or angular motion. Unfortunately, the figures and schemes can only show their minimum and maximum range of motion, but to deeply understand the mechanism you are limited to only imagine their motion. This is the point where Autodesk Fusion 360 can help in the cinematic study of aircraft instruments more than any other book, scheme or article.

This software has its specific tool called ''ASSEMBLE'', a tool so useful in the cinematic study that it made me think of making this entire article. As we see in the print screen below, this tool is divided in many options, from „NEW COMPONENT" to „MOTION STUDY". Because in the case of single pointer altimeter, I only need a few of them, I will mention them and also talk about why they are so useful in my cinematic study of the single pointer altimeter.

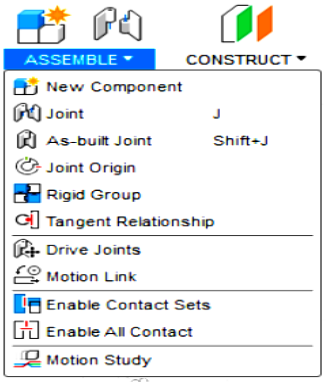

Fig. 4.4 ASSEMBLE tool's options

a). First we have the NEW COMPONENT option. I cannot create a cinematic mechanism if I select the option JOIN when creating a new component, because this way it will be bonded to the previous component and they will both be treated as a rigid single component. This way, even if I initially create the second component bonded to the first component, with this option I can separate and treat them as different components, an essential aspect when I will get to the point where I need to create their motion link.

b). Next useful option is the JOINT option. After I create every component separately from one another, next step is linking them, but this is not the best part of this option.I do not only link them, but I can specify the type of motion they have in conjunction with the other.For example, when bonding the second lever-p_2 to the first shaft-a_1, with the JOINT option I can specify that I want a angular deformation of the shaft, setting my mechanism to motion.

c). An option that does not make part of the ASSEMBLE tool but will help me get to the last option is EDIT JOINT LIMITS. For example, the previous step was making the levers rotate the first shaft-a_1, but the main problem is how much rotation I actually need. Without this option, the levers would rotate the shaft by 360 degrees, a value that is way too much for the altimeter. Editing joint limits will fix this problem, allowing me to set the motion of the component to its real life accurate range, for example 70 degrees.

d). Our last option that will help me build an accurate and precise 3D single pointer altimeter is the MOTION LINK option. After I link all the components, establish their type of motion in conjunction with the other component and also limiting their motion, next step is linking the JOINTS. For example, the bank of aneroid capsules have a maximum range of linear deformation, and the pointer has also a maximum range of rotation-360 degrees.I can select the MOTION LINK option and literally link their motion, so for a maximum deformation of the capsules I will have a total rotation of the pointer.

These 4 options are all I need to accurately build a 3D single pointer altimeter, because they allow me to link all the components, establish their type of motion in conjunction with the other component, limiting their motion and also link their motion, so Autodesk Fusion 360 provides me with all the necessary tools in my cinematic study of the altimeter.

5. After setting the dimensional parameters of the aneroid capsules, next few steps are the conditions that must be followed in order to get a perfectly functional component. Because the main purpose of my article is using Autodesk Fusion 360 for a better understanding of the cinematic mechanism when talking about the single pointer altimeter, the essential part is using my result regarding the mechanism in Autodesk Fusion 360 and not talking about mathematical calculations

regarding how I got the results. Mathematical calculations were made according to [1], [5], [6].

6. Next step is creating the levers and the upper shaft, but to do so, I have to make sure I follow the conditions and the recommended dimensions, as you can see in the picture below (Fig. 4.5).

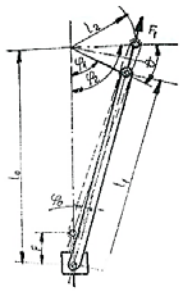

Fig. 4.5 Dimensional parameters of the levers mechanism

The most important elements to be considered are φ_1 and φ_2, because they represent the angle of the cranking bar in the minimum position (f=0) and the angle of the cranking bar at maximum deformation (f=f_{max}=2). Following the recommendations and all the steps from [1], [5], [6], the optimal values for the two angles are 85.332 degrees and 106.407 degrees.

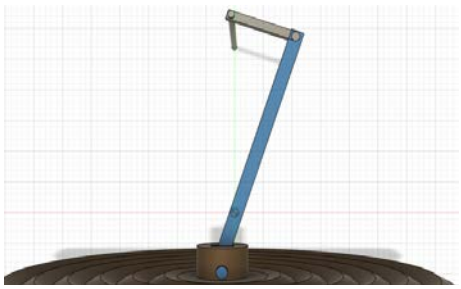

Fig 4.6 Dimensional parameters of the aneroid capsule and levers mechanism in Autodesk Fusion 360

Following the steps mentioned above, I built the bank of aneroid capsules, the levers and their range of motion. Using the EXTRUDE tool, I created a 3D version of the mechanism and I also assigned a diferent color for each component for a better understanding of the motion.

Last step is building the second shaft, the one bonded to the pointer. Because the toothed sector-pinion gear's main purpose is to multiplicate the angular deformation of the upper shaft, I have to determine the accurate multiplication ratio (u) using the formula:

$$u = \frac{\theta}{\alpha}; \quad (1)$$

Θ-the angle of the cranking bar(φ_2-$\varphi_1$from the previous step, so I have approximately 21 degrees of angular deformation of the shaft, but due to the fact that the toothed sector is bonded to the first shaft, it rotates with the same angle .

α-the angular deformation of the pointer (because I chose a single pointer altimeter, it will perform a full rotation, so α in this case has the value of 360 degrees)

I have to establish the number of teeth of the pinion (z_2), so I will choose the recommended value for it (30 teeth).

In this case, u has the value of 0.05, a value that helps me calculate the right number of teeth for the toothed sector, using the formula:

$$z_1 = \frac{z_2}{u} = \frac{30}{0.05} = 600; \quad (2)$$

Now I have all data for creating the toothed sector-pinion gear and as you can see (Fig. 4.7). This is the reason I think Autodesk Fusion 360 is the perfect software to materialize my calculations into a 3D model of the mechanism.

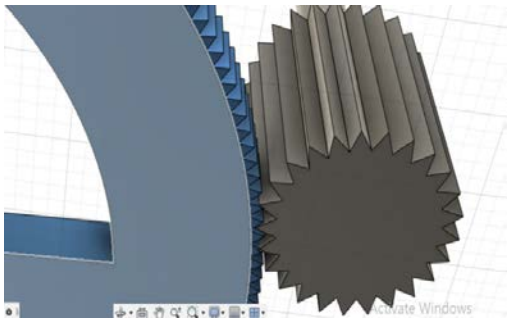

Fig. 4.7 Toothed sector-pinion gear in Autodesk Fusion 360

The entire mechanism is ready to be projected in Autodesk Fusion. Using the EXTRUDE, JOINT, EDIT JOINT LIMITS and MOTION LINK tools, my cinematic study of the single pointer altimeter is complete (Fig. 4.8).

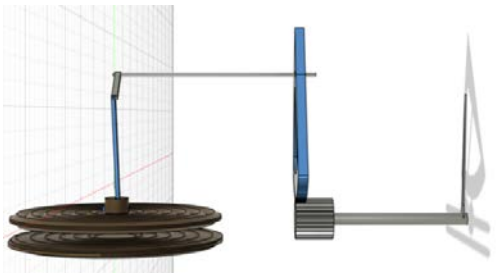

Fig. 4.8 The single pointer altimeter's mechanism in Autodesk Fusion 360

As you can see in Fig. 4.8, the cinematic scheme previously presented (Fig. 3.1) is precisely materialized into a 3D version for a better

understanding of the mechanism and its operating principles.

5. CONCLUSIONS & ACKNOLEDGMENT

Contrary to what has often been assumed regarding the difficulty of understanding the motion of a cinematic scheme, my project accomplished its main purpose of helping people around the world to better understand a cinematic mechanism.

Using Autodesk Fusion 360 software in the cinematic study of aircraft flight instruments turned out to be the best alternative for transforming a 2D static single pointer altimeter into a 3D working and functional version of it following the steps I used above. Each component has the accurate range of motion as it has in real life and by bonding them, we are able to study and understand the entire instrument, its purpose in the cockpit and how it operates.

6. REFERENCES

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6. Demian, Tr., (1980), *Elemente constructive de mecanică fină. Aplicații.Editura didactică și pedagogică*, București.
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ENHANCING THE SECURITY OF A NETWORK BY REMOVING TRACKERS AND ADS WITH RASPBERRY PI

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Abstract: *This essay shows how can we use the Raspberry Pi with Raspberry Pi OS (Raspbian) in order to block ads on any local network, ads that randomly appear on Google search, YouTube, online stores and basically all websites, along with restricting the trackers that advertisers use to target ads based on what websites we access, what products we're looking for on the internet, what videos we're watching online and so on. This is a very simple, cheap and effective solution, as it won't affect the network performance and QoS overall.*

Keywords*: advertisements, Raspberry Pi, Raspbian, trackers, local network, usage statistic, pi-hole, QoS, Debian.*

1. INTRODUCTION

Online advertising has become one of the biggest issues in these days, as ads and usage trackers have basically took over every single page we're accessing in order to complete certain activities. Why is that?

Well, online advertising, also known as online marketing, digital marketing, digital advertising or web advertising is a form of marketing and advertising which is using the internet in order to promote products and services to audiences and platform users.

Online advertising includes e-mail marketing, search engine marketing (SEM), social media marketing, web banners advertising, mobile advertising, media services and platforms advertising (also known as programmatic advertising), and many other methods, methods which can also be used in a malicious way for people who are not so sharp-eyed on the internet and believe things that no one should believe.

The way internet advertising works is rather simple; it involves a publisher, who integrates advertisements into its online content and an advertiser, who simply provides the ads that need to be displayed on the publisher's content.

This is a very "hard-working" domain, as it pushes harder than any other company in order to publish all kind of ads, and this is proven by the fact that in 2019, research estimates that internet advertising revenues in the United States surpassed those of cable television and broadcast television. The revenues from online advertising in the United States are estimated to be around $125.2 billion, $54.8 billion higher than television ($70.4 billion).

2. USING OF RASPBERRY PI COMPUTER FOR DEVELOPING

2.1 Components

The Raspberry Pi 4 model B tiny computer, with 2GB of RAM and GIGABIT ethernet port (very important for the performance of the network).

Fig. 1 The Raspberry Pi tiny computer

Next, we have the Samsung 32GB UHS-U1 MicroSDHC memory card, which serves as boot and storage drive for the Raspberry Pi, as the computer doesn't come with any storage attached to it whatsoever, and it's the best method to boot and use this environment, as it has only 4 USB ports (2x USB 2.0 and 2x USB 3.0), and if you need to use it for another application which requires USB ports, it just makes no sense for it.

Fig. 2 The Samsung 32GB MicroSDHC memory card

The next component is the cooling case for the Raspberry Pi, as the case which comes with kit can't provide a decent cooling with 3 tiny radiators mounted with double-sided adhesive tape and a plastic case without any vents or orifices for the air to flow, as you'll see below. For this I have chosen an aluminum body with thermal pads and 2 small coolers, which provides great temperatures no matter how hard the stress is on the CPU/RAM/USB controller.

Fig. 3 The original plastic case with radiators that you stick with double-sided adhesive tape on the hotspots of the Pi board (CPU, USB Controller and RAM).

Fig. 4 One of the radiators which are mounted with double-sided adhesive tape

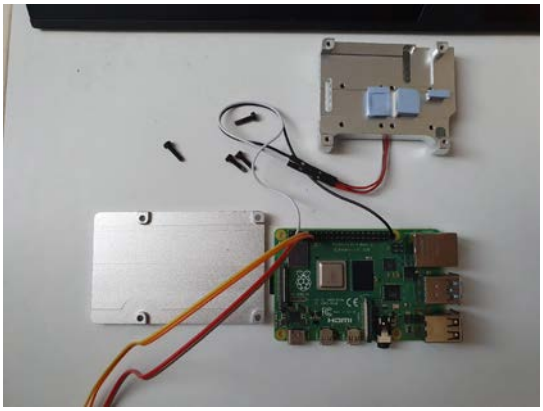


Fig. 5 The aluminum case with thermal pads placed on the hotspots

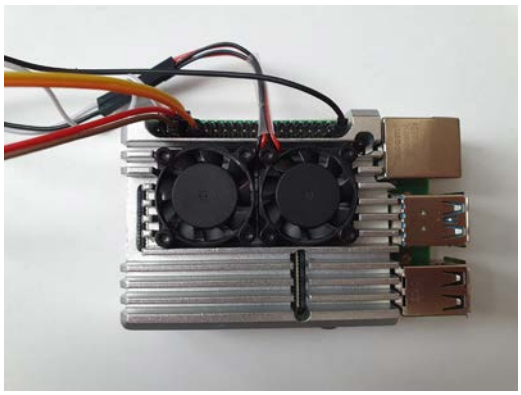


Fig. 6 The aluminum case with fans assembled and connections made

Next, we have the USB Type-C power supply unit needed to power the Raspberry Pi. In order to be used, the Raspberry Pi requires a type-C connection that can supply 5V and 3A DC.

Fig. 7 AC adapter

2.2 OS flashing and installation

For this project I have used the Raspberry Pi tiny computer with the AC Adapter, generic mouse

and keyboard, and a video adapter at the beginning, in order to configure the VNC server in order to remotely access the desktop of the Raspberry Pi when needed, as usage statistics can be viewed by connecting directly to the application that we are going to run on the device.

First, in order to install the Raspberry OS on the SD card and boot the Raspberry, I used the official app from Raspberry Pi – Raspberry Pi Imager to flash the software.

Flashing the software on the SD card using the application is rather simple as you'll see below, you just have to choose the operating system (OS) first, then the storage, and after these 2 steps, you just press Write and the media will be flashed according to the requirements of the platform.

There are multiple choices of operating systems to choose from, as you'll see below, but I'll explain my choice after the next slides.

Fig. 8 Raspberry Pi Flashing Utility

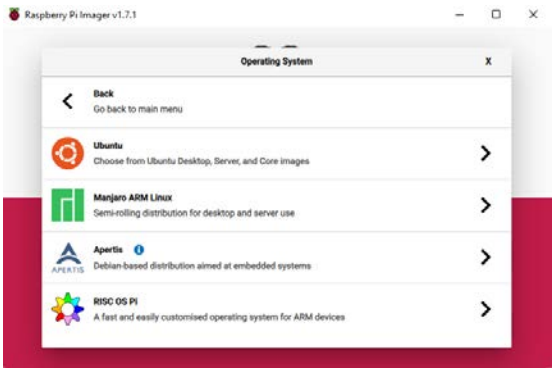


Fig. 9 A few general-purpose OS which can be installed on Raspberry Pi

Based on your needs and what you want to use the Raspberry for, there is plenty to choose from; from dedicated OS (Raspbian) to other general-use OS based on Linux/Debian such as Linux, Alpine, SUSE and others.

You can also install a special OS on Raspberry, such as 3D printer dedicated OS, home assistants and home automation OS, retro gaming orientated OS, media player OS and other lite versions with or without UI of Raspberry Pi OS. Below you can find some of the OS mentioned previously. Needless to say, that every single OS mentioned above can be found directly inside the Raspberry Pi Imager, and the flashing procedure is the exact same with the one used for Raspbian and it doesn't involve searching the operating system online, then downloading it and flashing it with 3rd party software.

The main reason why I chose the Raspberry Pi OS over any other OS from the list, is because I consider it to be one of the most lightweight OS with GUI from that list, and most certainly it provides the best software optimization for the hardware we are using, namely the Raspberry Pi 4 Model B.

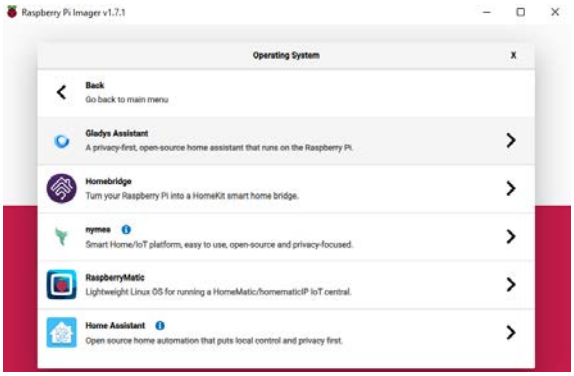


Fig. 10 Raspberry Pi OS for Home Assistant

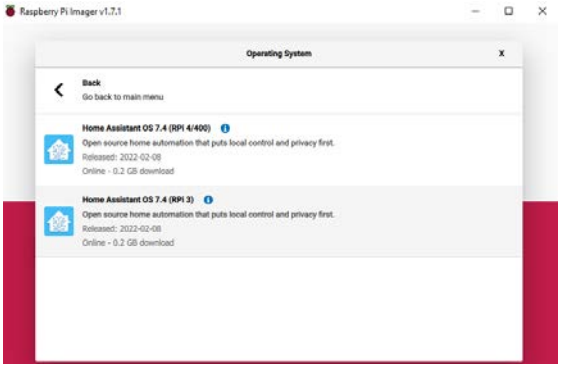


Fig. 11 Raspberry Pi Home Assistant OS

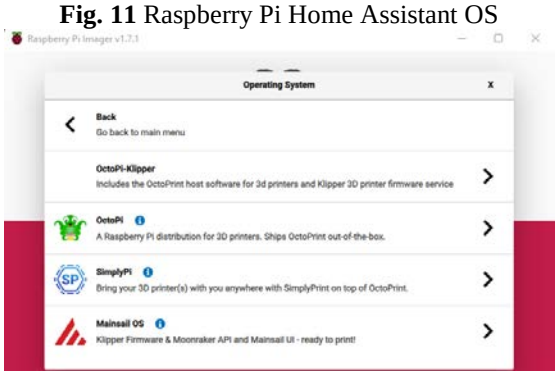


Fig. 12 Raspberry Pi 3D Printing OS

Next, after flashing the Raspberry Pi OS to the SD card, the next step is to boot the system and install the VNC server in order to get rid of the peripherals and display, which specifically for this application are not needed, as you can simply use the VNC Viewer from any device after installing the server, and you can connect using the details from the server you'll see below. Please note that the connection to the Raspberry via the VNC server can be used ONLY while being connected to the local network – the network to which the device is connected.

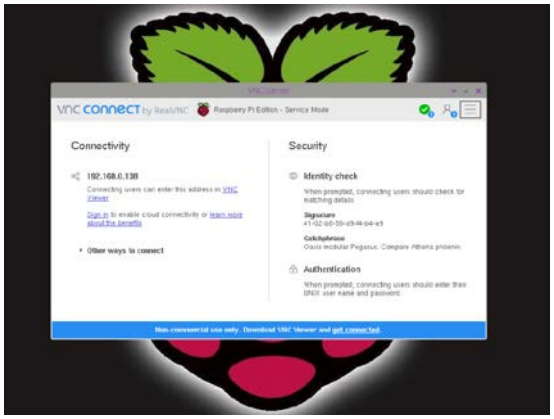


Fig. 13 Details for the VNC server

After configuring this, the next step is to install the Pi-Hole. Pi-Hole is the application that we are going to use in order to block all the trackers, ads, usage statistics and unwanted content that cannot be otherwise controlled, some of them not even with a generic AdBlock Plus available on Google Chrome/Firefox/Opera.

2.3 Pi-Hole install and config

After installing the Raspbian OS and the VNC Server so that we can work remotely and remove all the peripherals from the Raspberry Pi. Now we have to start the really important part, which is the installation of Pi-Hole.

Pi-Hole, as mentioned earlier, is the open-source application that uses certain user-installed and default libraries and ad lists in order to block the very annoying advertisements and trackers.

Why would someone even bother doing this you might ask, and the answer to that is rather simple; today, we have advertisements on mostly every single web page we access, and their presence is to be justified with several reasons. Some web pages use them only in order to maintain their services free, as they get a revenue from posting the ads, while other web pages post ads, which are not exactly what it seems to be, because they are used as very interesting things that you might be looking for, and in the back they are just phishing attempts, malware and other types of viruses that can harm you computer and even use sensitive data stored in it, such as credit cards, passwords, accounts and so on

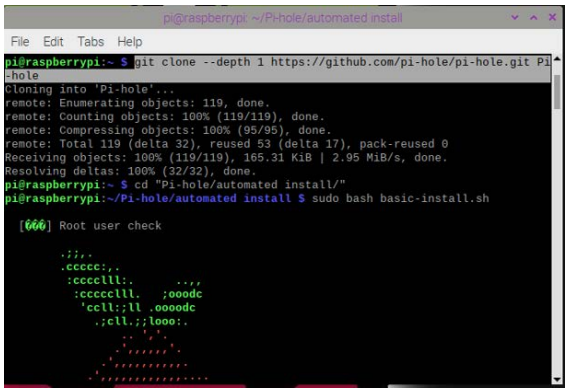
Then as we made things clear with the ads, it's time to talk about trackers. What are they and why you should consider blocking them?

The general use of trackers is to obviously track and store user activity. This means that for example, if you are searching on the internet for a baking oven, you may notice that for a few hours, or even days, most of your advertisements are related to other baking ovens. This may not seem as such a big problem, but have you ever noticed that after talking about something next to your phone, such as the baking oven described above, a few minutes later after you finish discussing, when you search for something on the internet and then access a web page, you will find an advertisement with baking ovens?

And this is the reason why trackers and ads as well should be blocked altogether, because they use all kind of clever trackers without you even noticing this, and store a lot of data, no matter if it's useless or not, because some of the information may be even part of our privacy, and that is not necessarily a bad thing, but neither good.

Now, in order to enhance our privacy, we'll be installing Pi-Hole. The procedure is simple, we just have to open a terminal window, login as super user or root (sudo) which in our case won't be necessary, as we are already logged in to the super user, and then write the command line to start the installation, as you'll see below. But first, let's perform a quick speed test WITHOUT the Pi-Hole filtering, so we can ensure that the QoS is not affected.

Fig. 14 The Upload/Download rates without Pi-Hole filtering



Fig, 15 Installation of Pi-Hole

After running this command, a few windows like the one below with certain configuration options should appear during the installation. I have to mention that I have used mostly the defaults on the installation, so that I can make sure the usage and experience or the application is not disrupted by anything.

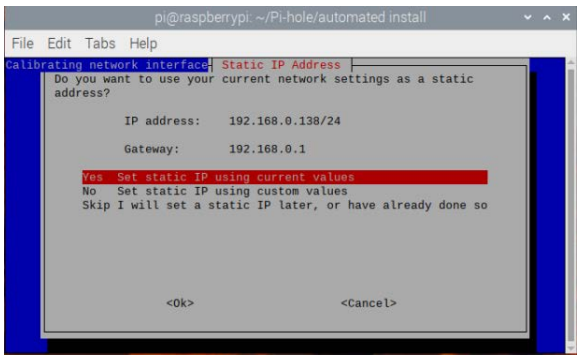


Fig. 16 Prompt for the static IP that will be used

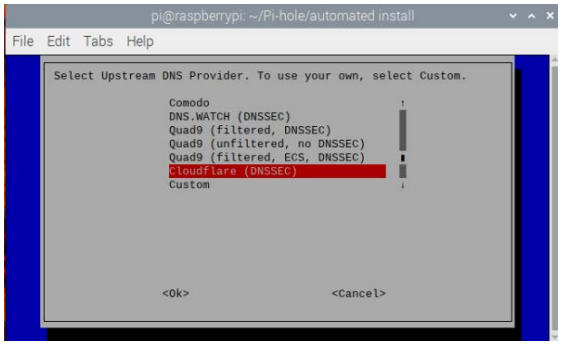


Fig. 17 Prompt for the primary DNS that will be used by Pi-Hole

As an addition, you can go with whatever DNS provider you wish, but I chose Cloudflare as it ensures the highest network speed, lowest latencies and overall the best performance available for me.

Then, after configuring the installation options, at the end you should see a window like this with the connection and interface login information. Also, the IP address of the Raspberry Pi MUST be used as primary DNS in the router in order to filter all the connections, and you are going to see this in the upcoming pictures. The configuration method for the DNS varies on the router brand, and I'm going to show you how I did this for my TP-Link Router.

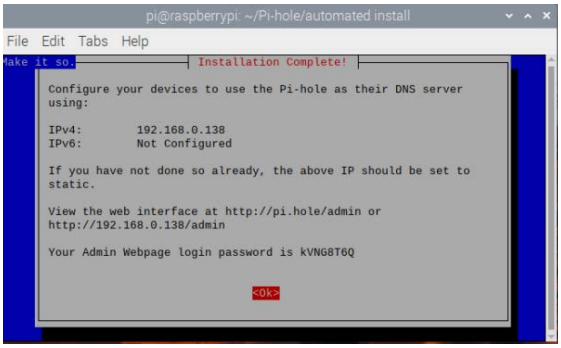


Fig. 18 Connecting and DNS information for Pi-Hole

After the installation is finished, you can either change your password from terminal first, and then login to the UI, but we'll dive right into the important things and we'll just leave the password be as it is right now. For this, we just have to open a browser window and type the IP address of the device and /admin at the end of it in order to get to the admin panel, and in our case the address is 192.168.0.138/admin.

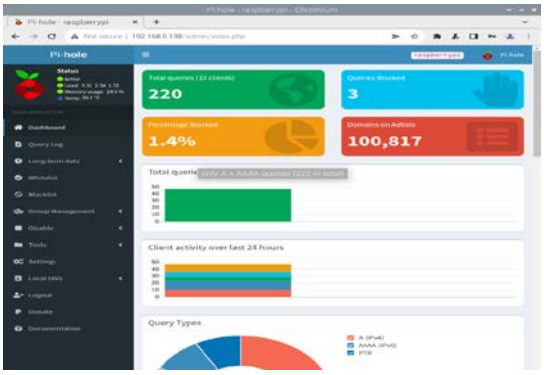


Fig. 19 Admin interface of Pi-Hole

From the admin page we can watch the logs, edit blocklists, view loaded domains and many other administrative things.

Now, after installing, we'll see that the predefined blocklist has around 100.000 domains stored, which is not bad, but not enough for our needs, because with this list, we can't block many ads and trackers, so we have to install additional blocklists. But first, let's configure the Pi-Hole as primary DNS in the router and then perform the speed test in order to ensure that we have the same QoS.

For the router I'm using, TP-Link Archer AX50 we have to go to the admin interface first, and then enter Network/Settings/DHCP server, and we'll set the Primary DNS to be the IP of our Pi-Hole, which in our case is 192.168.0.138. After this, the router must be restarted and the changes will take effect. Now the speed test can be performed.

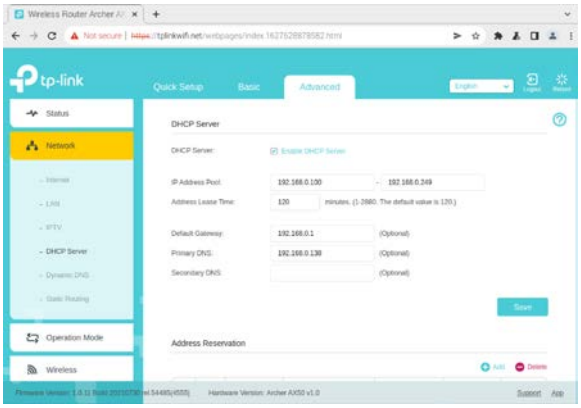


Fig. 20 Router configuration for Pi-Hole

Fig. 21 The Upload/Download rates with the Pi-Hole Filtering

As we can see from the results presented above, after connecting the Pi-Hole filtering to the router, the QoS is the same, the upload and download rates along with the ping being very close to what we had before the installation.

Now, once we have ensured that the QoS is the same, we can proceed and start adding blocklists. When we talk about blocklists, coming to the available options, there is plenty to choose from. I have mentioned before that this is an open-source project, and we can do mostly whatever we want with the blocklists, we can add blocklists from GitHub, we can create our own blocklists, and use plenty sources for this.

The approach that I chose here is to use a few high-rated blocklists for ads, because this is the most visible result that we are going to see.

Blocklists can be installed in multiple ways, with terminal scripts, copying them inside the folder of Pi-Hole on the Raspberry Pi computer (which is not the best option, because it's more complicated than the other methods) or simply by copying the host of a .txt blocklist and uploading it straight through the admin interface of Pi-Hole.

You'll see below how to upload a list from terminal, and the procedure is rather simple. You have to copy the repository with the list and installation script, make the script executable and then simply execute it as super user (sudo bash xyz.sh). After running the script, we just have to run in terminal the command pihole -g, so that the system assimilates all the new domains and starts blocking them.

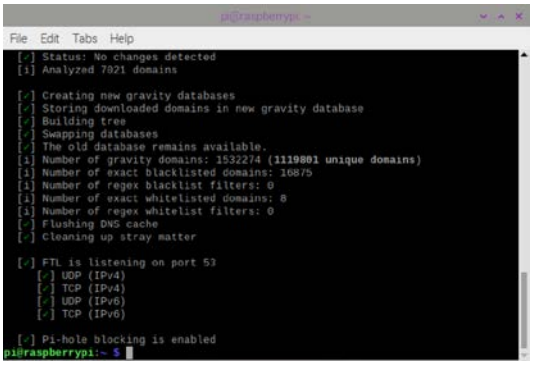


Fig. 22 The results of running pihole -g command

After running this command and adding a few blocklists, I am going to show below the number of domains we have, and these are ONLY for ads, not trackers, because as I said before, we are going to focus mostly on ads, because this is the most visible result that we can get.

Fig. 23 The domains present in the blocklist after adding lists

After adding the new lists, we can observe that the number of blocked domains has grown from 100.817 to 1.119.801.

To verify what I have said until now, after the setup has been finished, I am going to search for a product on Google and try to access the first result which is always an ad for the product you're looking for.

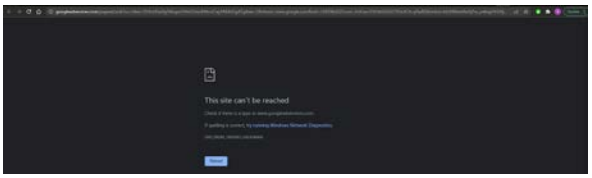


Fig. 24 The result of clicking an advertised product on Google after configuration

Fig. 25 The query log in which we can observe that Pi-Hole blocked an Apple device from caching ads

3. CONCLUSIONS

The first conclusion is that Pi-Hole, along with Raspberry Pi computer is a very good solution for blocking ads and trackers, and it's filtering the traffic without affecting the overall QoS, and there are plenty to choose from when you want to add new blocklists for trackers, ads, certain domains which you don't want to be accessed on the network. The browsing disruptions from ads are close to zero when configured properly.

Another good thing about this system is that it's fully customizable when it comes to blocking domains and usage domains, it can be used for both home and business applications. Honestly, the fact that it can be used in business applications is the most important thing from here, as it can increase the security level of the internal network, because of the almost inexistent shady tempting ads which can be intentionally or accidentally accessed by employees, and so compromise the security of the network, even generate very dangerous leaks of sensitive data.

Also, if the computers used in the network are not the fastest, by having this device present, the browsing speed and overall workflow of the people using it will be significantly enhanced, as the browser doesn't cache anymore all sorts of useless content, which if you watch the query log, you'll notice that the amount of useless links that are trying to be cached during casual browsing is basically ridiculous high.

The last major advantage of this, is that it can be ran either on a virtual machine using certain Debian-based operating systems as seen in the first part, or the best option, it can be ran on Raspberry Pi directly.

From my point of view, for home applications, Raspberry Pi is the most cost-effective long-term method for Pi-Hole, as you won't have a laptop or desktop pc powered on just to run the virtual machine with Pi-Hole installed, and moreover, the low power consumption of the Raspberry Pi cannot be ever compared to the usual devices mentioned above.

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INNOVATIVE METHODS TO ACHIEVE THRUST VECTORING

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Abstract: *Since the second half of the last century, the thrust vectoring of aircraft has been a subject that has interested many aviation engineers. After various studies and experiments that were materialized by aircraft prototypes, some variants of vectoring were developed and are still used today on military aircraft. Although these constructive variants of vectoring systems were tested, with the passage of time they proved to be expensive or were not able to achieve the required performance during flight, some of them considerably reducing the thrust. The aim of this paper is to present innovative vectoring methods which, in addition to low maintenance costs, offer superior characteristics to the methods already used to achieve this phenomenon. Although these methods have not reached the maximum level of exploitation, they are very promising because of the new technology and principles they use.*

Keywords*: thrust vectoring; fluidic vectoring; shock vector control; co-flow; counterflow; intelligent materials.*

1. INTRODUCTION

The thrust vectoring has posed a significant challenge to aviation, a challenge that engineers have not thought twice to respond to. Although in aviation this concept began to be developed in the early 1950s, it has been used in rocket control technology since the beginning of the last century. The need for thrust vectoring came from the desire to combine the helicopter's vertical take-off capability with the high cruise speed of fixed-wing aircraft.

It all started with the P1127 prototype aircraft developed by Hawker which had a vectoring system that allowed the thrust vector to rotate up to 18 degrees. The successor to this aircraft is the well-known Harrier aircraft.

During this period there were numerous experimental aircraft using the concept of thrust vectoring, many of which failed due to their instability. Some of these failed experimental models are: Convair XFY-1, Rolls Royce Flying Bedstead Ryan X-13 Vertijet, Bell XV-3 Tilt Rotor, Hiller X-18 Tilt Wing.

With the passage of time, thrust vectoring has become a necessary feature in order to achieve V/STOL. Nowadays there are many aircraft that use this concept not only to shorten take-off distance, but also to increase maneuverability, such as F-22, F-35, Su-57 etc. These aircraft use thrust vectoring by mechanical means, such as rotating nozzles or other methods that change the configuration of the aircraft.

In the following lines I will present newly developed vectoring methods in aviation that seem to be encouraging for the future of aeronautical engineering.

2. FLUIDIC THRUST VECTORING

Unlike mechanical vectoring, fluid vectoring uses fixed geometry, maintaining the aircraft configuration. So, this concept uses a secondary flow that changes the direction of the main exhaust flow-stream when exiting the aircraft. The benefits of this method include reducing the cost and weight of the vectoring mechanism up to 50% compared to mechanical means of vectoring.

Fluidic thrust vectoring can be achieved in several ways such as: shock vector control, co-flow/counter flow and throat-shifting.

2.1 Shock Vector Control

In this type of fluidic vectoring a secondary jet is injected asymmetrically into the diverging part of a converging-diverging nozzle. This injection creates a low pressure downstream of the area where the secondary jet was injected and results in a strong oblique shock wave.

A typical shock wave phenomenon occurs: the change in flow properties. The shock wave causes a change in the direction of the flow which is vectored as it passes through the oblique shock. Vectoring takes place at supersonic speeds and thus thrust losses can occur as a result of the main flow passing through the oblique shock wave. In static tests, vector angles of more than 19 degrees were obtained, but in reality, the shock wave attachment point can be moved more inside the nozzle, which results in a decrease in the efficiency of the method.

The disadvantage of this system is that when the shock wave becomes too strong, it gets reflected in the opposite wall of the nozzle. When this happens, the resulted shock wave, which has a lower intensity, vectors the main flow in the opposite direction.

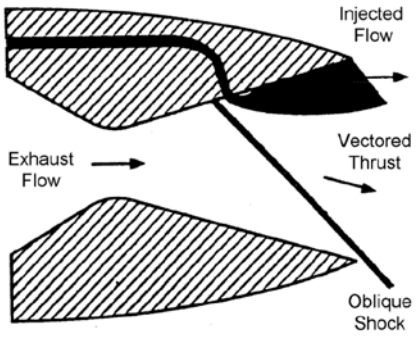

Fig. 1 Shock Vector Control

2.2 Co-Flow and Counter Flow.

Another way to achieve thrust vectoring by fluidic means is co-flow thrust vectoring. This system works on the Coanda principle which states that a jet remains attached to a convex surface and gets deflected around it. This effect of Coanda principle can be increased by passing a thin layer of high velocity turbulent air tangentially to the surface. This method consists of blowing a secondary flow across the surface. This secondary air stream flows tangentially to the surface and deflects the main flow into a curved path. This principle proved to be very effective for blowing high lift devices, but encounters difficulties when it comes to vectoring the exhaust jet. Some recent studies reported that such a system can be difficult to control. Other studies concluded that the maximum vectoring angle this method can reach is about 12.5°. The effectiveness of this system can be growth by adding a high aspect ratio nozzle.

The higher performances were demonstrated on a prototype aircraft. However, there might be considerable differences in effectiveness on usable aircraft. The studies showed that co-flow thrust vectoring is more effective at low primary jet Mach number.

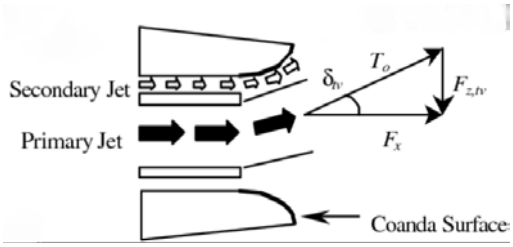

Fig. 2 Co-flow Vectoring

Counter flow system is similar to co-flow thrust vectoring and works on the same principle. The main difference between those two methods is that in this system the secondary flow is blown in the opposite direction from the main jet. Due to the asymmetric separation in the interaction zone of the two air flows, the main jet is deflected at the nozzle exit. Vectoring angles of up to 16 degrees and traction efficiency of 92-97% have been achieved with this system. However, this method also has a disadvantage. At high vectoring angles the system may experience a phenomenon known as hysteretic jet attachment. This phenomenon consists in the attachment of the primary jet to the suction collar due to the Coanda effect, thus losing control over vectoring. However, a reasonable vectoring angle can be achieved with this system.

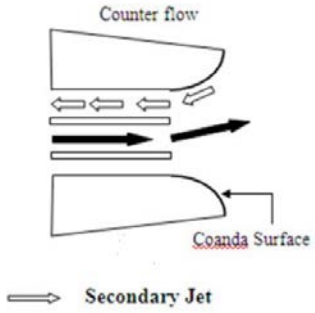

Fig. 3 Counter Flow Vectoring

2.3 Throat Shifting Vectoring.

In the method of fluidic throat shifting the secondary flow is injected into the divergent section of a supersonic convergent-divergent nozzle. This causes the main jet to deviate from its course, obtaining thrust vectoring. Thrust vectoring is achieved by creating virtual aerodynamic surfaces using secondary jet injection, surfaces that have the same effect as mechanical surfaces.

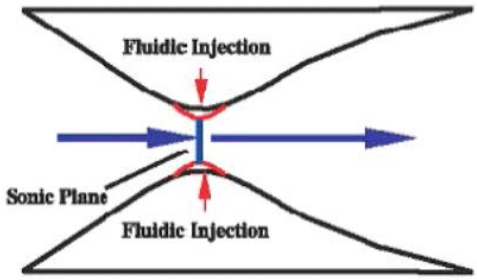

Fig. 4 Throat Shifting before Vectoring

Vectoring is taking place in the subsonic part of the nozzle throat, at lower main jet speeds. Thus, the thrust losses are lower. The injection points are located at different positions on the nozzle axis. This placement has the effect of skewing the sonic plane from the geometric throat to correspond to the injection points. Vectoring angles depend on the offset between injection points. Due to the fact that turning of the flow takes place before the shock wave, at subsonic speeds, the traction loss is lower than with shock wave vectoring. Studies show that the effectiveness of vectorization by this method is similar to that by shock wave vectorization.

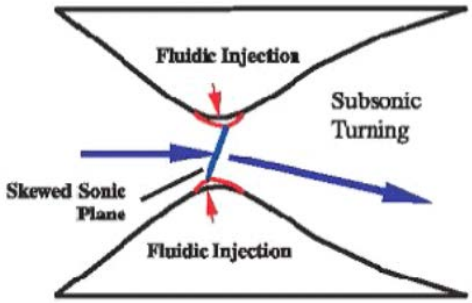

Fig. 5 Throat Shifting after Vectoring

3. THRUST VECTORING USING INTELLIGENT MATERIALS

Smart materials, or intelligent materials, are materials that respond to changes in environmental parameters. They are activated by different stimulation sources such as heat, electricity, voltage, microwaves, etc. Some examples of smart materials are piezoelectric materials, shape memory alloys, shape memory polymers, electro-active polymers, etc.

The use of smart materials is increasingly common in the aerospace industry. They play an important role for the future of control surfaces as they contribute to the achievement of the *Morphing aircraft*[1]. Some of the most commonly used smart materials are: shape memory alloys, piezoelectric materials and shape memory polymers.

Thrust vectoring using smart materials can be combined with fluid vectoring to optimize the process. Studies show that the most suitable fluidic vectoring method for such a hybrid vectoring system is shockwave vectoring. The smart material chosen for this vectoring system is the magnetic shape memory alloy due to its high response speed when exposed to a magnetic field.

This hybrid vectoring method uses deflection flaps combined with shockwave vectoring. The flap deflection is obtained by using magnetic shape memory alloys as the material of manufacture. After the flap has been deflected, according to the Coanda principle, the jet will tend to remain attached to the flap surface, achieving vectoring. By using the two combined methods of achieving vectoring, larger vectoring angles can be obtained.

Fig. 6 Thrust vectoring using flap deflection *Morphing aircraft*- an aircraft that changes configuration to maximize its performance at radically different flight conditions [Digital Library].

4. CONCLUSIONS

In conclusion, the thrust vectoring methods presented in this paper are not yet used on operational aircraft. Although maintenance costs and thrust losses are lower than with conventional methods, vectoring by fluidic means is still in the experimental stage, although the first studies on these systems appeared several decades ago. Instead, the study of vectoring by smart materials is in its infancy. The use of intelligent materials to complement one of the fluidic vectoring systems in the realization of vectoring represents a major advantage for the future of the aircraft industry.

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COLONEL PAUL LANDMAN, COMMANDER OF 5th BOMBER GROUP IN THE AVIATION`S CAMPAIGN ACROSS THE FRONT EAST

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Abstract: *After finishing the Infantry School from Bucharest, Colonel Paul Landman discovers his passion for aviation and takes classes at the School of Aerial Observers and the School of Piloting, both based in the city of Tecuci. Through out his military carrer, he develops his capacities in both aviation and teaching other military personnel. His superiors always thought of him as an intelligent, strong and trustworthy person, these characteristics helped him to become the commander of Wien`s School for radio guided piloting. Even if he was a former infantery man, the love for aviation helps him to become the leader of 3rd Bomber Group, 5th Bomber Group of the 1st Bomber Flotilla and 2nd Bomber Flotilla.*

Keywords: *aviation, instructor, pilot, experienced, school*

1. INTRODUCTION AND EARLY LIFE

A model for future pilots and military staff is born in Craiova on 30th of January in 1899. Paul Landman is the son of Iosif Landman and Ana Landman, as Landman family was a wealthy family. His father was a mechanic and he worked at a workshop and his mom was just a housewife. He finished 12 grades in his hometown. His only wife was also a housewife, her name was Slăvitescu Lucreția (born in 1931). He was capable of speaking both Romanian and French.

Colonel Paul Landman was the leader of 5th Bomber Group in the fight from Basarabia and lead the group to many victories. Through many nights, he led many victorious bombings that made possible many more wins after. He was also a great aviation instructor and military instructor by teaching his subordinates tactics and helped them develop their skills so that they will be able to succeed in future missions and surpass difficult challenges. He was characterized by others as a role model officer and as someone that should be followed in battles. Paul Landman`s contribution across his whole career was beneficial for the growth of Romania`s Air Force so that, even the smallest advices and every pioneer was crucial for the state that it is in today. His work ethic was an amazing one and his dedication was unheard of. Colonel Paul Landman was and will be a model for every one of Air Force`s officers.

2. VOCATIONAL TRAINING AND MILITARY ROADMAP TROUGHOUT HIS CAREER

After finishing a civilian high school from his hometown, Craiova, Paul Landman chose the military career and got into the Infantry School for Officers from Bucharest in November 1918. He finished it on the 21st of July 1920 with the rank Second Lieutenant. The first military base that he got assigned to was the 26th Infantry Regiment. Even if he was just a novice in the military domain, his superiors already noticed him after just one year of service and said about him: *His character is strong and resilient. He had very good results. He also took care of the training and education of his recruits. He was a real asset to the 26th Infantry Regiment`s adjutant service. He enjoyed sports and was well-dressed.* This first description already shows Landman`s professionalism and character. His potential was great and it matches one of a future role model officer.

Even if he graduated an Infantry School, he finally discovered his love for aviation and he started manifesting it by taking courses at the Aerial Observers School from Tecuci between July 1922 and October 1922. The first one that writes down about Paul Landman`s passion for aviation is the Commander of Aviation Training Center Lieutenant Colonel Aviator Beroniady: *He showed a special love for aviation. He is eager to work and to progress.* The sparks of love for aviation started to be seen easily but surely.

Between November 1922 and October 1923, he finished two more schools: Special Infantry School and Shooting and Specialties Infantry School both from Sfântu Gheorghe. These two were meant to help Paul Landman develop his leader skills, to become more of an army man and also to be more capable for the future career.

In 1923 he started working to ascend to his goal, that goal of becoming a pilot. He attended the Aviation Piloting School from Tecuci but unfortunately, he was not able to finish it and had to postpone it. In the meantime, he had to focus on his primary specialty, infantry, and finished anther course at the Superior School of Infantry from Sfântu Gheorghe on by the end of October of the same year. By the end of October of 1925, he actually finishes the Aviation Piloting School from Tecuci. Between 15th of May and 30th of October 1927 he takes courses at the Aerial Observers School from Bucharest. Also in Bucharest, he learned many more between 1st of October 1930 and 1st of October 1931 in Special Aeronautic School and from the 1st of October 1932 to the 30th of October 1934 at Superior War School.

After all these courses and experiences, Colonel Paul Landman got even closer to the perfect instructor and was able to slowly become one of the greatest officers that aviation has seen on Basarabia`s battlefield.

3. CAREER

At first, a Second Lieutenant at the 26th Infantry Regiment, Colonel Paul Landman got his next rank, First Lieutenant, while on the 4th Regiment on the 1st of November 1924. He took the command of an aviation squadron on the 1st of November, the 3rd Aviation Group. The first place where he had the chance to become a professor was at the Aviation Training Center in 23rd of May 1928. He was also an instructor for aerial missions. He earned his rank of Captain while assigned at Aerial Observers School on the 1st of October 1931. Paul Landman had the chance to teach others about his knowledge while at Aviation Training Center Command.

The one moment that really made him a hero was when he got assigned as the commander of 5th Bomber Group in 1938 as a Major. The training started, with Major Paul Landman as the leader of a soon to be glorious group. At that time he already flew for 106 hours, and was considered one of the most distinguished senior officers and has rendered all his efforts to the unit. Colonel Aviator Alexandru Sahini said about him: *He was a valuable collaborator in the heavy and varied command of the Flotilla, working with love and devotion from morning until late at night to complete the instruction of the navigating personnel of his group, returning all this merit to him. He drove night after night with all the fatigue of the day's efforts, the institution of the night flight on the Heinkel warplane, carrying out raids on a war mission in the darkest nights, being helped from the ground by radio communications. He was a model of hard work, skill and devotion to his weapon and always praised in terms of the flight in which he put his soul and a lot of understanding. He had a professional ascendancy over the staff, which he loved very much. It is an element of exceptional hope capable of leading a bombardment flotilla. He was decorated for completely exceptional deeds at the command of the 5th Bomber Group and the execution of 26 bombing raids at the head of the formation.*

After the battles from Basarabia, Colonel Paul Landman had the chance to be the commander of both 3rd Bomber Flotila and 2nd Bomber Flotila. General Aviator Emanoil Ionescu was able to see his contribution towards a better unit and publicly congratulated him about his work.

After such a career his work could not be just forgotten, so he was awarded with great military distinction by both the Romanian Military and German Military. He was awarded the *Romania`s Crown 5$^{th}$ Class, Star of Romania 5$^{th}$ Class, Aeronautical Virtue* golden cross with spades and ribbon, *Romania`s Crown* 4th Class, *Aeronautical Virtue* with the rank of Knight, *Mihai Viteazu* Order of 3rd Class, *Commemorative Cross 1916-1918, Honorific Award for 45 years of Service, Star of Romania* 4th Class with spades, all these being awarded by the Romanian side. The germans also recognised his merits and gave him two aditional awards: *Iron Cross* 2nd Class and *The eagle of Germany* 1st Class for his progress and discoveries as a teacher.

He retired with the rank of Colonel on the 9th of August 1946.

4. HEINKEL HE-111H-3, LANDMAN`S BEST FRIEND

At the beginning of 1940, around 32 Heinkel He-111 were bought by the state and sent to the new 5th Bomber Group. The plane came in real handy, as the success from the campaign in Basarabia was thanks to the continuous bombing and numerous reconnaissance flights.

It had a flight crew composed of 5 people. There was a spot for a pilot, one for a navigator, bombardier or a nose gunner, one for a ventral gunner, one for a dorsal gunner or a radio operator and another for a side gunner. Losing of one these planes would not mean just material loss, but a big loss in terms of experienced manpower. It had a length of 16,4m, a height of 4m and a wingspan of 22,6m. The empty weight was about 8 680kg, while the maximum takeoff weight was 14 000kg. The engines of the plane came in three variants, but Paul`s Landman He-111 was the H3 version which was equipped with two Junker Jumo 211D-1, one on each of the plane`s wings. It had a power of around 1200HP, and was able to take the plane up to 8500m, at a maximum speed of 406km/h. It had a range of about 1930km, that could be stretched to up to 2800km.

In terms of weapons, the HE-111H3 had six machine guns, each of them being 7,92mm caliber machine guns. It also had a 20mm caliber gun and it was able to carry bombs of up to 2000kg.

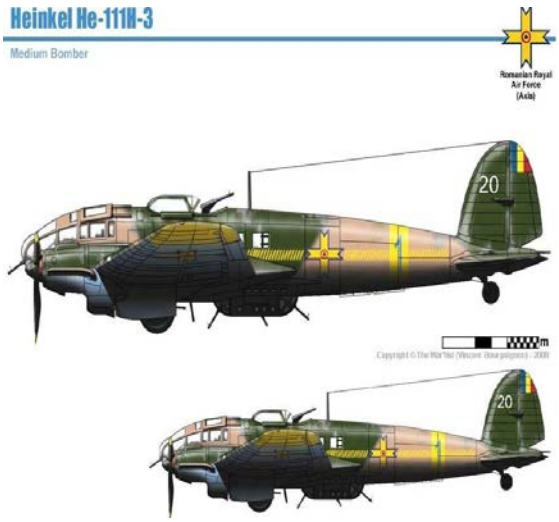

Fig. 1 *Heinkel He-111H3*

All these specifications might mean nothing in terms of 21st century bombers, but for the 1940s it was the best technology of the time. As historical events and wins show us, He-111H3 was the perfect weapon for bombing missions and reconnaissance missions. Paul Landman trusted this german masterpiece.

5. CONCLUSIONS

A role model, a true officer and a teacher in the end, Colonel Paul Landman was by no means a fierce leader, he was someone that nobody would be feared to follow. From the first moments of his military career, he started to help his subordinates and to teach them every piece of knowledge that he had. All the schools that he finished were not just for his resume, they were the bricks to the fundaments of an intelligent officer. As Victor Hugo said *an intelligent hell would be better than a stupid paradise*, it might be the reason why Colonel Paul Landman wanted to so bad to almost become the perfect instructor. He did not want a boring and a stupid life, he did not want to hide and keep it all just for him. He pursued a career in which he pursued not just himself, but he looked after others too, he tried to make sure that his knowledge was a gift and that the gift is received by every one of the them.

FIG. 2 Colonel Paul Landman

Even after many hours of bomber attacks, after many hours spent as an instructor for future pilots and aeronautical staff, he shown great professionalism and amazing traits that made him the perfect officer. He did not have the most victories, he did not win the war by himself, he is

not remembered as the greatest instructor or pilot of the time, but something that should not be forgotten is that he is and will be a model even for my generation, a model that should be followed and respected. History almost forgot him, but the aeronautical staff will never be able to take away from their hearts someone like Colonel Paul Landman.

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IN WAR, EVEN SURVIVORS WRITE HEROIC STORIES. IOAN CRISTESCU, COMMANDER OF THE 2ND BOMBING GROUP AND OF THE 2ND AIR FLOTILLA, AN IMPORTANT REPRESENTATIVE OF ROMANIA ON THE EASTERN FRONT

Răzvan MICU

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Abstract: *Everything has begun in Brăila. The town on the left bank of the Danube does not seem to have been disfavoured in history because many people to whom we now attach great importance have had the opportunity to watch their first sunrise reflected in the waters of the river. One of these privileged people was Mihail Sebastian, whose description laid out on sheets of paper by me would fade in front of his most clumsy text. At a time, the writer had the inspiration to say among many others significant words:"I don't ask anyone to be good or bad, beautiful or ugly, rogue or angel. I only ask that it be something that exists only once." Probably the one I am going to write about read his literary work or at least watched his plays, being not only contemporaries but also admirers of the same city with locust trees from the first moments of their lives, because the pilot Ioan Cristescu, because it's about him, listened to him exactly and "he lived only once." He was unique. His "uniqueness" is similar to that of other World War II fighters, but he was more than that, the commander of the Light Bombardment Group and the 2nd Air Fleet between 1939 and 1944. But the positions held are timidly hidden by the remarkable human quality of the one who in the most important stage of his career would wear on his shoulders the insignia of an air flotilla general, Ioan Cristescu.*

Keywords*: aviation group, commander, military aviation, air flotilla, air mission.*

1. INTRODUCTION

Even if the phrase "beauty is in the eye of the beholder" is loaded with a rich meaning, its expressiveness fades in relation to certain places on romanian lands. In this sense, it is easy to see how a considerable number of localities in our country are attributed an extraordinary importance, if only because they have been the birthplace of remarkable personalities. Like Emil Cioran's Rășinarii, which the writer will miss until the last moment of his life, or Constantin Brâncuși's Hobița, Brăila is the town where Ioan Cristescu, the hero around whom the following pages are built, spent his childhood. He was born on 1 January 1899 in the commune of Tudor Vladimirescu in the county of Brăila (at that time it was in the county of Galați), but at the age of 7 he went to the city to study. He attended the theoretical high school "Nicolae Bălcescu", a prelude to the studies he was to follow throughout his life.

Just as the quiet end of a fruitful career was in sight, the Second World War broke out, a conflagration that led the commanders of the Romanian Air Force to put him in command of the 2nd Bombardment Group of the 2nd Bombardment Flotilla on 1 November 1939. The Aviation Group was deployed in various locations until, on 8 August 1941, the Potez 63 Squadron of its composition merged with the Loos Squadron and formed the Lieutenant Colonel Cristescu Group, based at Tarutino. This name given to the group is a recognition of the commander's merits. His career advancement came naturally, after a period in which he served a mission in France, commanding the 2nd Air Flotilla until 23 August 1944 when, once the Romanian Army had turned in its weapons, he was appointed Director of Protection at the Romanian Air Command in Bucharest. In April 1945 he was put on leave of absence due to sickness, followed by his transfer to the reserve, and on 1 April 1946 he retired.

2. FAMILY

As for the commander's family, this is a large one, consisting of father, Pandele Cristescu, mother, Zamfira Moldoveanu, the two brothers, Ștefan Cristescu and Constantin Cristescu. He later married Victoria Măcelariu, with whom he had a child, Mircea Cristescu.

3. PROFESSIONAL TRAINING AND MILITARY CAREER

3.1 Studies.

Because a rich career is built on a solid foundation, offered mainly by the studies he has done throughout his life. These were very numerous and in chronological order, as follows:

- School of Infantry Officers in Botoșani: 01.04.1917-01.06.1918
- Special Infantry School of Sf. Gheorghe: 01.04.1922-01.04.1923
- Tecuci School of Air Observers for Aviation: 01.04.1924-1.10.1924
- Tecuci Pilot School: 01.10.1924-15.06.1925
- School for the Improvement of Piloting: 01.06.1926-10.06.1926
- Special School of Aeronautics: 01.10.1926-01.04.1927
- School of Fighter Pilots: 01.06.1927-01.07.1927
- School for the Improvement of Fighter Pilots: 01.06.1928-01.07.1928
- Mamaia School of Aerial Shooting and Improvement: 01.07.1928-01.08.1929
- Liaison Course with the Czechoslovak Aviation in Kosice: 01.08.1929-30.09.1929
- Senior Officers Course in T. Severin: Graduated on 01.10.1937
- Modern Aircraft Instructor School in England: 01.08.1939-15.09.1939

3.2 Career.

As a result of his studies, his career life was one to match:

- 38th Infantry Regiment from Brăila
- Commander of Pluto: 01.07.1918-01.10.1924
- 3rd Reconnaissance Aviation Group from Galați: 01.10.1924-01.10.1928
- Head of Section
- Specialty Squadron Commander
- 2nd Reconnaissance Aviation Group from Cluj: 01.10.1928-01.04.1937
- Fighter Squadron Commander
- Chief of Training Office
- Head of Technical Service
- Head of Mobilisation Bureau
- Fighter Group Commander
- Bucharest Air Fleet Command: 01.04.1937-01.10.1937
- Director of the Civil Pilot School of the IAR aircraft factory in Brașov
- Flight Instructor
- 1st Bombardment Aviation Flotilla in Brașov: 01.10.1937-01.11.1939
- Commander of 2nd Light Bombardment Group
- Head of Mobilisation Bureau
- Head of Training Office
- 2nd Bombardment Flotilla in Sihlea: 01.11.1939-01.05.1944
- Light Bombardment Group Commander
- Flotilla Commander
- Passive Defence Command in Bucharest: 01.05.1944-15.04.1945
- Director of Protection
- Provisional Commander of the Oil Region Passive Defence Troops
- Sick leave under Article 133 of the Aviation Law: 15.04.1945-15.09.1945
- Retired: 01.04.1946

3.3 Special Missions.

He carried out several special missions in various European countries, both before and during World War II:

Reception of Savoia-Marchetti aircraft from Italy - between 01.07.1938 and 15.08.1938

Testing of Potez 63 aircraft from France - between 01.02.1939 and 01.04.1939

Brings 6 Potez 63 aircraft to Romania from France at 27.07.1939

Reception of a Blenheim aircraft from England at 19.09.1939

Brings 6 Potez 63 aircraft from France - between 01.10.1941 and 15.11.1941

4. PROFESSIONAL PERFORMANCE

As for his professional performances, Lieutenant Colonel Ioan Cristescu's service characteristics cannot be presented, since many of them are unknown for various reasons, but the few words of Brigadier General Ion Popescu (Sheep) about him are sufficient and reveal the very essence of the wonderful character of the "phenomenon" Ioan Cristescu: "I reported to the 75 Potez Squadron of the 2nd Bombardment Group commanded by Lieutenant Colonel Ion Cristescu

(Knife Fighter). He was a very gentle man originally from Brăila, and I don't know who gave him the nickname Knife Fighter."

The fact that Ion Popescu mentioned the place of origin of the Lieutenant Colonel only leads to the idea that this is a place where great romanian historical personalities are formed. One such chosen individuality was Panait Istrati, whom the writer Andrei Crăciun admiringly calls "The Great Tramp" and whom Ioan Cristescu resembles to a considerable extent, the two being both contemporaries and lovers of travelling abroad, one with the reason of satisfying his soul and the other to carry out missions of need to Romania, his country. At the same time, the nickname "Knife Fighter" completes the mysterious aura of the commander and the resemblance to "The Great Tramp".

4.1 Rewards.

Throughout his successful career, he has earned a number of rewards for leading the 2nd Bombardment Group on the battlefield, including:

- "The Aeronautical Virtue (Peace)"
- "Order of the Crown of Romania, with swords (Officer)"
- "The Aeronautical Virtue (War)"
- "Order of the Star of Romania, with swords (Officer)"
- "Iron Cross 2nd Class"

5. CONCLUSIONS

The service sheet, completed on 2 June 1951, is the main historical source that provides information about Lieutenant Colonel Ioan Cristescu, but an important shortcoming of this document is that after the date of completion it no longer provides information about the life of the former commander of the aviation group and air flotilla, which turns him, metaphorically, into a promoter of the concept of "youth without age", like Ana Aslan, born in Brăila 2 years before the great commander.

REFERENCE

National Military Archives

AIR FLOTILA GENERAL ENESCU RAMIRO, CHIEF OF THE AIR STAFF IN ROMANIA'S MILITARY AVIATION CAMPAIGNS IN WORLD WAR II

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Abstract: *A graduate of the School of Artillery and Engineering and later of the Romanian War College, a personality of the Romanian Army with a complex aeronautical training, a strong desire for knowledge and a strong spirit of patriotism and courage, General Enescu Ramiro was a worthy figure and a model officer. His perfect military education and his love for aviation helped him to achieve spectacular results both on the battlefield, where he achieved numerous victories with his comrades, protecting his homeland, and in the development of military aviation, a field in which General Enescu was very active. He also dedicated much of his time to the training of future officers, successfully serving as a teacher and instructor in aviation educational institutions, disseminating his knowledge to others. Thus, General Enescu contributed enormously to the glory of the Romanian wings.*

Keywords*: military aviation, battlefield, patriotism, officer, victory*

1. INTRODUCTION

Military history has been and still is studied in military institutions because the military leadership has always sought to improve its performance and avoid repeating mistakes made in the past. Thus, the use of lessons learned in the past as well as following the role models of commanders is possible only after the assimilation of historical knowledge and understanding it. One such model is General Enescu Ramiro. He was born on 5 December 1891, in Botosani. He follows the career of his father, who was an officer and fought in the war of independence. General Enescu fought in both World War I and World War II, as well as in the Second Balkan War, bringing victory and contributing to the reunification of the Romanian nation, as well as to the liberation of Romanian territories. It is very important for our leaders to study and analyze Enescu's behavior and dedication in order to improve themselves by learning from his heroism.

2. PROFESSIONAL TRAINING AND MILITARY CAREER

2.1 Studies. General Enescu Ramiro followed his father's career and chose the officer's path, being a graduate of the military high school in Iasi in 1911 and later of the Special Artillery School in 1914, where he ranked second among artillerymen. He distinguished himself from a young age and was always a leader among officers.

Since 1st December 1919, Captain Enescu began to attend the Superior War School, where he received the praise of the commander, Colonel Constantinescu, who fully recognized his merits. Thus, Captain Enescu passed the 2nd year, ranked 2nd and finally finished the War College ranked 3rd and was promoted to the rank of Major.

In 1926 he was sent to France for a two-month stint with the General Staff of an airborne division.

On June 10 1933 he starts the aerial observer course, which he completes with exceptional results on August 30, 1933. Captain Commander Diculescu, commander of the aeronautical training center, praises him for the great efforts that Lt. Col.

Enescu made to graduate the courses, in the context that he was extremely busy with matters of the Air Force Command, but also at the schools where he taught. Thus, Lt.Col. Enescu did exceptionally well in history, artillery matters, balloon missions, having "the vision of the field developed"-Baraniak V., commander of the Training School (Baraniak, 1946:35v),

On 6 June 1939, after graduating from the command course, he was promoted to the rank of Air Force General.

2.2 Military career. Fresh graduate of the military high school in Iasi, Second Lieutenant Enescu Ramiro is assigned to the 2nd artillery division, where he begins his long military career. Since the beginning of his career, his chiefs recognized him as one of the best officers. It was also here, at the mounted artillery regiment, that his fruitful career as an instructor began. His first mobilization in 1913 showed him to be courageous, enthusiastic and passionate in everything he did, and he was given command of a section of the 6th Battery of the 2nd Division. His direct commander thus nominated him for decoration. Following the recommendations of his commanders, he is promoted to the rank of lieutenant on November 1, 1914, when he is also assigned to mobilization duty in his unit.

In the first part of the First World War campaign, Lieutenant Enescu Ramiro commanded the 6th Battery of the 3rd Howitzer Regiment, until 1 April 1917, when he was transferred to the Military Artillery School. During the campaign, the commander of the 2nd Division, Lieutenant Colonel Dragomir, reports that Lieutenant Enescu took part in all the battles in Transylvania and in the country, until the enemy was stopped on the Putna Valley and that he proved to be a "very skilled officer, with cold blood and courage" (Partenie, 1946:9v).

On 16, 19 and 25 September, thanks to the firing executed by the 6th Battery, the enemy was stopped. In the battles in Buzaului Valley, Lieutenant Enescu and his battery "occupied the most advanced position" (Partenie, 1946:9v).

In the Syrian Valley he managed to silence the enemy and protect allied troops, thanks to his skill. Other precision firing done by Lieutenant Enescu and his battery took place in the attack over Mount Șoimu, which "inflicted serious losses on the enemy". (Partenie, 1946:9v).

On 24 November, after the division was forced to leave the Buzăului Mountains, there was "great and heavy fighting all the way to the Putnei Valley, where the enemy was stopped" (Dragomir, 1946:10).

In all these battles (Cislău, Parscov, Putreda Mare, Râmnicu Sărat, Tâmboești, Satu Nou) Lieutenant Enescu "stood out for his solid knowledge" (Partenie, 1946:9v), managing to face the terrible challenges. His career as a teacher began when he was requested by the Artillery and Engineer School, where, starting with 1918, he was professor of the artillery course and battery commander. From his first moments as a professor, he is recognized as "the type of teacher and educator" (Bottez, 1946:13) by the school commanders. He also conducted the course "Projectile Effects". Immediately after finishing the courses, starting on November 1, 1921, for a period of 5 months Major Enescu served as a trainee at the army training office, within the General Staff, under the command of Lt.Col. Dimitriu, who catalogued him as a "distinguished staff officer". (Dimitriu, 1946:17).

Since September 1, 1923, Major Enescu Ramiro was the head of the Bureau "Military Schools and Training Centers". In this position, Enescu had a large contribution to the drafting of the law for the organization of aeronautics and the military aeronautical education system. Thus, the aeronautical schools, although new at the time, could be compared to the rest of the military schools.

Subsequently, Major Enescu joined the General Inspectorate of Aeronautics as Deputy Chief of Staff. At the same time, he was also the head of the 3rd Operations Bureau, as well as a professor teaching the aeronautical tactics course at the Higher War School and the artillery tactics course at the School of Aeronautics. Further, he made major contributions to the drafting of aeronautical regulations and to their improvement and modernization and, in addition, he drafted the necessary papers for the execution of the air maneuvers in the fall of 1927. The Chief of Staff, General Sîrbu, characterized Enescu as one of the "elite officers of the air force and artillery" (Sîrbu, 1946:23v).

Thus, he was promoted to the rank of lieutenant colonel on 31 March 1929.

Between July 1st, 1930 and August 27th, 1930 he attended the senior officer training course as division chief and instructor, where he led and trained 30 captains.

Further, as a teacher he continued to attract "the esteem and admiration of pupils and teachers" (indecipherable, 1946:27).

In July and August, Lieutenant-Colonel Enescu is requested by the General Staff and transferred as division chief to the intelligence course for captains. In 1930 he also took part in the Royal Maneuvers in the Arbitration Directorate, thanks to his extensive knowledge of aeronautics. Enescu wanted to be transferred to frontline service, so until 31 March 1932 he was commander of the 1st Division of the 1st Anti-Aircraft Artillery Regiment. Colonel Popescu, the regimental commander, praised his work and his behavior. From April 1st 1932, Lieutenant Colonel Enescu returns to the service of deputy chief of staff at the General Inspectorate of Aeronautics and then to the Air Force Command. Here, Lt. Col. Enescu worked actively on the directives of instruction, training, those for the functioning of the aeronautical schools, the draft budget, the study of the activity of the units in the 1916-1919 campaign and the draft regulation of the aeronautical law, his work being praised by the director of the study, Colonel Spiroiu.

From 1932, he was appointed Chief of Staff in the Air Force Command, where he worked tirelessly. After the appreciation of the Commander of the Air Force, General Sichitiu, of the Chief of the General Staff, General Lăzărescu and of the Undersecretary of State for Air, Radu Irimescu, he was promoted to Commander of the Air Force. During all this time, Commander Enescu continued his work in the department, but he also participated in flying, in 1934 he managed to have already flew 22 hours as an aerial observer.

In 1935 he became the commander of the School and the Aeronautical Training Center. General Spiroiu said about him that "although he was very busy at the Under-Secretariat of the Air Force, he found time to teach out of love for the school" (Spiroiu, 1946:41).

In parallel, Enescu has also brought major benefits to the Air Force's endowment programs and has contributed to some changes over some of the laws within the State Air Undersecretariat. He was also the president of the National Aviation Fund House, a position he took care of. In September of this year, Commander Enescu led an aeronautical mission to Paris for the purpose of sorting out orders placed there.

Since 1936, Commander Enescu Ramiro served as Director General of the Air Force, where the Undersecretary of State said that "with his help and his hard work it was possible to carry out a program based on a detailed study for the reorganization of the State Air Force" (Caramfil, 1946:82).

He was able to conclude an agreement with the French air ministry to ensure the delivery of three bombing squadrons, which consisted of Bloch 210 aircraft.

In 1937, Commander Enescu was transferred to the 3rd Air Region, where he was second in command and where he worked mainly on plans for the air defence of the territory, while also continuing to be a teacher.

On 9 June 1939 he was promoted to the rank of Air Force General and became Commander of the 3rd Air Region. Shortly afterwards, he is appointed Commander of the Command of Aviation Centers and Schools. Here, he continued to be in charge of the aeronautical equipment and the acquisition of necessary materials from France, as well as the improvement of the quality of aeronautical education, achieving an increase in numbers of students. General Paul Teodorescu, Minister of Air and Navy, praised the work of General Enescu: "he obtained advantageous prices, even though they were in the midst of war" (Teodorescu, 1946:49v).

Since 29 May 1940, General Enescu was transferred to the General Staff, where he was appointed Deputy Chief of Air. Between 22 June and 31 October 1941, he was mobilized, leading the Romanian aerial actions within the Grand Headquarters. As the former Chief of the General Staff and of the General Headquarters died, General Enescu took over as Chief of the Air Staff on 1 November 1940. Here he successfully led the aerial operations, the Romanian army succeeding in obtaining air superiority towards Chisinau and the Black Sea, which lately provided easy ways for supporting the 4th Army in crossing the Prut, achieving the liberation of Bessarabia and the advance of troops to Odessa. Later, he actively participated in the reorganization and training of the air force troops returned in the country after the fall of Odessa. Since 16 September 1942 he became head of the Air Headquarters. During this time, the Chief of the General Staff, General Ilie Steflea said about Enescu that he had drawn up the mobilization plan for 1942, had drawn up studies on increasing the efficiency of the aeronautical industry, on the plans for the defence of the territory, had directed the aeronautical equipment between Bug and Don and had led the aeronautical group deployed on the Eastern Front, exercising personal guidance from the field. In the meantime, he did not forget the educational system, drawing up directives for instruction in schools based on the

lessons he had learned from the war. Thus, on October 25, 1942, he was promoted to the rank of General Commandant Aviator for outstanding merits, especially in the war.

From 17 January 1943 he returns as Chief of the Air Staff, until 8 September when he becomes Commander of the Anti-Aircraft Artillery and since 15 October 1943, he becomes Deputy Chief of the General Staff for air defense. Again, he worked tirelessly to rebuild the air force after the 1942 campaign, worked on the mobilization plan for 1943, contributed to the organization of the first paratroopers battalion and directed training in schools and centers.

General Enescu continues to monitor air defence activities from the field, organizing an operation with the purpose of removing the effects of the bombings and organized assistance to the victims. He also organized the evacuations from the objectives threatened by the bombings and also the dispersal of state authorities and industry, thus deserving "exceptionally good appreciation in 1942 and 1943" (Steflea, 1946:55v).

He still actively participates in the organization of all air defense activities during the war, including the defense of the capital city on August 24-28, 1944. He reorganizes the defence of the Ardeal by deploying anti-aircraft artillery units to the large land units, which lacked it. After the Armistice Agreement, General Enescu ordered the reorganization of the air force in accordance with the agreement. He organizes the collection and handing over of captured materials from the Germans to the USSR.

3. DECORATIONS

3.1 Medals. In 1913, he received the "Avantul Țării" Medal for his participation in the 1913 Campaign.

He is also awarded the medal "Commemorative Cross 1916-1919" for his participation in the First World War.

In 1931, he was awarded the "Victory of the Air Force" medal, 3rd class, for his outstanding merits in aviation.

He also receives the "Sanitary Merit" medal, class 1, as well as the Golden Badge of Honor for 25 years of military service.

3.2 Orders. On February 2, 1942 he was awarded the Order of the "Star of Romania" with swords, in the rank of Grand Officer, with the ribbon of "Military Virtue" for the exceptional way he conducted air operations.

He is decorated with the order "Crown of Romania" with Swords and Ribbon of "Military Virtue", due to his participation in the battles of 1916-1917.

In 1921 he was decorated with the order "Crown of Romania" in the rank of peace officer for his outstanding merits.

On July 1, 1942, he received the Order of "Aeronautical Virtue" of war with swords, Gold Cross class with first and second bar and Knight class "for the particularly fruitful and commendable activity he carried out in the 1941 campaign, as Chief of the Air Staff, contributing through this activity to the brilliant successes achieved by the air force and to the glory of the Romanian wings. Present at the airfields, never hesitating in the face of danger, to personally direct operations, he executed 91 hours of overflights, in the area of operations, under enemy air threat".

Other orders with which Enescu Ramiro was decorated were: "Polonia Restituita" in the rank of Commander as well as the order "Steaua Romanaiei", both 4th and 5th class.

4. CONCLUSION

With a career based on continuous and fruitful work, but also on vocation and passion, General Enescu Ramiro is an example of an officer, commander and leader, who has been a pillar of support of the Romanian army in front of the enemy and has succeeded in his long career to bring a multitude of benefits to the Romanian aeronautics. The hero Enescu Ramiro will forever remain a living memory for future generations who will follow his path.

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