THE RUNWAY BETWEEN NATIONS: AVIATION LANGUAGE

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ABSTRACT

This paper aims to discuss some aspects of the multicultural environment and how different people can work together for the same purpose in the aviation field. I was inspired to do this project because I consider that different people with different cultural backgrounds, languages, and environments, can leave everything behind and start to work, creating amazing things for the good of everyone. I am going to present how the need for communication appeared in aviation, some standards and rules, verbal and nonverbal communications and cases with real applicability. This article aims at showing that everything which implies humans represents hard work and this is why everyone needs to know their job, this aspect being possible only by communicating and understanding the future mission. In the aviation domain there are a lot of rules, written with "blood", so it is our duty to not repeat the errors and improve the weaknesses.

***Keywords**: communication, aviation, military, civil, nonverbal.*

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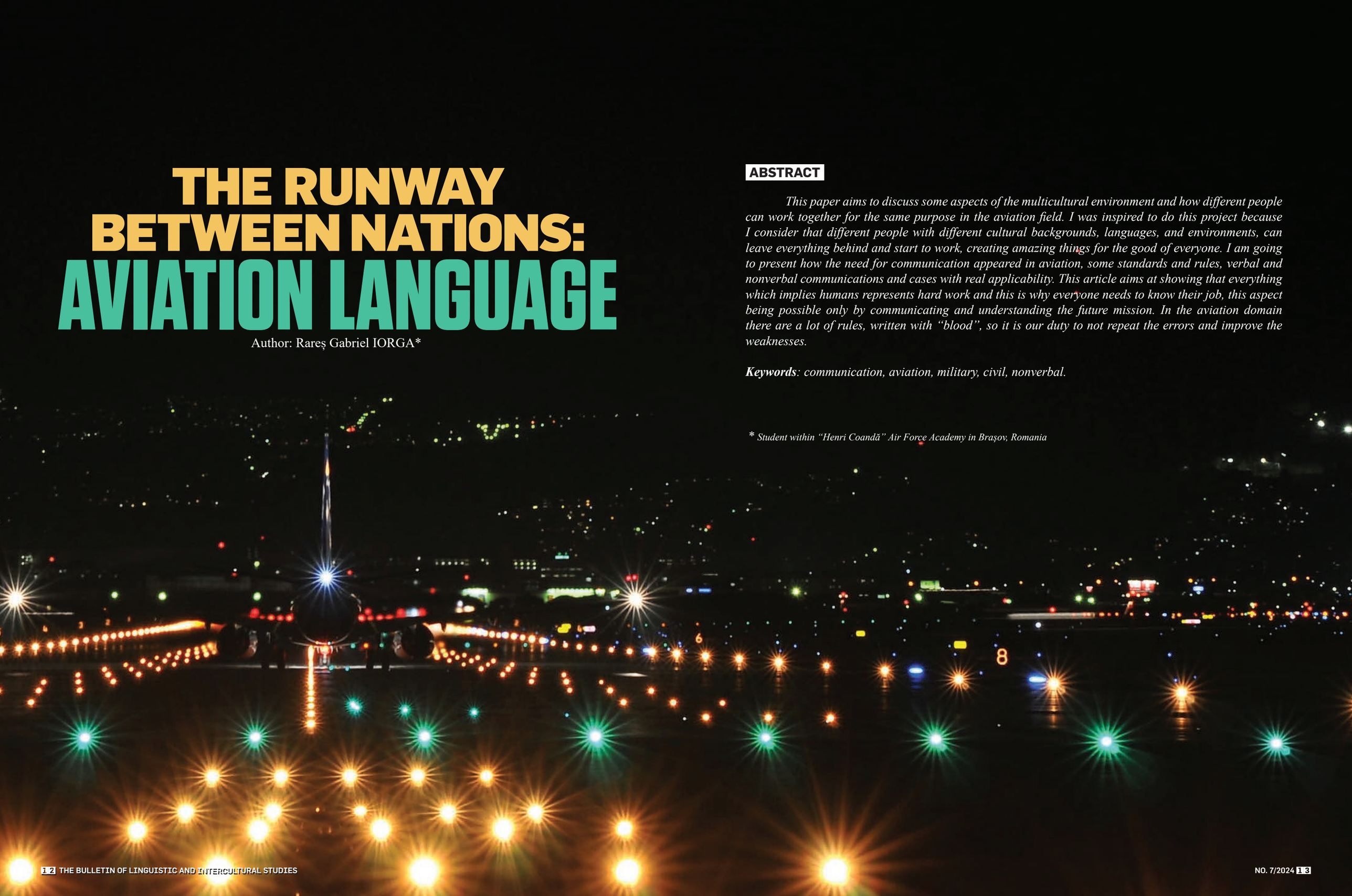


Introduction

From the earliest days, the human species has been fascinated by the aspiration to soar high in the sky like birds or to dive into the depths of the planet's oceans like fish, and is constantly looking for ways to fulfill these dreams. This fact is seen a lot of times throughout history and confirmed by events. It is unanimously accepted that the first attempt and manifestation to break through the gate of heaven dates back to the Chinese empire and the appearance of kites, in the 5th century BC. The next relevant event was the perspective of aviation shown by Leonardo Da Vinci in the 15th century. He had design ideas, but without a well-founded basis. The next step was the first flight with a hot air balloon on November 21, 1783, but this was not sufficient to kickstart the aviation industry. Modern aviation, as we know it nowadays, had its start with the first considered flight, the one of the Wright Brothers, dated December 17, 1903 (Spartan, n.d.). In the early age of modern aviation, the sky was considered to have no limits and the probability of meeting another aircraft in the air was very reduced. In that period there was a rudimentary communication system between aircraft and ground personnel, by using visual signs, colored paddles, signal flares, and hand gestures. Unfortunately, these systems were not efficient in communications between pilots, so after a while wireless telegraphy appeared. These systems, which conveyed communication in Morse code, emerged together with aviation development. Initially, ground-to-air contact was established in this way and later air-to-ground communication became possible. The efficiency of flights was increased and the problems regarding safety were decreased thanks to the appearance of portable radios inside the aircraft. The complex technology represents the foundation of modern aircraft technology. Some of the new technologies are GPS, Internet, advanced radio and video capabilities. English is the official language of aviation, as stipulated by the International Civil Aviation Organization (ICAO). Pilots must take English proficiency examinations to ensure a high level of skills on communication across language difficulties (Aviation eLearning, n.d.). After a lot of work from visible signals to cutting-edge technology, aeronautical communication has come a long way, considerably contributing to the safety and success of aviation journeys.

Civil Aviation

The Second World War served as a strong impetus for aircraft technology advancement. Even if nations did not communicate to each other in part, every one of them was in a constant race for supremacy on all domains. Aviation started to gain more and more terrain in this race, because people realized that every operation like reconnaissance, medical evacuation, assault, and deep strike would be problematic without air supremacy. Realizing the importance of this factor, aviation developed (Rosen Aviation, 2023).

Although a huge network of freight and passenger flights was established during that time, numerous political and technological roadblocks continued to impede the development of these modes of transportation and the air routes toward new civilian uses. Every big nation had its part in the research and development of the aviation domain. Some technological advancements were represented by improved airframes, using aluminum and other lightweight durable materials, these becoming the new standard. Navigation and communication systems became more important and efficient, having towers with radar technology and radio communication, which were vital for managing increased air traffic. Infrastructure developed, because WWII necessitated the construction of numerous airfields and the expansion of existing ones, so some of them were modified for civil use. After the war, companies like Boeing, Douglas and Lockheed Martin moved on from military to civil production (Smithsonian, n.d.).

After the conflicting situation ended, it was clear that civil aviation became a huge industry which needed some standards and procedures known and respected by a big number of countries to ensure everyone's safety. The Convention on International Civil Aviation, drafted in 1944 by 54 nations, was established to promote cooperation. This convention, also referred to as the Chicago Convention today, served as the foundation for the development of the policies and guidelines required for international air navigation during times of peace. Air services should be formed "on the basis of equality of opportunity and operated soundly and economically," according to the Agreement's primary goal, which was to promote international civil aviation "... in a safe and orderly manner" (Chicago Convention, 1944). The Chicago Convention was successful in setting the hope up for creating the International Civil Aviation Organization (ICAO) to reality. The ICAO was meant to coordinate and facilitate the close international collaboration that the recently formed global air transportation system requires.

The primary goal of ICAO, which has not changed over time, was to assist states in reaching the utmost degree of uniformity possible in rules, standards, procedures and organization. The number of the Convention's annexes has increased from the moment of foundation and until the present. As of right now, they contain over 12,000 international standards and best practices (SARPs), all of which have been approved by consensus of the 193 Member States that currently make up the Convention.

One of the most important decisions made by ICAO was the one regarding the communication factor between nations. Because even if they were working for the good progress of this industry, for safety reasons they had to decide about linguistic standards. The first aspect was the language of use, and they decided English as the universal language for international aviation communication. Other aspects to consider were pronunciation (clear and understandable), structure (clarity and focus on the correct use of tenses), vocabulary (unambiguous, aviation specific terminology and general vocabulary), fluency (coherent, without hesitation, speed around 100 words/min), comprehension (understanding spoken English in both routine and non-routine contexts) and interaction (abilities of initiating, sustaining and concluding conversation) (ICAO Doc 9835 AN/453, 2004).

Military Aviation

It was not by chance that the linguistic standards imposed on pilots in civil aircraft and military aviation were examined first and foremost, respectively. The concept of aviation itself was first connected with military aviation at the turn of the 20th century, and then with civil aviation. However, when it comes to the language competence requirements for military pilots, things are not all that different. The objective of pilots' professional training and their work setting depends on the area of work in which each of them will perform. The civilian pilots' primary duty is to fly passengers or move cargo, whereas the military pilots' main duty is to fly military aircraft that have different technologies and equipment, and first and foremost, to defend the skies of their nation. Advanced language proficiency in a foreign language, as well as understanding of the specialized languages used, is mandatory for using all the resources available, including the technology aboard. When an expert completes his/her education entirely in his/her native language, he/she will have a knowledge disadvantage compared to someone who has strong language proficiency in a language that is widely spoken around the world.

Aviation English

Because aviation is a specialized, technologically driven field that encompasses a wide variety of activities, the language codes related to the many professional sectors are collectively referred to as Aviation English or English for Aviation. Every employee in the aviation domain can benefit from learning more English because their daily tasks are based on the use of English and linguistic codes. The air specialists' use for safety and coherence some innovative combinations of technology, automation, and language, such as DATALINK, a computerized communication system that transmits menu-based communication options between the aircraft and the control tower computer (ICAO Doc 4444-ATM/501 Amendment No. 1, 2007). In the near future, these technological systems will be able to distinguish both voice and communication nuances and will be used in simulated or real-world scenarios. In the majority of our minds, there is a correlation between specialized language codes and images of pilots in their cockpits communicating with air traffic controllers while using a set of uniform protocols to preserve airspace order. In aviation there is a wide array of codes, because, just like in other jobs, a set of capabilities are required, such as physical talents, emotions, and intricate technical knowledge.

Clarification

The Chicago Convention of 1944 selected the motto of pilots, "Aviate. Navigate. Communicate.", which reflects the flying activity in every situation especially in emergency ones. The pilot must have the control of the aircraft and the ability to fix it if needed, to know their position and where they are going to and to be able to communicate with other pilots or air traffic controllers. According to the Second Edition of ICAO Doc 9835 AN/453, 2004, radio stations or other cutting-edge face-to-face or nonverbal technologies serve as the channel or means of transmission for messages exchanged between pilots and traffic controllers, as well as between pilots and other pilots/interlocutors, using a communication code unique to the aeronautical environment. Mostly formal in nature, the communication can take several forms: written, verbal, paraverbal (e.g., voice modulation, speech rate, pronunciation, pauses, hesitations, etc.), and nonverbal (body language/signaling). Pilots use a specific, restricted code when interacting with personnel from the same sphere of expertise. Both native and non-native

English speakers must use the same code and language in order to properly communicate the message with the recipient. Both parties should be able to decode and understand the message. When carrying a conversation, both the pilots and the radio station personnel must respect the communication guidelines and acknowledge and accept the others' cultural variations, just like their cultural baggage should be respected by the other party (The Air Pilot's Manual Vol. 7, 2013).

Verbal and Nonverbal Communication

It might be argued that during communication, the pilot not only conveys information to the other party, but can also indicate something about himself by sharing essential details regarding his background and experience. The pilot can show his knowledge in this domain even just by the messages he sends. He can "talk" about the theoretical knowledge of the aircraft, its operating principles, maneuvers, aerodrome organization, execution phases of the direction, type of mission, weather conditions, etc.

Because in this industry a limited code is used, which is understood only by persons in this domain, its particularity regarding the language must be understood and used in context of common English. This kind of language code is composed of the following language elements:

- phonetics (the sounds of calls);
- vocabulary (the words and phrases used in calls);
- semantics (the meanings of words and phrases);
- syntax (how words are ordered or combined to make a meaningful call);
- pragmatics (how a call relates to the real situation or activity in which it is transmitted).

In our area of study, verbal communication occurs not just in radio communication but also in side meetings, working visits, briefings and debriefings, pilot training courses for collaborative actions with strategic partners, and other settings. As a result, it is equally important to be aware of the cultural quirks of the people you are speaking with, to adhere to the state's cultural norms and values, to use appropriate forms of address, to understand military grades and their equivalents in English and American, etc.

People who operate airplanes on the ground employ gestures, more especially nonverbal communication, to guide the aircraft's movement using their arms and body posture (Fig. 1). All air traffic users, military or civilian, use and recognize the reference system since it is standardized.

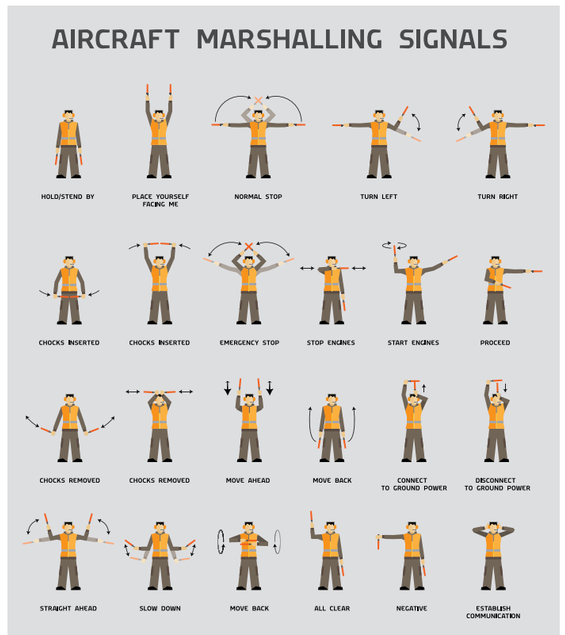


Figure 1: Marshalling signals (http://civilaviationindia.blogspot.com/2011/09/marshalling-aircraft-signals.html)

There are no other examples of nonverbal communication in standardized aviation language outside of this system. However, in terms of professional relationships, pilots taking part in international missions need to be mindful of the cultural differences of their cooperating colleagues as well as the possibility that some nonverbal cues could be misconstrued or even objectionable to individuals from other cultural backgrounds. Gestures, proxemics, and eye contact are the most prevalent nonverbal communication manifestations that sociologists and anthropologists have studied for a long time. In certain cultures, it is considered impolite to look someone in the eye like in the Japanese case, in others, it is customary to touch the person you are addressing like in Asian countries (Tan, 2024); in certain regions of the world, specific gestures made by shifting the positions of the hand, fingers, palm, convey different messages according to different codes of meaning (Kern, n.d.).

In the year 2023, I had the opportunity to be involved in the Erasmus+ program in my Air Force Academy, and I had the chance to be the coordinator of the team from Romania. The project started in October and lasted for approximately three months. The countries involved in the International Air Force Semester and the partners of Romania also, were Bulgaria, Greece, Poland, and Portugal. This experience made me think about how different cultures can react to usual gestures and things we do by instinct, but for my international colleagues it can have another meaning and at the first view this may be something good, but in most cases, this may be inappropriate. For example, a Greek person would consider it highly offensive to show someone their open palm, even if they are merely indicating the number five. However, if the palm is turned towards the speaker, it indicates a neutral gesture that could be interpreted as the number five. In aviation we can show by using our fingers how readable you are on the radio station, using a scale from one to five. In Greek culture, a gesture like this can be seen as rude at first, because they can see this as *moutza*, which is a highly insulting gesture. Another gesture can be thumbs up, which in aviation we use for transmitting: "All clear!", but in the normal use of Greeks this is something impolite (Owen, 2024). In the realm of aviation, verbal communication and certain nonverbal forms of communication are inextricably linked to the cultural norms of the people who utilize them. Radio communication is the lone exception, although even in this case, cultural cues reveal information about the transmitter.

Communication through Written Messages and Emblems

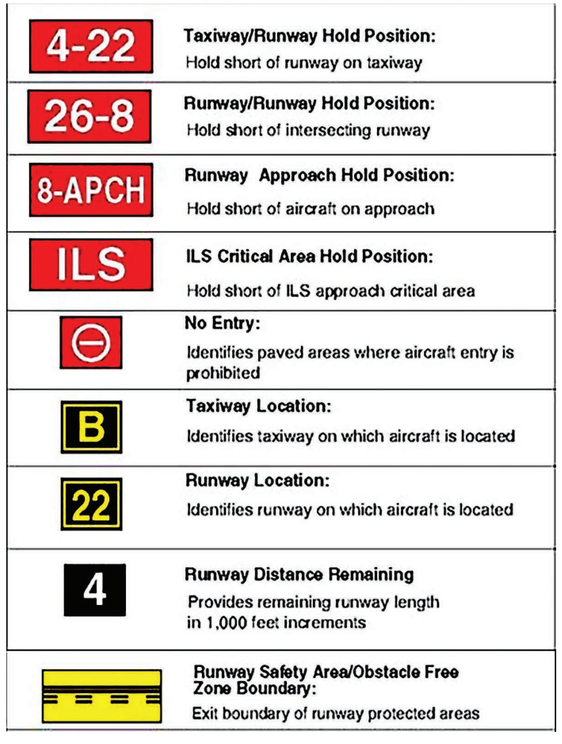
In the military and, of course, in military aviation, written communication is realized by abiding by a strict set of rules for documents (development, preparation, and dissemination). The guidelines must be followed by all participants in international and multinational missions. Written messages frequently include graphic insignia and/or adhere to the same rules as spoken communication, with the exception of phonetic aspects.

For documents that do not technically connect to aeronautical activity, such as military reports and official information on a state of affairs, issuers must master and use specific characteristics of English usage, in writing. Among the most relevant, we can list:

- correct, standardized completion of military ranks (abbreviated or in their full form, if provided in the completion instructions). There are situations in which military ranks are incorrectly used, by translation into English: e.g., to Romanian pilots, the rank of a general in command of an Air Flotilla (a small fleet of airships), corresponds to an Air Flotilla General not to a Brigadier General, but such a rank does not appear in any NATO reference; the abbreviation of the rank of Lieutenant Colonel is, in aviation, LtCol, and not LTC);
- correct use, or, where appropriate, avoidance of the use of personal pronouns and replacement of nouns by pronouns (the English way of directly addressing anyone by using the personal pronoun you may be perceived as impolite, and even aggressive, by people from other cultural backgrounds);
- avoiding the use of the passive voice in military reports (in the case of passive voice, the action is made by someone else for the subject of the sentence, which does not comply with the military rules specifying that the order is executed by the designated person).

As far as our field of observation is concerned, written communication comprises a wide range of types of messages, for the transmission of which technology and emblems, or graphic signs, contribute. There are also special situations, in which the "message" is interpreted as written, even when there is no text in the message, but only graphic representations that are decoded by receivers, based on the aforementioned restricted code. The decoding of the message is always the same for pilots, as it is established internationally. Among the most commonly used forms of graphic messages we can include:

A. RUNWAY SIGNS AND MARKINGS;



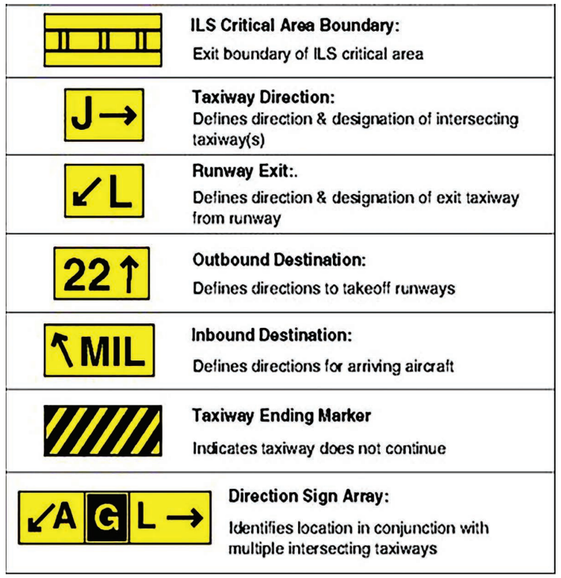


Figure 2: Runway signs (https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQ2D5CwtDXoRPRYh_sXpKJ7H7m3B-fRt-fLOHIP6PnzFQ&s)

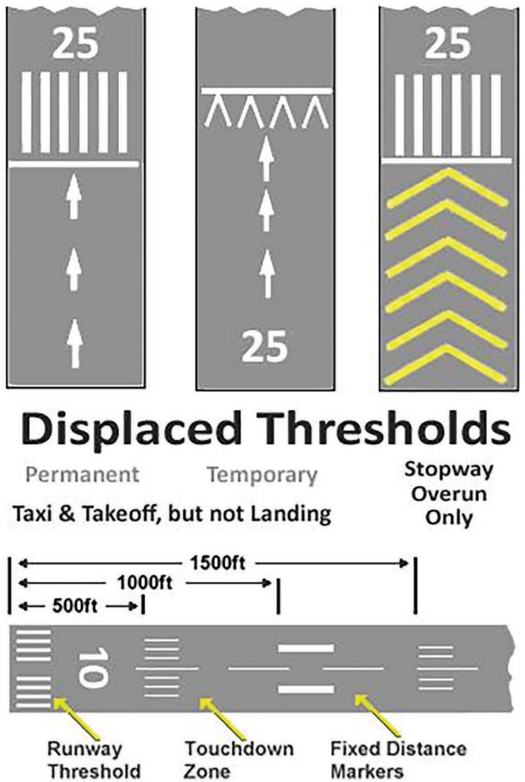


Figure 3: Runway markings (https://www.flygo-aviation.com/ppl-challenge/explanations/air-law/)

B. LIGHTS;

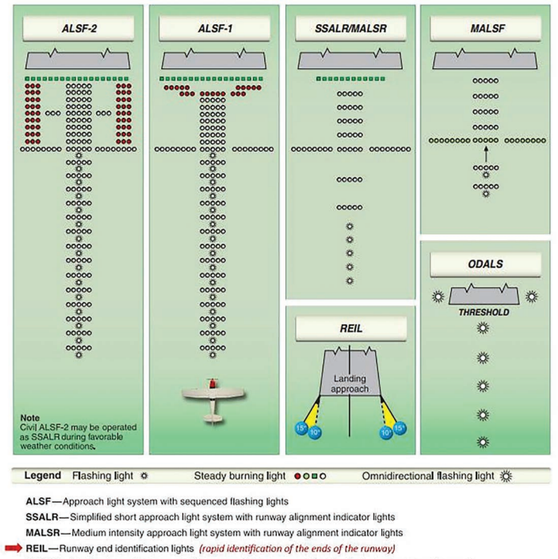


Figure 4: Lights (https://www.askpilot.info/2020/06/approach-lighting-systems-als.html)

C. LIGHT SIGNALS;

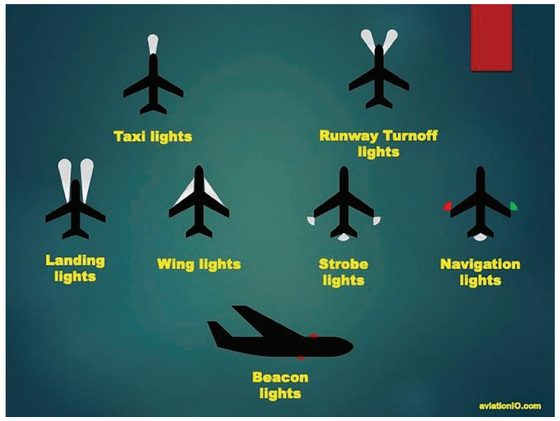


Figure 5: Light signals (https://www.aviationio.com/?p=569)

D. ONBOARD GAUGES (WHOSE DISPLAY SHOWS CODED INFORMATION RAPIDLY)

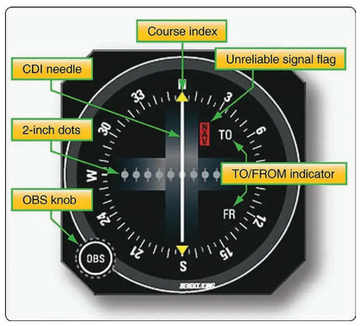


Figure 6: Board gauge (https://www.aircraftsystemstech.com/2017/05/vor-navigation-system.html)

E. OTHER GAUGES COMBINING GRAPHIC TEXT WITH CONVENTIONAL SIGNS (GPS, RADAR, ETC.)

These examples represent an important part of every pilot life, and they are very common in this domain. Actually, they can show vital aspects about position on the airport, landing path and distances to the runway, the position of another aircraft by your position and some navigation facilities. Every pilot must know all of them and even more, be they either civilian or military, because there are airports (e.g.: LROP) which are used by both types of pilots.

Conclusion

In conclusion, aviation is like we know it today because every nation that took part in this process contributed to it. From the beginning, with kites, until the present day with airplanes of the 5th generation, one thing remained constant, and that is the humans with their eyes every time on the sky. Communication between humans evolves constantly, day by day, and indeed in the aviation domain we need to find constant solutions for the new needs of the society and make every word or gesture really mean something. Sometimes in this industry the hard part is not represented by a formula, but by the human part. The diversity in every domain represents a proper way for ideas to be born, but the right ones appear when they intersect the same goal. Yes, it is true that all of us represent different types of people and we can find ourselves in a competition, but the most important subject needs to remain the humans' lives, and their quality.

With this article I tried to show a respectful and representative area where things work mostly well in aviation. Even if this had a huge development in conflictual periods, they have their importance as well. I presented the beginnings of aviation, modern aviation and aeronautical communications, the problems of communication and culture, solutions such as trying to find a common point of view and having a standardized set of rules. I discussed both military and civil parts, which are interconnected, some types of verbal and nonverbal communications and some perspective differences. I had the chance to share a personal input on this work and I described everything through my point of view but based only on real facts.

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