PROFESSIONAL EDUCATION

UDC 811.111.378
DOI: 10.18372/2306-1472.67.10442

Nataliya Pazyura

SOCIOLINGUISTIC ASPECTS OF THE STUDY OF PECULIARITIES OF RADIO COMMUNICATION

National Aviation University
1 Kosmonavta Komarova prospect, 03680, Kyiv, Ukraine
E-mail: npazyura@ukr.net

Abstract

Purpose. *Flight safety has always been in the center of attention of scientists and practitioners in aviation. That is why in the end of the last century the ICAO assembly recognized inadequate English proficiency among flight crews and controllers as a contributing factor in aviation accidents. It also directed the ICAO's Air Navigation Commission (ANC) to strengthen the provisions for the use of English in aeronautical radiotelephony (air traffic communications) in Annex 1 - Personnel Licensing and Annex 10 – Aeronautical Telecommunications. Results. The article is devoted to the study of peculiarities of communication in aviation – radio communication between an air traffic controller and pilot, which is very important for promotion of flight safety. The author pays special attention to the study of social factors influencing the choice of certain lexical units and functional styles. Methods. For our research we used scientific general methods which are main ways of studying scientific sources, and comparative-historical method for synchronic comparison of event in the same region. Discussion. The factors that explain such linguistic choice during communication have been characterized. Similar and different features of professional radio communication and usual every day communication have been revealed. Some examples are given and explained according to specific professional activity.*

Key words: airmen; air traffic controller; aviation English; communication; pilot; radio phraseology.

1. Introduction

Language has always been an object of study of scientists and aroused interest among laymen. Among others, linguists, anthropologists, grammarians concentrated their attention on the analysis, categorization, interpretation of language symbols used in all language communities. The study of language in aviation - is extremely important because the language (English) is commonly recognized as the only communication tool of airmen. Airspeak, Aviation English is the language of International Civil Aviation and international agreements emphasize the need to observe the specific rules of communication during the flight.

2. Theoretical framework and research methods

Our analysis of studies on various aspects of aviation English demonstrates the importance of these issues in societies. The interaction between special and general vocabulary became an object of study in the works of many linguists (Y. Zatsniy; F. Nikitina, D. Shmelev and others). A large number of papers are devoted to problems of linguistic terms (S. Lotte, V. Vinogradov, A. Reformatsky, A. Superanska, V. Golovin, R. Kobrin, V. Tatarinov, S. Greenyov, S. Shelov and others). A considerable number of her works O. Kovtun dedicated to linguistic and translation analysis of aviation terminology in English. At the same time, we believe that there are many aspects that remained without attention of scientists in the sphere of communication of airmen in terms of sociolinguistics.

3. The aim of the study

The aim of this article is to study of social factors that influence the use of certain lexical units and different functional styles, to characterize social factors that explain the appropriate language selection in a dialogue, to identify similar and different features between professional communication by air traffic controllers and pilots and common everyday communication.

4. Results

Research in sociolinguistics are mainly focused on "natural communication" that occurs unconsciously among members of community every day. This community can be defined as "a group of interlocutors that uses rules for communication and language interpretation, interpretation at least one functional style (D. Hymes). A speaker needs to know more than vocabulary and syntax; understanding the relevance of style is also necessary. H. Sacks expressed the view that sociolinguistics considers the rules or regulations that govern those involved in communication, which are determined by the participants and are not taken outside [1].

We should admit that radio communication between an air traffic controller using a radar on the ground to give instructions to pilots is of great interest to sociolinguistics. The main objective of communication between the pilot and air traffic controller is to ensure safety of flight by means of effective communication. We can say that communication that takes place between the pilot and air traffic controller is an example of communication within a community. The following facts support this idea: in order to belong to a language society, you must master the "natural language" (unlike Pidgin, for example), identify it and be involved in the production of common knowledge of daily activities (H. Garfinkel, H. Sacks) [2]. Without these conditions, the normal communication is impossible. And we should point to the fact that during radio communications foreign accent could deteriorate the effectiveness of important information delivery [3].

In addition, E. Rose insists that "trust strengthens these language communities and makes each participant its member. Each very day conversation occurs through such trust "[4].

Our analyses showed that the development of sociolinguistics research was directed to the study of the rules involved in the conversation. S. Ervin-Tripp and E. Schegloff's work shows that these rules may be analyzed under the social situations in which they occur [1]. H.Garfinkel emphasizes that the interest in "situational" and "indexical" character of the conversation needs the study of ways in which participants of conversation understand what is happening. "Situational" conversation means that it is appropriate for use only in some specific context, place, time and social environment. Its "indexical" character in that it describes or makes a conversation understandable only in relation to a situation in which it occurs [2].

In the light of these studies we consider the study of a special case of the usage of English in two-way radio communication between the pilot and air traffic controller actual and necessary. This type of communication is intentionally designed as an effective means of conveying information, and displays differences and similarities to the usual natural communication.

In the USA the two-way radio communication became popular on commercial airliners since the 30s of the last century, and 50s on private planes. Due to the increasing air traffic radio communications has turned into a means of ensuring safety, and the question of proper use of radio communication was the object of many studies. In those years, the Federal Aviation Administration issued a manual for airline staff, in which a unit was devoted to the necessary methods of communication, aircraft identification, standards of phonetic alphabet [5]. In March 2008 ICAO according to the requirements for language proficiency competence stated the following: "Pilots of aircraft and helicopters and other airmen, which use radio on board should demonstrate the ability to speak and understand the language used in radio communications" [3]. These requirements refer as well as to managers and operators aeronautical stations. In addition, in the FAA Private pilot's Handbook of aeronautical knowledge there was the information about the use of two-way radio for air-ground communication. The requirements determined the tone of voice in which a pilot should speak, paying attention that along with common language use of radiotelephone phraseology reduced radio communication messages and made them more informative [6].

It is known that there are certain phases in every radio communication between the pilot and controller: Phase I: "collup" - the initial call or contact of controller and identification of the aircraft; Phase II: special request of the pilot; Phase III: instructions for flight and air traffic advisory services and acknowledgment from the pilot; Phase IV: the completion or final instructions from the controller.

Usually, when callup the pilot identifies the number of its aircraft and its altitude. If the air traffic controller's computer has found the aircraft he

repeats its number and says: «radar contact». Example:

1. 06V: Denver Approach, Turbo Commander 6-5-zero-six-Victor, 1-7 thousand.

2. C: Turbo Commander 6-5-zero-six-Victor, Denver Approach Control. Radar contact. Confirm information Mike [1].

Let us try to interpret conversation:

1. Aero Commander aircraft pilot number 6506 V, informs Denver Approach Control, he is listening to this radio frequency and flying at an altitude of 17,000 feet.

2. The controller repeats number of the aircraft and identifies itself as Denver Approach Control. He confirms that the computer has found the aircraft on the radar screen (Radar contact). Confirm information Mike is the request to the pilot to determine whether the pilot listened to the weather report and the state of the airport, which is transmitted on a different radio frequency. This is similar to the recorded message "time and temperature" and it eliminates the need for a controller to give each pilot the same information. This clearly allows radio frequency to be used for efficient air traffic control.

Our study shows that in radio communication there may be some confusion and misunderstanding most from the pilots' side. For prevention of problems between the pilot and controller more transfer information is necessary. To prevent errors a controller should repeat information and listen carefully for reiteration by a pilot its content. If it is necessary to repeat, request is accompanied by the repeat of the previous the message. Interference in radio communication between the pilot and the controller must be replaced by the exchange of radio messages till the moment of restore of communication [1].

In phase II after identification usually special requests from the pilot follow. More often, the pilot makes requests without preliminaries, as it is shown in this example:

1. 14F: --Baron 1-1-4-Fox.

2. C: Baron 1-1-4-Foxtrot, Denver Radar.

3. C: - Baron 1-1-4-Foxtrot, Denver Radar.

4. 14F: Yes sir, we are about, uh, a mile southeast of Cherry Creek Dam and we're just, uh, coming up on eight thousand. Landing Stapleton. Jeld like to get a transponder check, sir.

5. C: November 1-4-Foxtrot, roger. Uh, stand by just a moment. We're having a little difficulty as it would be, uh, without transponder at Stapleton now. We'll have it fixed in just a second. We'll make a check for you ...

Interpretation:

1. The pilot initiates the call, identifies himself as a Beechcraft Baron number 114F.

2. The controller repeats the number and identifies the plane.

3. The controller repeats his message that the plane did not respond.

4. The pilot determines his position ("a mile southeast of Cherry Creek Dam") and a height of 8,000 feet. He says he going to land at the airport and want to check his transponder

5. The manager says it will be possible after a short period of time, due to some malfunction of equipment.

Phase III - Instruction, advisories and acknowledgment.

Most two-way radio communication of this type are dedicated to Flight instructions and traffic advisories. Instructions consist of commands to a pilot to tune his transponder, climb or descend, speed up or slow down, turn right and left, and the like. After each controller's transmission, the pilot should acknowledge that he understood the command and executes it. The most common way is to use the word "roger," "wilco", or repeat instructions or number of the aircraft [7]. The next conversation has a typical set of instructions:

1. 34Ft Denver Approach, King Air 3-4-Fox, out of 13-point-four with Juliett.

2. C: King. Air 3-4-Fox, stand by

3. -3-4-Fox, radar contact. Say altitude.

4. 34F: Uh, we're out of, uh, 1-2-point-eight, sir, and we have Juliett.

5. C: King Air 3-4-Fox, descend and maintain 1-1 thousand. Turn left, heading 1-7-zero, vector runway 2-6-right.

6. 34F: Left 1-7-zero.Vectors 2-6-right. Down to 1-1 thousand.

7. C: Sir ....

8. 34F: 3-4-Foxtrot, 1-1 thousand.

9. C: OK. King Air 3-4-Foxtrot; roger. Turn left, heading 1-4-zero.

10. 34F: Uh, left, 1-4-zero.

11. C: 3-4-Fox, turn right to heading 1-5-zero.

12..34F: Right, 1-5-zero ....

13. C: King Air 3-4-Fox, maintain eight thousand, turn left, heading 1-2-zero.

14. 34F: Left, 1-2-zero. Down to eight thousand. We're out of 11.

15. C: Roger.

16. C: - Fox, turn right to heading 1-7-zero.Report altitude.

17. 34F: OK, sir.Were out of 10.Right to 1-7-zero [1].

Interpretation:

1. Pilot Beechcraft King Air 34F number is Denver Approach Control, indicates that he descended from a height of 13.400 feet ("out of 13-point-4"). He descended on instructions of another controller. "With Juliett" means that the pilot heard Juliett recorded weather report and flight information is transmitted on a different radio frequency.

2. The controller responds, and asks to wait.

3. After a pause, the controller indicates that it has identified the aircraft on the radar screen (radar contact). This was done automatically by the transponder and the computer. He asked the pilot to indicate his altitude.

4. Pilot says he is descending from 12.800 feet and repeats that he has Information Juliett.

5. The controller tells the pilot to continue to descend and level off at 11,000 feet. Simultaneously, the pilot is told to turn left (170 degrees) - very close to the South. He is informed that he is being guided to a landing on runway 26 Right at Stapleton Airport.

6. The pilot follows the new compass readings, the runway being used and new altitude.

7. The controller confirms the correctness of understanding of his instructions by the pilot.

8. The Pilot after identifying himself, informs the controller that he descended and continued flying at an altitude of 11,000 feet.

9. The controller after confirming his understanding the pilot‘s information (roger), tells him to turn left under to a new compass readings of 140 degrees.

10. The pilot repeats the instruction, confirms them.

11. The controller says to the pilot to turn right, according to a new compass heading of 150 degrees.

12. The pilot repeats the instruction, confirms them

13. The controller says to the pilot to descend and level off at 8,000 feet, and at the same time turn left to 120 degrees.

14. The pilot repeats the instruction tells the controller that he began to descend to 8,000 feet from the present altitude of 11,000 feet.

15. The controller confirms that he understood (roger).

16. The controller says the pilot to turn right 170 degrees, and asks the plane’s altitude.

17. The pilot reports that he is descending from 10,000 feet, and repeating instructions to turn right to 170 degrees.

During the radio communications, instructions, information, and confirmation are performed quickly and easily, and informed listener may not understand the meaning of the conversation. But for the controller and the pilot it is the only professional routine “shop-talk” which they can perform only due to skills they acquired after thousands of hours of practice.

Phase IV – Termination.

The termination means the end of radio communication. The pilot, which is preparing to land receives “final approach” instructions to the airport. The pilot is said what type of landing approach he must take - by instrument or visually - and when to change the radio frequency. Before landing the pilot is guided by the control tower controller.

1. C: TWA 431, cleared visual approach, runway 2-6-right, and call Denver Tower over Skyranch, 1-1-3-point-3.Trafficis a Cessna at 7 thousand 500 feet, 2 o'clock, 5 miles. He'll be passing in front of you, over Fitzsimons Hospital, southbound.

2. 2.431: OK, thank you [1].

Interpretation:

The controller said that TWA Flight 431 is allowed to approach visually, without instrument guidance on runway 26 Right. He must change his radio frequency to talk to Denver Tower, when he comes to Skayrench airport, 5 miles from Stapleton. Radio frequency is 118.3 MHz. In addition, there is Cessna plane at an altitude of 7,500 feet to the right (2 o'clock) at a distance of 5 miles. The other plane will be passing Fitzsimons Hospital, as he flies to the south.

Thus, the standard format of this type of two-way radio communications between the pilot and controller: a callup and identification, special request if necessary, instructions, advisories and acknowledgements and termination.

The analysis of communication records of pilots and controllers shows the difference and similarities of such communication to normal communication. The main difference between common language of communication and airspeak is in the fact that its structure and intention of such language must be

effective, provide as much information most accurately in a short period of time. Ensuring safety be means of radio is the main task of controller. During training, a pilot is taught to limit their conversation with the controller discussing only important issues. However, this demand is not always observed, indicating the presence of other signs of understanding during two-way communication [1].

Besides, the use of radio phraseology is obligatory in accordance with ICAO requirements. The study of the standards of phraseology of Federal Aviation Administration (FAA) showed limitations in the choice of words and the highly structured nature. During the tests controllers rarely deviate from the recommended phraseology because it leads to obtaining a level below 6 [3].

Overburdening messages by information can lead to communication problems [8]. By radio communications information about main indicators of a flight - the aircraft speed, direction of movement, altitude, increase or descend – is transmitted and pilots receive information according to these important indicators. Instructions such as "left to 1-7-0 degrees, descend to 8,000 feet, slow down to 1-8-0 knots" have a number of verbal signs that can not be cut down [1].

Attempts to make radio communication more effective are seen in the standardization of "style." If the "style" of communication is fixed, the listener has the opportunity to focus on the content of the message. Repeats and the procedure for submission of information allow this communication to become "background characteristics", which is seen as usual and remains unnoticed by communication participants until some problems occur. Air traffic control is performed in the following order: the direction from the pilot, the pilot's distance from other lines of flight, a description of other aircraft and corresponding speed (fast or slow) or height, descend or increase in altitude. Such usual presentation of information in the same order allows the pilot to wait for certain information. Therefore he is able to focus just on the content of information without the distraction of style. Presentation in a different way, using pilot or controller's "creativity" can have negative effects.

Another difference is the absence of face-to-face communication. Therefore, non-verbal means of communication are not available. Many paralinquistic dimensions such as tone of voice can not be used because two-way radio communication does not transmit vocal characteristics of a participant of the communication.

Another difference lies in the fact that the design of the equipment allows only one person to speak at a time. It is impossible to listen to messages during data transmission by other radio communication participant. In such circumstances, one should always identify oneself, calling the number of the aircraft, at the beginning and end of the session, until it is completely clear who the speaker is. This is a significant limitation similar to the situation naming his name before the start of conversation in the conventional communication [1].

However, despite the significant differences between common communications and radio communications, there is a number of similar features that are better to consider from the points of view of the sociolinquistics. The authors believe communication in the format "controller-pilot" a language community. These participants have a level of verbal behavior and interpret messages according to their own mutual clear rules and regulations. They either understand these rules or use them in radio communications, while communicating with the help of more than one functional style. Both parties understand radio communications and demonstrate effective communication, limited by professional subjects, but they can use styles that allow them to perform unimportant for the situation conversations among the routine shop-talk [9]. In such situations, the participants using usual language in the same sense as in usual conversations, observing the rules of grammar and syntax of the English language. Such conversations are allowed in the absence of problems of flight or equipment. Also, humor is also present in radio communication, although it is highly technical. Example:

C: - 24, are you navigating inbound on the localizer?

2.024: No, we're shooting a, uh, little practice, uh, ADF approach. We've got the runway and the airport in sight.

3.C: Got it. Show a little bit left of course.

4.024: Do not tell them.

In this example, during landing in clear weather the pilot of commercial aircraft practiced A-D-F approach (type of instrument guided approach used in bad weather when the pilot can not see the ground). However, it was poorly executed, and the controller noticed that the airplane was off course.

The pilot asked not to speak about the case to the Federal government's flight examiners who make pilots pass quite complex tests every six months to permit fly commercial airliners.

Another similar feature with the usual communication is situational or indexical character of such communication. Instructions to turn right or slow down are appropriate only for special moments. Pilots often ask instructions but they are primarily responsible for safety and may deviate from the instructions when they feel it necessary. Sometimes passengers wonder why the plane turned more than it seems to be necessary. This fact can be explained by indexical nature of the conversation. Pilot's actions make sense when you can hear the controller's instructions. Without this actions could be perceived as actions without an explicit reason. Communication gives dimension that makes such actions reasonable [1].

While airmen training the importance of appropriate language is emphasized: colloquialisms, slang, pleasantries can lead to problems for those staff whose English is less fluent. In addition, unclear pronunciation, poor articulation, foreign accent can also cause problems in understanding. Similar negative effects can have the use a non-standard phraseology: *Yeah, See ya, Outta, Gotta,* and exclamations *Uh, Um, Ah* [3]. However, various functional styles of one language are still used in radio communications despite the limitations. They are informal, unessential phrases having no relation to the situation as well as expressions of politeness, and this is another common feature of radio communication and usual communication. There are enough examples of greetings, thanks, excessive information between pilots and air traffic controllers. Although they are examples of deviation from the rules, they show attempts to create a more "human" atmosphere, even among those who never see each other, which is the evidence of the formation of linguistic community [10].

It is worth noticing that inefficient and informal communication can occur even in times of crisis that can be the basis for conclusion about the importance of the informal language for both parties of radio communications. To numerous questions about the reason for this we may say that the answers may have historical nature. We can suggest that at the beginning of air transport rules conversations were more flexible. In the 30 years of the last century often communication with the plane was lost, the equipment often came out of order, radar was used less frequently. Another explanation may be represented by "natural" cause. A controller and pilot can bring their usual language rules in other contexts unconsciously [1].

It is also a well known fact about great stress experienced by controllers that led to the creation of the American Academy of Medicine controllers in 1972. It raises important questions about the role of communication in the stress that controllers feel. Communication is an essential part of a controller's professional activity and is associated with its objectives.

5. Conclusions

Thus, communication between the pilot and air traffic controller can be viewed as communication in a particular community. This type of communication through professional nature is different (it is specifically designed to make it effective in transmitting the largest possible amount of information in a short period of time, communication never happens face-to-face, and radio is the only possible means of communication, equipment design makes simultaneous conversation between two participants impossible) and similar characteristics to usual every d ay communication (pilot and controller form a linguistic community, they use rules of interpretation for more than one functional style - formal and informal, communicative situations are situational and indexical and therefore functional styles are appropriate only in certain times and place).

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Received 11 February 2016

Н.В. Пазюра. Соціолінгвістичні аспекти вивчення особливостей здійснення радіообміну

Національний авіаційний університет, Київ, Україна

Мета: Безпека польотів завжди привертала увагу науковців та практиків авіаційної галузі всього світу. На прикінці 90 років минулого століття Міжнародна організація цивільної авіації визнала недостатній рівень володіння англійською мовою членів екіпажу та диспетчерів як важливий чинник багатьох небезпечних ситуацій у повітрі. Комісія аеронавігації ICAO посилила вимоги щодо використання англійської мови у радіообміні між пілотом та диспетчером. **Результати:** Статтю присвячено дослідженню особливостей мовленнєвої комунікації в авіації - радіообміну між авіадиспетчером та пілотом, ефективність якої є однією з умов забезпечення безпеки польотів. Автор зосереджує увагу на вивченні соціальних факторів, яки впливають на використання певних лексичних одиниць мови та її функціональних стилів під час радіообміну. **Методи:** Для дослідження були використані загальнонаукові методи, які полягали у вивченні наукових джерел, а також порівняльно-історичний метод для синхронічного порівняння. **Обговорення:** Схарактеризовані чинники, які пояснюють відповідний мовний вибір під час такого професійного спілкування. Виявлені подібні та відмінні риси між професійною мовленнєвою комунікацію авіа диспетчер - пілот та звичним повсякденним спілкуванням. Наведені приклади радіо обміну та пояснення особливостей їхньої мовленнєвої комунікації.

Ключові слова: авіадиспетчер; авіаційна англійська мова; авіаперсонал; комунікація; пілот; фразеологія радіообміну.

Н.В. Пазюра. Социолингвистические аспекты изучения особенностей радиообмена

Национальный авиационный университет, Киев, Украина
E-mail: npazyura@ukr.net

Цель: Безопасность полетов всегда привлекала внимание ученых и практиков авиационной индустрии. В конце прошлого столетия Международная организация гражданской авиации признала недостаточный уровень владения английским языком членов экипажа и диспетчеров значительным фактором для создания аварийных ситуаций. Комиссия аэронавигации ИКАО усилила требования к уровню владения английским языком в время радиообмена между пилотом и диспетчером. **Результаты:** Статья посвящена изучению особенностей коммуникации в авиации – радиообмену между авиа диспетчером и пилотом, эффективность которой является одним из условий обеспечения безопасности полетов. Автор уделяет особое внимание изучению социальных факторов, влияющих на выбор определенных лексических единиц и функциональных стилей. **Методы:** Для исследования были использованы общенаучные методы для изучения научных материалов, а также метод сравнения для синхроничного изучения явления. **Обсуждение:** Охарактеризованы факторы, которые объясняют такой лексический выбор во время радиообмена Выявлены подобные и отличные черты между радиообменом и обычным повседневным общением. Автор приводит некоторые примеры и пояснения особенностей проведения радиообмена.

Ключевые слова: авиадиспетчер; авиационный английский язык; авиаперсонал; коммуникация; пилот; фразеология радиообмена.

Pazyura Nataliya. Doctor of Pedagogical Science. Associate Professor.
Head of the Chair of Aviation English, National Aviation University, Kyiv, Ukraine.
Education: Kramatorsk Economic-Humanitarian Institute, Kramatorsk, Ukraine (1997).
Research area: Theory and methodology of professional education.
Publications: 70.
E-mail: npazyura@ukr.net