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How to Interpret Aviation Lingua Franca

The main aim of the paper is to give the reader a general overview of how and when aviation lingua franca is used and what rules it follows. It also highlights certain trends in current aviation communication. In 1951 International Civil Aviation Organization established English as the language of aviation and soon after, it became strictly regulated. From that moment Aviation English has been used globally and quickly transformed into the lingua franca of aviation. We cannot overlook the dominance of English in all of the aviation disciplines. This article narrows discussions down to the aeronautical code used in radiotelephony. It was prescribed for operational personnel: airline and general pilots, controllers as well as airport ground services. Furthermore, this specialist variety has also to be learned by native-English speaking aviation professionals because its specific coded nature impedes comprehension by general English users. The article presents the method of code interpretation for any linguist who would like to be familiar with Aviation English. The article offers the insight into the rules and current use of Aviation English, explaining standard aviation phraseology and plain Aviation English. The focus is put on interaction between native and non-native speakers in professional communication. Following her experience in teaching Aviation English, the author points to the main problems that students must overcome in order to start using this variety of specialist language.

Introduction

Understanding aviation communication is not possible without particular aviation knowledge as well as knowledge of the rules of such communication. The most representative example of such communication is aeronautical communication which covers pilot-controller, pilot-pilot

and also pilot/controller-ground/emergency service communication as it is strictly prescribed:

A number of regulations and policies, either mandated (via the national Aeronautical Information Publications, or AIP) or internal to the various organisations (such as airlines, flight training schools or maintenance companies) define and constrain the language all these aviation personnel must use and how they must communicate. This makes Aviation English different from other varieties of English for specific purposes, in that it is mandated by law and heavily regulated. (Estival, Farris, Molesworth 2016: 19)

When ordinary people without any aviation background listen to aeronautical discourse, they can recognise the English language, or to be more precise – a sort of code based on English, but they certainly are not able to figure out grammatical structures used in the discourse, let alone the meaning of utterances. Therefore, it is worthwhile to present interpretation of the basic phrases of Aeronautical English, traditionally also called Aviation English. There are numerous groups that may benefit from the hints presented in this article, such as students or trainers of Aeronautical English, or anyone interested in specialist varieties of language as well as intercultural communication. The main aim of the paper is to give the reader a general overview of how and when aviation lingua franca is used, what rules it follows and how to interpret its utterances.

Aviation lingua franca

Civil aviation developed gradually after World War II. Following the use of radiotelephony, safety had to be also ensured by global aviation communication. Therefore, in 1951 International Civil Aviation Organization (ICAO) established English as the language of aviation. Unfortunately, aviation accidents from the 1970s on where the use and interpretation of the English language were major or contributing factors gave rise to first extensive aviation language studies. According to Cushing (1994: 1), the complexity and flexibility of natural language are problematic, so the confusions and misunderstandings can readily arise as a result of such linguistic phenomena as ambiguity, unclear reference, differences in intonation, implicit reference. Therefore, Aviation English has been strictly

regulated. From that moment it has been used globally and has quickly transformed into the lingua franca of aviation.

Seidlhofer (2011: 7) defines a lingua franca as “any use of English among speakers of different first languages for whom English is the communicative medium of choice, and often the only option”. Nevertheless, for aviation purposes this definition does not suffice. Firstly, it may happen during aviation communication between a pilot and an air traffic controller that they speak the same mother-tongue but binding aeronautical regulations do not allow them to use it. Secondly, aviation lingua franca cannot be called a chosen, but rather an imposed medium.

English as a lingua franca (ELF) for intercultural communication is used largely in order to communicate among non-native speakers of English. This variety of English needs no longer be related to a particular native ‘target culture’ in which certain ways of speaking and behaving are appropriate (MacKenzie 2014). MacKenzie suggests that lingua franca users should adopt the ways their bi- or multilingual interlocutors speak that add to mutual intelligibility and successful communication. However, it is not always a solution when it comes to global aviation communication because there are cases when it is not possible to predict the interlocutor’s particular culture. In such situations the range of communication strategies at our disposal should be significantly wide. It is assumed that lingua franca speakers do not share a cultural background, thus native speakers of English involved in a lingua franca communication cannot treat the language as their mother tongue as ELF merges elements of all the ‘Englishes’ of the world.

According to Estival, Farris and Molesworth (2016), Aviation English is a lingua franca, i.e. a working language, but also a relatively stable variety in comparison to general ELF, which covers more contexts. The focus of our discussions throughout this article is on communications that take place between air traffic controllers and pilots of various nationalities, and which are traditionally called aeronautical communications. The ICAO language proficiency requirements came into effect in March 2011 (ICAO 2010). This means that all operational personnel (excluding native speakers of English) who take part in aeronautical communication must pass a formal Aeronautical English exam in order to be able to work in international environment. In this way, proficiency

in the English-based language of radiotelephonic communications has been elevated from a recommended to a required status (Estival, Farris and Molesworth 2016).

The aeronautical lingua franca must be learned by all its potential users, including native speakers of English. It seems obvious when native speakers are required to use the aeronautical code, called standard phraseology, but it is not natural for them when they need to adapt their mother tongue to Plain Aeronautical English. A basic principle in this context is that native speakers using English for international communication, in other words – speaking the lingua franca, should eliminate idioms, cultural references and syntactic complexity from their speech in favour of a relatively plain form of language. This may mean not so much using pre-specified language forms, e.g. standard phraseology, as developing effective communicative strategies that draw on a suitable range of language resources (Read and Knoch 2009: 21.7).

Standard phraseology vs. Plain Aeronautical English

The first step in understanding any pilot-controller exchange is to be able to tell the difference between the coded standard phraseology prescribed for all routine situations, i.e. all phases of flight, and the natural English language for aviation purposes, called ‘plain English’ (ICAO 2010), ‘plain Aviation English’ (Bieswanger 2016; Vitryak, Slipak and Serhii 2017) and ‘Plain Aeronautical English’ (Borowska 2017a).

The ICAO introduced the international aeronautical spelling alphabet and modified the pronunciation of numbers so that they could be used internationally without any sounds characteristic of English¹. Standard phraseology (SP)² is characterised by short ellipted utterances prescribed for each phase of flight. The ICAO (Doc. 9835, 2010: 6.2.8.4) defines SP as “the formulaic code made up of specific words that in the context of aviation operations have a precise and singular operational significance”. The SP rules have been also clearly formulated in other ICAO regulatory documents. The main one is ICAO Doc. 9432 *Manual of Radiotelephony* (2007). Thus, unnecessary words have been eliminated from the set of

¹ See ICAO Doc. 9432 *Manual of Radiotelephony* (2007).

² More on SP linguistic description in A.P. Borowska (2017a).

standard phraseology phrases which have also been compressed in order to be short and precise. In this way, the specific aeronautical code was born. Although it is based on English, it does not behave exactly like English, but shows linguistic features of its own: “We should also bear in mind that SP, unlike the natural English language, is a kind of limited tool when it comes to grammatical and lexical choices” (Borowska 2017a). Ragan (1997: 5) points to the unique grammar of tower communications as one of the idiosyncratic features and adds that little information can be drawn from the SP text alone in this case, since it is so dependent on the communicators’ contextual knowledge of situational factors. Listening to an aeronautical exchange, we can hear the SP utterance that does not resemble a general English sentence, but after decoding it, we may interpret such utterance in the same way that we interpret general English utterances, so naturally we understand them as sentence structures despite their coded nature and elliptical character (see Borowska 2017a).

The following Exchange (1) illustrates the nature of coded standard phraseology, where we can observe ellipted grammatical structures and coded expressions recognised in a fixed word order:

Exchange (1)

Controller: SCW150, CONFIRM SQUAWK

Pilot: SCW150, SQUAWKING 4555

Thus, standard phraseology cannot be treated as addition to natural language, since carefully determined ICAO SP phrases are not used in everyday language. Indeed, native speakers of English may have problems in understanding them (Borowska 2017a) unless they learn the code.

With regard to Plain Aeronautical English (PAE), Estival, Farris and Molesworth (2016) emphasise that we should not understand the adjective *plain* in the same way as it is used in other non-aeronautical contexts:

‘[P]lain language’ in other domains involves simplification and avoiding technical jargon, this is not the case with ‘plain English’ in aviation. In the medical or legal environments for instance, ‘plain language’ is aimed at making specialized language intelligible to patients or clients; by contrast, ‘plain English’ in aviation is not aimed at outsiders and does not preclude the use of technical terms. Plain English can be considered a linguistic fiction, in that

it does not exist as a language but is an ideal which aviation personnel are encouraged to aim for when there is no strict phraseology available. (Estival, Farris and Molesworth 2016)

Therefore, this type of (sub)language seems to be *plain*, but only for operational personnel. Nevertheless, specific simplification is included in forming utterances therein. As this specialist language variety is used mainly in emergency or non-scripted situations, it should never cause any confusion. Therefore, it is constrained by phraseology rules of clarity, preciseness and concision (Mell 1992: 73). Plain Aeronautical English³ is also simplified, but mainly in the aspect of English grammatical structures, the length of sentences, and the choice of general vocabulary. PAE should be clear for all its users and should not include any idiomatic expressions (see point 2 above). Moreover, PAE users should speak with “an internationally understood accent or dialect” (ICAO Doc. 9835, 2010: 5-6). However, the ICAO does not specify more precisely what is meant by ‘internationally understood accent’ and does not name any recommended accents in particular (Bieswanger 2016). Nevertheless, it seems to be another feature of the aeronautical lingua franca – to sound intelligible for all discourse participants.

Simplified language of PAE for the emergency purposes can be seen in the following exchange:

Exchange (2)

Controller: CSA787, the field is at your about 10 o'clock, 9 position, 6 miles, you have the field in sight?

Pilot: CSA787, we have in sight, we will proceed visually and we will stop on the runway, request fully assistance on arrival.

Controller: CSA787, that's copied, continue visually for runway 31R. (www.liveATC.net)

Having specified the main aims and functions of Aeronautical English, we can move towards the interpretation of its utterances.

³ More on PAE linguistic description in A.P. Borowska (2017a).

Interpretation of coded utterances

The safety of each flight depends on successful dialogue between a pilot and a controller. Both must be able to negotiate meaning through language at all times, and in the international context through Aeronautical English (Mitsutomi and O'Brien 2003: 117). Thus, for international, so also intercultural, communication there must be prescribed rules that are easy to follow. In order to understand the nature of aeronautical interactions, one should be also familiar with their mechanism (Borowska 2017a) and have basic knowledge of air traffic control:

At and in the vicinity of aerodromes, ATC is normally provided by the aerodrome control service, which operates from a control tower, hence its abbreviation (TWR) aerodrome control tower. Approach control service (APP) is also provided in the vicinity of aerodromes, but is a service which is mainly concerned with flights operating on an instrument flight rules (IFR) flight plan and in instrument meteorological conditions (IMC). Area control service (ACC) is that part of the ATC service which is provided to controlled flights while they are en route and is normally done from an ACC.

2.2.1.3 Where FIS is the only service provided for enroute traffic, it is generally provided to aircraft by a flight information centre (FIC). Where this service is provided to aircraft on and in the vicinity of a given aerodrome it is referred to as aerodrome flight information service (AFIS).⁴

Moreover, we can specify external and internal levels of aeronautical communication. With regard to the external one, *Eurocontrol* (2006) presents the model of aeronautical communications and calls it *pilot-controller communication loop*: “the pilot-controller confirmation/correction process is a ‘loop’ that ensures effective communication”, as depicted in the figure below:

⁴ Annex 11 to the Convention on International Civil Aviation – Air Traffic Services – Air Traffic Control Service, Flight Information Service, Alerting Service, Chapter 2 1/11/01 2-2 Thirteenth Edition, July 2001.

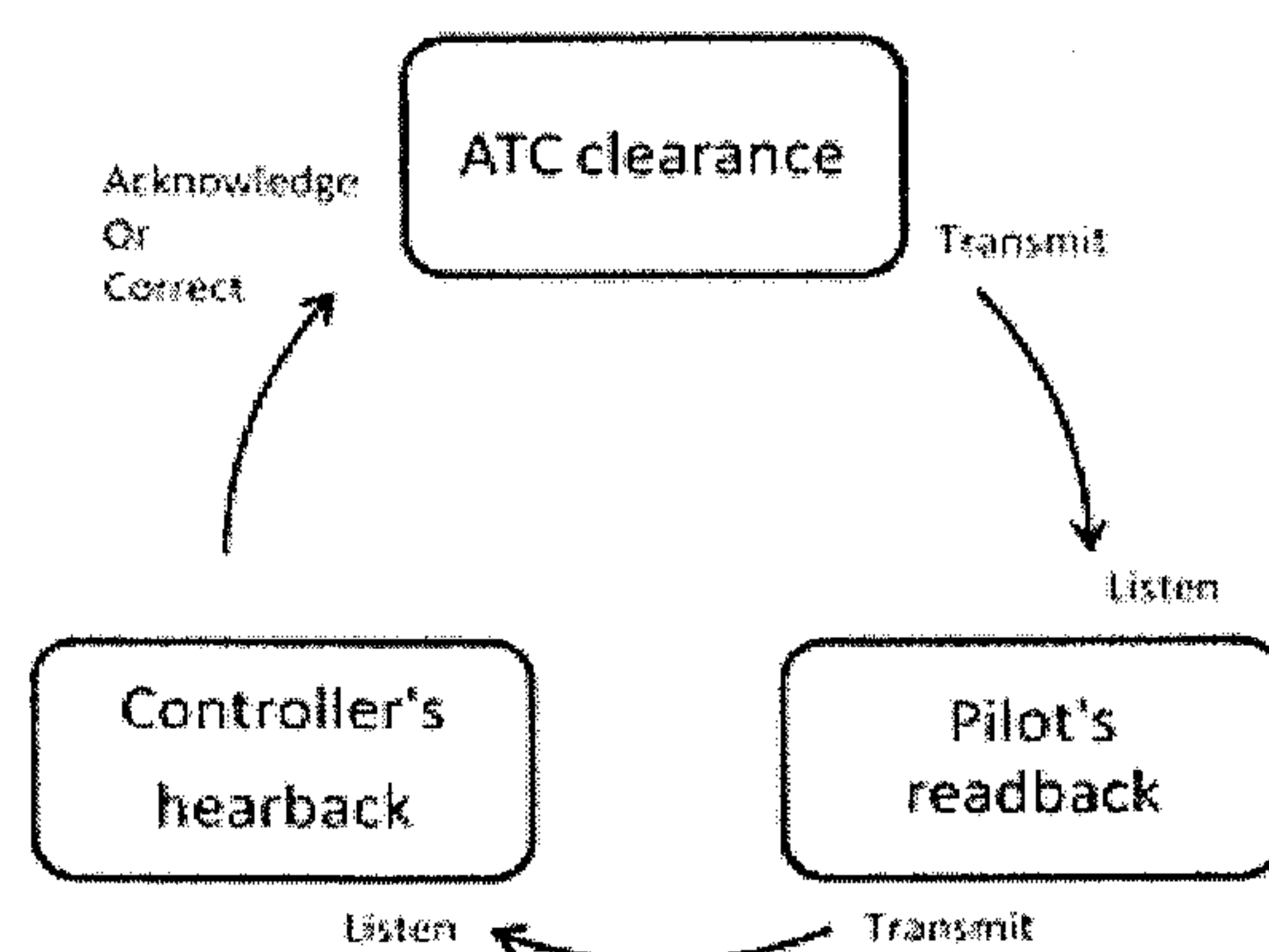


Figure 1. Pilot-controller communication loop (Eurocontrol 2006)

Although the loop does not indicate the initial turn, we can assume that this is a pilot who requests a clearance, then an ATCO (Air Traffic Control Officer – a controller) acknowledges or corrects the request and issues an unambiguous instruction to the pilot; or simply an ATC calls out the aircraft and gives their clearance first. Second, the pilot reads it back⁵, the controller hears it back⁶ and if the readback is correct, the controller acknowledges it; but if it is incorrect, the controller corrects it and again expects a readback. When the pilot reads it back correctly, the controller acknowledges the readback (sometimes by saying nothing, as silence in this case means acknowledgement). Finally, the pilot terminates the transaction by accepting the message as mutually understood and appropriate and he or she executes the instruction as intended by the controller.

At the internal level of aeronautical communication, we deal with exact words and phrases uttered by aeronautical dialogue participants.

⁵ To read back in aeronautical terminology means: to repeat the clearance (message) with understanding and acceptance (A.B.); and Readback is a "procedure whereby the receiving station repeats a received message or an appropriate part thereof back to the transmitting station so as to obtain confirmation of correct reception" (ICAO Annex 10 to the Convention on International Civil Aviation – Aeronautical Telecommunications – International Standards and Recommended Practices and Procedures for Air Navigation Services, Sixth Edition, October 2001, Volume II, Communication Procedures including those with PANS status).

⁶ Hearback – controller's readback validation for accuracy (ibid).

As mentioned above, routine situations require the use of standardised words and phrases, and non-routine situations still necessitate the use of standard phraseology, but it is 'plain' English for aviation purposes that is required for flawless communication in this context. Routine situations cover a specialist set of utterances including the parameters that may additionally provide information on flight status. Thus, we can distinguish the following standard phases of flight: preflight operations (start-up, pushback), taxiing, line-up, take-off, climb, en-route (cruising), descent, approach, landing, taxiing to stand.

When the pilot initiates the contact at any phase of flight, he or she should:

- 1) name the station he/she is calling,
- 2) provide the aircraft's callsign;
- 3) specify position/altitude;
- 4) state intentions.

Analogically, when a controller is calling out the aircraft, he/she should:

- 1) provide the aircraft's callsign;
- 2) provide the name of the station;
- 3) give instructions.

When a pilot calls an ATC station another time, the aircraft callsign comes first and the name of the station is not necessary. Further, there is a tendency not to begin each utterance with a callsign, but rather use it at the end of each message (see Borowska 2017a). There are still numerous problems with callsign confusion, so it is very important to pay particular attention to that.

Therefore, some notable patterns of usage emerge in regular aeronautical exchanges. First of all, it should be observed who communicates with whom, e.g. a pilot with a controller (our example), a pilot with a pilot or a pilot/controller with ground/emergency services. Secondly, a given exchange should be identified as routine or non-routine and the phase of flight it is included in should be specified. Thirdly, the language in use should be analysed, including prosodic features, lexis and grammar. The interpretation of the following lingua franca exchange is presented

below, where the participants are a pilot, non-native speaker of English, and a controller, a native speaker of English:

Exchange (3): pilot (NNS) – controller (NS); routine; phase of flight – taxiing.

Pilot: Ground, LAN CHILE533?

Controller: LAN CHILE533?

A pilot initiates an exchange and a controller reads back the aircraft call sign to ensure the pilot of the readiness to listen to him.

Pilot: Can you confirm holding short of K-G?

The pilot wants to confirm if he should hold short of (stop before) taxiways K and G. He must have been provided with the instruction to do so earlier (not necessarily by the same controller).

Controller: NEGATIVE, LAN CHILE533, hold short of single G.

The controller denies the message using the word NEGATIVE as the words 'yes' and 'no' should not be used in standard phraseology expressions; and he corrects the instruction by naming the proper taxiway and using additional word 'single' in front of it.

Pilot: T-G, LAN CHILE533.

The pilot reads back the clearance, but incorrectly. Probably he did not expect any additional word preceding the name of the taxiway and he interpreted this word as another letter referring to a taxiway. This is the perfect example of expectation bias, namely one expects to hear a name representing a letter in aviation alphabet, but in fact a transmitter aims to say a word. That is why 'single' and 'tango' were confused because in this context they sound similar, so the pilot interpreted 'single' as 'tango'.

Controller: NEGATIVE, G, hold short of G, single G!

Unfortunately, the controller did not realise he might have sounded misleading using the word 'single'. This time the pilot's readback is correct.

Pilot: Holding short of G, LAN CHILE533.

However, after a while, the pilot needs confirmation again and uses the wrong letters indicating taxiways:

Pilot: Just to confirm, we're going runway 31L, via BRAVO, holding short K-G?

Controller: LAN CHILE533, NEGATIVE, NEGATIVE, NEGATIVE. B, hold short of G. Taxiway G is in between H and F.

Pilot: G between H and F, LAN CHILE533.
(www.liveATC.net)

This time the additional position 'between H and F' was more helpful for the pilot. In the above exchange the standard phraseology code was violated with inserted questions in general English and some explanatory remarks. As a matter of fact, it happens more and more often and there are cases when the standard phraseology set is insufficient for routine communication (Borowska 2017a, Holzem 2013).

It is not possible to list here all of the standard phraseology lexical elements being different from everyday English use, however, we have already mentioned: SQUAWK – which is not used with reference to screaming birds or complaints, but setting the transponder; NEGATIVE meaning 'No'; HOLD SHORT meaning 'stop before reaching the specified location'; CONFIRM meaning 'I request verification of...'. In order to understand the following exchange, we should also know that 12 O'CLOCK is not a time reference, but a position, a location outside the cockpit; and CLEAR is uttered as the controller's instruction and does not refer to a degree of darkness or transparency (Domogała 1991).

Exchange (4): pilot (NNS) – controller (NS); non-routine; phase of flight – take-off.

Controller: Lufthansa 457 Super, wind 250 at 12, runway 24L, cleared for takeoff.

The controller provides the pilot with necessary information before take-off.

Pilot: Lufthansa 457, sorry. We have a standing person in the cabin. We're unable.

The pilot declares and describes an incident, and reports the take-off is not possible due to a person standing in the cabin.

Controller: Lufthansa 457 Super, cancel take-off clearance. Advise when you're ready.

The controller cancels take-off clearance and asks the pilot to report her readiness for take-off.

Pilot: Thank you, cancelling take-off clearance, holding position and I'll call you when ready; Lufthansa 457 and our apologies.
(www.liveATC.net)

The pilot reads back, confirms that the aircraft is holding position (does not move), and suggests calling the ATC when ready. The pilot uses continuous verb forms to indicate that the action is happening now.

According to Borowska (2017b), it is also possible to observe some non-linguistic aspects of the aeronautical lingua franca communication such as low- and high-context cultures, dominant culture, etc. For example, American controllers are often blamed of ethnocentrism, i.e. their way of thinking and acting in the given context is superior to others. There are communication patterns that are understood to be 'typical' of American controllers, e.g. the use of slang, chatty style, informal expressions and ironic comments (ibid).

The following exchange confirms the above:

Exchange (5): pilot (NNS) – controller (NS); non-routine; phase of flight – taxiing.

Pilot: ...757 right on front and advise we unable to take taxiway C, Airbus 340-600.

Controller: You're unable to do everything, sir, on that plane of yours, sir. Let me see, yup, you can't go on C, how nice. Go right on ... give way ... give way to the Delta jet of your right, sir, ok? Actually, it looks like it's clear. So, yeah, [laughter] go right on V, right on 13L and hold short of Z E, Iberia, ok?

Pilot: OK, right V, 13L, hold short Z E, Iberia 6252 Heavy.
(www.liveATC.net)

Although the ICAO requirements say: "The burden of improving radiotelephony communications should be shared by native and non-native speakers" (Doc. 9835), it has been often observed that native speakers do not conform to the standards of aviation communication and are too demanding towards non-native speakers. Thus, native speakers are accused of being not clear, making communication errors and using phraseology inappropriately or not using it at all (Borowska 2016: 66).

Conclusion

The aim of this paper has been to explore the aviation lingua franca at both external and internal levels and to familiarise novice professionals and general linguists with the rules of pilot-controller discourse. All of the above discussions constitute an essential reference for aviation communication interpretation as each uttered word is crucial in this high-risk discourse. The accurate understanding of every unit of information is vital for air safety and has resulted in the explicit acknowledgement procedures, such as readbacks, that enable addressees to repeat the sender's message so that the sender can hear back, and thus check its interpretation (Sassen 2005).

To sum up, the comprehension and proper interpretation of the aeronautical lingua franca requires being familiar with the following:

- radiotelephony rules
- aeronautical discourse rules
- Aeronautical English (SP and PAE)
- intercultural communication aspects, including the attitude of some native speakers of English towards communication based on their mother-tongue.

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