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# A Linguistic Review:
# American Airlines 965 in Cali

A hallmark of accident investigations is their thoroughness. Aviation accident investigators understand that improving safety requires a detailed understanding of the usually complex set of causes and contributing factors that result in an accident.

Accident investigators look behind the immediate set of circumstances to uncover less readily visible human factors that may have been at play. The well-known Dryden Investigation into the crash of 1989 Air Ontario Flight 1363 is often considered pivotal in our understanding of how organizational factors can undermine a safety culture, or contribute to establishing a culture in which an accident may be more likely to occur. An integral part, therefore, of accident investigations is understanding the background and potential organizational circumstances that allow the series of events and happenings to line up in such a way that an accident occurs.

The role of language in aviation safety is universally acknowledged to be a critical factor in aviation safety. Language is the component in the "ecosystem" of aviation safety with which we construct our safety system depends.

Language is also beguilingly complex, and understanding how language--and its close cousin, culture--affect aviation communications, requires greater familiarity with linguistics than is generally available to accident investigators. As thorough as accident investigations are, most accident investigators, naturally, bring a layperson's understanding of language, linguistics, and communication. Accident investigators are usually operational experts. Language is complex and too often more subtle factors are overlooked or misunderstood.

## Missed opportunities: The Case of American 965

As a concrete example of why it is important that accident investigation teams are provided with a more informed and comprehensive perspective on language in aviation, it is useful to recall American Airlines 965.

When American 965 crashed into a mountainside near Cali, Colombia in 1995, the controller last in communication with the English-speaking U.S. pilots admitted to accident investigators that he had suspected, from the pilot communications, an anomaly in their position.

He also said that if the pilots had spoken Spanish, he would probably have sought to clarify the situation. In that case, clarification of their position would have required the use of plain language beyond the standard phraseology provided in ICAO Documents. In other words, the controller was apparently proficient in English *phraseology*, but did not have adequate plain language English proficiency to communicate his concerns to, or seek to clarify their position with, the pilots of American 965.

Even with his limited English proficiency, the controller used the phraseology available to him to repeatedly request the aircraft heading, an apparent attempt to alert the pilots to check or confirm their position and heading:

"He said that his fluency in non-aviation English was limited and he could not ask them to elaborate on the request. Rather, he restated the clearance and requested their position. He believed that the pilot's response, that AA965 was 37 miles from Cali, suggested that perhaps the pilot had forgotten to report passing the Tulua VOR. The controller further stated that had the pilots been Spanish-speaking, he would have told them that their request made little sense, and that it was illogical and incongruent. He said that because of limitations in his command of English he was unable to convey these thoughts to the crew."

In this case, accident investigators did not determine that a lack of English proficiency was a cause of or contributory factor to the accident, stating instead that the controller's use of ICAO phraseology was in compliance with ICAO Standards at that time:

"Both AA's guidance and ICAO's standards made it clear that English language ability by a controller who was not a native English speaker was limited to routine aeronautical communications. Consequently, Aeronautica Civil concludes that the Cali controller neither caused nor contributed to the cause of this accident.""

However, a closer review of ICAO language-related Standards and Recommended Practices (SARPS) and a a more nuanced understanding of language use in aviation, including plain language and phraseology, would have made apparent that even prior to the 2003 adoption of strengthened language standards, controller plain language proficiency was required.

## Better understanding of language and ICAO language SARPS

1) An ICAO Standard in force at that time required that controllers

> **"...Demonstrate knowledge of the language or languages nationally designated for use in air ground communications and ability to speak such language or languages without accent or impediment which would adversely affect radiotelephony communications."**

2) Other ICAO Standards and Recommended Practices in force at that time clarified, as a matter of an ICAO Recommended Practice, that English was to be made available to flight crews on request. (ICAO Member States are obligated to incorporate Recommended Practices into their national regulations insofar as possible but are not required to notify ICAO when they do not comply with a Recommended Practice.)

3) In addition, although ICAO published lists of ICAO "phraseologies," ICAO annexes and guidance material, in each instance, make clear that such lists of phraseology are intended to

be *representative* of how language should be used for radiotelephony communications, not inclusive or an exhaustive list.

Although somewhat awkwardly worded, even at that time, in 1995, ICAO SARPS required that controllers have plain language English proficiency.

**Missed Opportunity**

**These facts are important** because the accident investigation team were indeed able to determine that inadequate plain language proficiency was a contributory factor, but they concluded that, "Both AA's guidance and ICAO's standards made it clear that English language ability by a controller who was not a native English speaker was limited to routine aeronautical communications."

However, a closer and more thorough understanding of the ICAO SARPS in effect at that time, make it clear that this statement is incorrect. ICAO SARPS *in effect at that time,* did in fact acknowledge a requirement for what we now call "plain language" proficiency in English.

As a result, because of a misunderstanding of the more subtle aspects of the previous ICAO language requirements, prior to the 2008 strengthened Language Proficiency Standards, without a more nuanced understanding of language in aviation, the accident investigators were not able to issue a clarion call for more comprehensive language training in aviation. This was one more missed opportunity to highlight the critical need for plain language proficiency and for language tools: standardized testing and effective training.

Instead, the only recommendation related to language or language awareness in the accident investigation report was that ICAO "Urge the members states to encourage its pilots and air traffic controllers to strictly adhere to ICAO standards phraseology and terminology in all radio telecommunications between pilots and controllers."

**Not a phraseology issue**

In this case, however, it was not a lack of phraseology and terminology that contributed to an unsafe environment; it was inadequate plain language proficiency--and the many other factors that always contribute ultimately to the chain of events leading to an accident.

**Native English Speaking cultural situational awareness**

As an example of another critical factor in this case, as important as it is for controllers to have plain language proficiency, it is equally important--and new ICAO language Standards and related ICAO guidance make clear--for pilots operating in airspace in which English is used as a foreign language, that the pilots also bring a heightened situational awareness to the cultural and possible linguistic challenges that may be present. If pilots had been trained to be more situationally aware of **cultural issues** that can pose threats to aviation communications, they

might, for example, have been alerted to, and understood, the controller's unusual and repeated request for heading as a signal to increase their situational awareness. (Albritton, 2013): "He said that his fluency in non-aviation English was limited and he could not ask them to elaborate on the request. *Rather, he restated the clearance and requested their position*."

The point of this review is not to point fingers or cast blame, but rather to highlight the need for accident investigators to have a more thorough understanding of both ICAO language requirements *and* a better familiarity with language as a human factor in aviation.

**Why this is important**

The aviation industry tends to place priority on issues that capture people's attention. Only by accurately *perceiving* the full extent of underlying causes of a communication breakdown in aviation can we adequately implement safety improvements. The American Airline accident represented a missed opportunity to highlight the need for improved language standards in aviation.

Investigators naturally look most easily at areas of their own particular expertise; they are quite normally able to more carefully consider issues with which they are most familiar. Language use as a human factor in aviation should be investigated with the same systematic precision as other aspects of an accident or incident.

At the most fundamental level of information gathering, if the link between language proficiency and safety is not made explicit, if only the most glaring language issues are detected, and the more subtle yet still powerful influence of less obvious language issues go undetected, then the industry will continue to misunderstand the critical need for language and cross cultural training to become a priority, requiring recognized industry levels of best practices, and a long-term, industry wide commitment to implementing best practices.

(Information obtained from AA965 Cali Accident ReportNear Buga, Colombia, Dec 20, 1995. Prepared for the WWW byPeter Ladkin Universität Bielefeld, Germany. Prepared November 6, 1996. Accessed 2 Janu 2014 from http://sunnyday.mit.edu/accidents/calirep.html.)