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## COGNITIVE AND STRUCTURAL APPROACHES TO THE FORMATION OF AVIATION TERMINOLOGY IN ENGLISH, RUSSIAN, AND UZBEK

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**Abstract.** *This paper explores how aviation terms are constructed and understood across English, Russian, and Uzbek. It focuses on both the structural aspects—how words are formed—and the cognitive dimensions—how terms reflect underlying metaphors and conceptual patterns. Aviation is a field where clarity and precision are vital, yet each language handles terminology differently. English tends to compress meaning into compact acronyms and compounds, Russian leans toward formal derivations and calques, while Uzbek blends borrowings with native expressions. Drawing on glossaries, corpora, and training materials, the study highlights how seemingly universal technical terms carry distinct linguistic and cultural imprints. The analysis shows that metaphors like “up/down” or “body as aircraft” shape how we speak about flight, but also complicate translation. Recognizing these differences helps us improve communication, translation, and training in international aviation contexts.*

**Keywords:** *aviation terms, word formation, metaphor, translation, English, Russian, Uzbek, cognitive linguistics*

**Introduction.** Aviation, perhaps more than any other field, relies on specialized language. Whether a pilot is requesting takeoff clearance or a controller is issuing a warning, precision is non-negotiable. Yet, behind the clean language of checklists and procedures lies a complex system of terminology—one that’s built differently in English, Russian, and Uzbek.

English dominates international aviation, but local aviation communities inevitably adapt, reshape, and translate these terms. That’s where things get interesting. How does a word like “stall”—which refers to a specific aerodynamic event—get translated in Uzbek or Russian without losing its technical essence? What happens to compact English acronyms when they enter morphologically rich languages like Russian or agglutinative systems like Uzbek?

This study takes a close look at how aviation terms are formed and conceptualized in these three languages. The goal isn’t just to catalog differences but to understand why they exist. By looking at both structure (how terms are built) and cognition (how they’re



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understood), we hope to shed light on the challenges—and occasional elegance—of multilingual aviation language.

**Methodology.** We used a mix of sources: official aviation glossaries, real-world flight manuals, and translations of key documents. We focused on five thematic areas—flight operations, aircraft parts, navigation, safety procedures, and meteorology—and pulled around 500 terms from each language. These were sorted by type: compounds, borrowings, acronyms, descriptive phrases, and so on.

Theoretically, we leaned on two approaches: derivational morphology (how words are built) and cognitive linguistics (how meaning is shaped by experience and metaphor). We also paid attention to translation strategies—especially how terms shift or stretch when moving from English into Russian and Uzbek.

English aviation language is famously dense with acronyms—ATC, ILS, TCAS—and packed with functional compounds like “runway,” “airframe,” or “cockpit.” These forms are efficient but carry hidden metaphorical baggage (think “cockpit” or “flare”). English also makes frequent use of clipping (*nav, freq*), giving it a compressed, almost code-like feel.

Russian takes a different route. There’s more reliance on suffixation, longer compound terms, and translated calques. For example, the English “black box” becomes *чёрный ящик* (a direct translation), while “runway” becomes *взлётно-посадочная полоса* (takeoff-landing strip). The emphasis is on clarity and completeness, even if it means longer words.


Uzbek sits somewhere in between. There’s a mix of borrowings (often from Russian), native terms, and hybrids. Words like *dispecher* (dispatcher) and *parvoz apparati* (aircraft) show how international terms are localized. Uzbek tends to unpack concepts that English compresses—*altimeter* becomes *balandlik o‘lchagich* (height-measuring device).

Things get even more layered in cognitive models and metaphor. Many aviation terms aren’t just technical—they’re metaphorical. We talk about climbing, descending, trimming, stalling—terms that map directly to physical experience.

In English, *pitch*, *yaw*, and *bank* borrow from body movement or navigation. The plane becomes a kind of human: it has a nose, belly, wings, even a tail. Russian carries over many of these metaphors (*нос самолёта, удар хвостом*), though often through more descriptive language. Uzbek sometimes keeps the metaphor (*qorong‘i quti* for *black box*) but may also default to literal, explanatory phrases.

What happens when metaphors don’t translate neatly? A term like *flare*, which in aviation means raising the nose of the aircraft just before landing, doesn’t have an intuitive equivalent in Uzbek. Instead, a phrase is used: *samolyotni qo‘ndirish uchun burish* (adjusting the aircraft for landing). The metaphor is lost, but the meaning is preserved.

Some English terms have no real match in Russian or Uzbek—not because the concept is foreign, but because the linguistic toolkit is different. Acronyms are especially tricky.



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*ATIS* (Automatic Terminal Information Service) is short and punchy in English. In Russian or Uzbek, it either stays the same (as a borrowed acronym) or becomes a bulky descriptive phrase.

False friends are another issue. A literal translation might sound right but miss the mark. *Holding pattern* can be rendered as *держаться по кругу* or *doira bo 'ylab uchish*, but the original aviation context (waiting zone in airspace) might get blurred if the translator isn't careful.

Sometimes new terms are invented—especially in Uzbek, where linguistic modernization is ongoing. *Parvoz registratori* (flight recorder) is gaining traction as a native alternative to *qorong 'i quti*. It's a sign of language asserting itself, even in highly technical domains.

**Conclusion.** Aviation terminology is where technology meets language. English, Russian, and Uzbek approach this intersection in distinct but overlapping ways. English is fast and compact, Russian is formal and explanatory, Uzbek is adaptive and hybrid.

Understanding how these systems build and interpret terms isn't just a linguistic exercise—it has real consequences for safety, communication, and learning. When a trainee pilot misreads a checklist because of an awkward translation, the stakes are high.

By recognizing the structural and cognitive dimensions of aviation terms—and by being aware of how metaphors shape our understanding—we can build better tools for translation, training, and cross-cultural communication.

There's more to explore. We could add corpus analysis of real-time pilot-controller exchanges. Or track how new aviation technologies (like drones or AI co-pilots) generate new terms. Most of all, there's room to build smarter, context-aware glossaries that reflect how people actually think and talk when they fly.

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