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Recognising the Role of Communication as a Human Factor:
Perspectives from Empirical Research in Applied Linguistics

Eric Friginal
Georgia State University, efriginal@gsu.edu

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RECOGNIZING THE ROLE OF COMMUNICATION AS A HUMAN FACTOR: PERSPECTIVES FROM EMPIRICAL RESEARCH IN APPLIED LINGUISTICS

ERIC FRIGINAL
GEORGIA STATE UNIVERSITY
EFRIGINAL@GSU.EDU

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The focus of this presentation is to strategically apply insights from the academic fields of Applied Linguistics, English for Specific/Occupational Purposes, and Intercultural Communication to describe and examine the complex set of issues related to English as a human factor in global aviation.
To explore and connect emerging research approaches in AL/ESP/ICC and their pedagogical applications beneficial to aviation English practitioners and their learners.
OPPORTUNITIES FOR COLLABORATION

Aviation Industry

Applied Linguists

ICAEA Members
WHAT WE CAN PROVIDE IN APPLIED LINGUISTICS

- Methodologists, discourse analysts, transcriptionists, interviewers
- Program developers, materials designers
- Assessment experts, test developers, test administrators
- [Graduate students: research assistants]
Studies in the subfields of English for Specific Purposes (ESP) and English for Occupational Purposes (EOP) have increasingly utilized extensive empirical data and innovative research approaches.

A survey of articles in many recent issues of English for Specific Purposes Journal or the Journal of English for Academic Purposes shows that linguistic descriptions of professional/academic varieties of English have been based in quantitative data such as corpora (Biber, Reppen, & Friginal, 2010)
What is Culture?
My Specialization

CORPUS LINGUISTICS

Methodology and Applications
CORPUS LINGUISTICS

- is a research approach in the study of spoken and written discourse, supporting empirical, frequency-based investigations of naturally occurring language-in-use.

Biber, Reppen, and Friginal (2010)
A research approach for describing language use:

How do speakers and writers across various demographics or registers actually use the vocabulary and grammar resources available in a language?

What is a CORPUS?

- A large, principled collection of ‘natural’ texts stored on computer
- A corpus should ‘represent’ particular language varieties or registers (e.g., conversation or newspaper articles, textbooks)
- Design and size are important: texts must be sampled from particular target registers
Which specific words to include when illustrating a grammatical feature that describe verbs for an English (American) conversation lesson? Think about foreign students who are in their first semester in a U.S. university: level-1 English class, oral communication, focusing on informal conversation in English.

The value of FREQUENCY: What are the most common lexical verbs in conversation?
FOLLOW YOUR INSTINCTS

“The only real valuable thing is intuition.”

-Albert Einstein
The 12 most common lexical verbs in AmE conversation occur in over 50% of spoken data.
Obtaining something  (activity):
   See if they can get some of that bread.

Moving to or away from something (activity):
   Get in the car.

Causing something to move (causative):
   Jessie get your ticket here.
   We ought to get these wedding pictures into an album.

Causing something to happen (causative):
   Uh, I got to get Max to sign one, too
   It got people talking again, right?

Changing from one state to another (occurrence):
   So I'm getting that way now.

Understanding something (mental):
   Do you get it?
Language use is mediated by *register*

That is, notions like ‘*common*’, ‘*rare*’, and ‘*typical*’ are usually not meaningful for general English.

Rather, language features and patterns are typical of particular registers.
Focusing on an iterative cycle which combines computational approaches to data extraction and analyses, and a progression of stages involving qualitative and interpretive techniques.

Baker et al. (2008); Biber (1988, 2006); Gentil (2013)
Potential stage cycle for corpus-assisted textual analysis, adapted from Baker et al. (2008) and Friginal and Hardy (2014)
LANGUAGE, CULTURE, & CORPORA

Elements of an Envirole Workplace Culture:
- Collective vision and purpose
- Inspiring leadership
- Visible, inspiring brand
- Effective, positive management
- Empowered decision-making
- Team dynamics
- Day-to-day communication
- Visible, flexible workspace
SPECIALIZED CORPORA

- Outsourced Call Center Industry
- International Maritime Industry
- Multicultural Workplaces in the U.S.
- U.S. Health Care Industry [Doctors/Nurses-Patients Interactions]
- Hotel and Customer Service Industry
- Augmentative/Alternative Communication (AAC) in the Workplace
- U.S. Academia [ITAs, Foreign-Born Professors-Students Interactions]
CORPUS-BASED RESEARCH APPROACHES

- Corpus design, tagging and annotation, processing
- Manual qualitative coding (NVivo, Atlas Ti)
- Distributional features, multiword units, keyword analysis
- Multidimensional Analysis (MDA) (Biber, 1988)
- Semantic Analysis and other approaches, e.g., Linguistic Inquiry and Word Count (LIWC), Cluster Analysis
- Various tests: tests for relationship and significance
WORKING WITH SPOKEN WORKPLACE CORPORAE

- Involves **audio/video recording and transcriptions** of real-world, task-specific, spoken interactions.

- Often includes **manual coding or annotation of features** such as turn-taking, latching, dysfluencies, length of short and long pauses, repeats/anacoluthon.

- May also **focus on multi-modal and spatial mark-ups** of speakers and utterances in communicative contexts (e.g., Gu, 2007).
Call Center Outsourcing in the Philippines, India, and Latin American Countries

'Accent' matters: Philippines acquiring 70% of India call centers
By Camille Oobra (philstar.com) | Updated April 7, 2014 - 10:23am

MANILA, Philippines — Most voice and call center businesses in India are transferring to the Philippines due to Filipino workers’ more “neutral” English accent, among other reasons, an Indian business group said.

The Associated Chambers of Commerce and Industry of India (Assocham) said that India is losing 70 percent of all incremental domestic business process outsourcing (BPO) businesses, particularly call centers, estimated to be worth $30 billion in foreign exchange earnings.
“Outsourcing” is defined as “the contracting of a service provider to completely manage, deliver and operate one or more of a client’s functions (e.g., data centers, customer service call centers, networks, desktop computing and software applications)”


Developments in satellite and fiber optic telecommunications and international business processing practices in the 1990s have paved the way for various services to be more transportable and fragmented, thereby simplifying the tasks involved in business operations and allowing them to be relocated more easily (Rodolfo, 2005).
a. **Stable** call center operations in the Philippines, India, and other locations

b. **Changing perceptions and attitudes** on call center services and communications (in the US)

c. Continuing **language concerns** and challenges

d. **Robocalls** for telemarketing?

e. **Use of speech analytics and voice sentiment analysis**

f. **US call centers in North and Central America**
Over the last 50 years, the Philippines has grown to become a leading global provider of maritime professionals and is subsequently considered to be the seafaring capital of the world (Cu, 2017). There are over 400,000 Filipino seafarers globally, serving in over 80,000 vessels (Ramos, 2016).
English Skills a Concern as Global Aviation Grows

A FOREIGN tourist approached me in Times Square.

"Please, where is ahhty-ahh?" he asked. At least, that's what I heard, even when he slowly repeated the question. I was flummoxed until he took a bank card out of his wallet and made the motion of inserting it into an imaginary slot.

"Oh, A.T.M." I said, and pointed the way to the nearest one.

As he thanked me, the man seemed to speak English well enough. But his pronunciation — a short rather than long A, an accent on the first rather than last syllable of "A.T.M."
COMMONALITIES

- English L1 and L2 speaker *(NNS vs. NS)* cross-cultural interactions
- **Miscommunication**, linguistic attitudes/perceptions, *power*, and *roles*
- Performance evaluations [or assessment of quality of service]
- **Technology-mediated communication**
- **Globalized, multi-national industries**

CURRENT CORPUS-BASED LIMITATIONS

- Smaller sample sizes, so far
- Contractual obligations with research data; corpora not often allowed to be shared with other researchers
- Restrictions: private assessment data, use of audio/video files, speaker information
CORPUS LINGUISTICS & Aviation English
Cross-Cultural Features of International Aviation Discourse Domains

Language of air travel: How traffic control keeps you safe

By Claire Har, for CNN

updated 7:28 AM EDT, Mon March 10, 2014

Nine instances of "pilot error" in Hong Kong last year are being investigated, but they rarely impact safety.
EXPLORATORY COMPARISONS
To establish the co-occurrence of linguistic features in outsourced call center interactions and aviation language, and to compare the distribution of these co-occurring features across registers and speaker groups.

**Factor analysis** is a multivariate statistical procedure that identifies systematic co-occurrence patterns in a set of variables. Essentially, a factor analysis is a method of data reduction: it reduces a large set of variables into a smaller set of aggregated factors by determining which of these variables pattern similarly across the dataset (Tabachnick & Fidell, 2008)
Markers of Elaboration and Information Density

**Dimension 1**

**Addressee-Focused**

- Second Person Pronouns: 0.674
- Word Length: 0.655
- Filled Pauses: 0.606
- Please: 0.519
- Nouns: 0.510
- Possibility Modals: 0.414
- Nominalizations: 0.399
- Length of Utterance: 0.389
- Let’s [let us]: 0.381
- Thanks: 0.310
- Ma’am/Sir: 0.307

**Personal Narrative**

- Pronoun It: -0.671
- First Person Pronouns: -0.655
- Past Tense Verbs: -0.610
- That Deletion: -0.517
- Private Verbs: -0.439
- WH Clauses: -0.393
- Perfect Aspect Verbs: -0.358
- I mean/You know: -0.340
- Verb Do: -0.320
Dimension 1 Scale: Register Comparison

ADDRESSEE-FOCUSED, POLITE, AND ELABORATED INFORMATION

3.0
Hotel-Customer Service Interactions (3.252)
All Call Centers (2.821)

2.0
Maritime Industry (1.967)

1.0
TEST CORPUS – Aviation Texts (1.011)
U.S. Academia [with ITA data] (0.775)

0

-1.0
U.S. AAC-Non-AAC Workplace Corpus (0.221)
U.S. Health Care (-1.812)

-2.0
U.S. Workplaces (-2.467)

INVOLVED AND SIMPLIFIED NARRATIVE

Data Standardized [z-scores]

Three Target Registers
Dimension 1 Scale: Call Centers and Aviation

**ADDRESSEE-FOCUSED, POLITE, AND ELABORATED INFORMATION**

1.5
1.0
0.5
0
-0.5
-1.0
-1.5

All Agents (OUTSOURCED)

PHILIPPINE AGENTS (1.121)

“INTERNATIONAL” Pilots (1.245)

INDIAN AGENTS (-0.432)

US Pilots (-1.012)

U.S.-BASED AGENTS (-1.467)

All U.S. Callers

Other Comparison Conversation Corpora

Call Center

Switchboard Call

American Conversation

Data Standardized [z-scores]

INVOLED AND SIMPLIFIED NARRATIVE
These two groups doing very similar tasks.

Data Standardized [z-scores]

INVOLVED AND SIMPLIFIED NARRATIVE

ADDRESSEE-FOCUSED, POLITE, AND ELABORATED INFORMATION
“Be Polite with Me”
VASAviation [www.liveatc.net]
DON'T APOLOGIZE, JUST FIX IT

1. Caller: [...] I can't sign in it says no internet connection
2. Agent: Uh-huh but sir may I uh have your name please before we start uh [inter]
3. Caller: Oh for god's sake it's the one you're showing
4. Agent: Ok sir I'm so sorry for that one
5. Caller: I can't sign in it says no internet connection
6. Agent: Ok I'm so sorry for the inconvenience sir have uh you're [inter] having right now
7. Caller: Don't apologize just fix it
8. Agent: Ok uhm but before I proceed uh sir may I have your approval to access your service record here at [company name]?
Selected “Politeness” Features

<table>
<thead>
<tr>
<th>Selected Politeness Features</th>
<th>Filipino Agents</th>
<th>Indian Agents</th>
<th>Central American Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thanks/Appreciate</td>
<td>6.1</td>
<td>5.1</td>
<td>4.4</td>
</tr>
<tr>
<td>Thanks</td>
<td>3.7</td>
<td>3.5</td>
<td>4.4</td>
</tr>
<tr>
<td>Please</td>
<td>2.8</td>
<td>2.3</td>
<td>3.1</td>
</tr>
<tr>
<td>Sorry</td>
<td>5.9</td>
<td>4.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Sir or Ma'am</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Normalized per 1,000 words
Agent Performance: Language and Service Scores Combined

Filipino Agents  Indian Agents  Central American Agents

Quality Assurance Evaluation Scale: 1 to 20 [20 highest score]
EXAMPLE:
HIGHER SCORING US NURSE (STAPLES, 2014)
PITCH RANGE ON EMPATHETIC RESPONSE
EXAMPLE: LOWER SCORING INTERNATIONALLY EDUCATED NURSE (STAPLES, 2014)

PITCH RANGE ON EMPATHETIC RESPONSE
CROSS-TALK

Cross-Cultural (MIS)COMMUNICATION

MY WORDS CAME OUT FINE!
THEY WERE PROCESSED INCORRECTLY
BY YOUR BRAIN!!!
FACTORS CAUSING CALLER CLARIFICATIONS
THIRD-PARTY ANALYSIS AND INTERPRETATION (FRIGGIN, 2011, 2014)

- Randomly selected 40% of total caller clarification sequences (400 samples)
- Two raters [mutual agreement]

Agents’ Packaging of Information: 42%
Agents’ Pronunciation: 12%
Others [difficult to identify]: 10%
Transmission/Noise: 19%
Callers’ Comprehension: 17%
Agents’ Pronunciation: 12%

**Agents’ Pronunciation:**

**Transmission/Noise:**

**Callers’ Comprehension:**

**Others [difficult to identify]:**
SOME IMPLICATIONS

- Distributional patterns of lexico/syntactic features [across registers and speaker groups] have important theoretical implications for the study of language and culture in general, and the analysis of linguistic variation in particular.

- Corpora representing typical interactions provide data that are relevant not only in understanding the variety of English in this domain, but also in achieving a broader understanding of the dynamics of cross-cultural exchanges.

- Corpus data have useful application in the design and implementation of training programs.
AL/ESP/ICC Research Goals and Objectives

- To **describe** the **cross-cultural features** [and linguistic distributions] of language in global aviation.

- To **understand** **register variation** and the influence of sociolinguistic factors such as role/relationships, power, and identities to speakers in this communicative domain.

- To **explore practical** and **pedagogical implications**:
  - How to use CL data to aid performance assessment?
  - How to develop training materials?
  - Does a “native speaker norm” exist in this domain?
  - What are macro policy implications of results?
THANK YOU!

SALAMAT PO!

ERIC FRIGINAL

GEORGIA STATE UNIVERSITY

EFRIGINAL@GSU.EDU