

APPLYING AI TOOLS IN ARCHIVAL FUNCTIONS

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OUTLINE

1. Motivation
2. Viewing AI tools through an Archival lens
3. Application to the UNESCO Radio Archives study

I TRUST AI OBJECTIVES

1. Identify **specific AI technologies**
2. Determine the **benefits** and **risks**
3. Integrate **archival concepts and principles** in AI
4. **Validate** outcomes case studies and demonstrations.

MOTIVATION

- Expert knowledge can enhance AI
 - Feature Selection
- Need for ensuring AI conforms to archival concepts
 - Do AI tools respect the archival bond?

COMPONENTS OF A RECORD

medium

form

content

act

persons

archival
bond

context

▶ Assuming that AI method is being applied to records...

▶ What parts of a record are impacted?

▶ How might this inform the design of AI tools that respect diplomatic theory?

ARCHIVAL CHALLENGES

medium

Digital records classification

form

Example:

content

Email Classification (Assign class code for indexing)

act

persons

AI Link:

archival
bond

Named Entity Recognition (NER), Topic Modeling, Weakly Supervised Learning

context

ARCHIVAL CHALLENGES

medium

Sensitivity review

form

Example:

content

Reviewing documents for
Personally Identifiable Information

act

persons

archival
bond

AI Link:

context

NER, Graph Convolutional
Networks (GCN), Supervised
Learning

ARCHIVAL CHALLENGES

medium

Access to textual materials

form

Example:

content

Visualizing digital records in
aggregate (fond, series, file)

act

persons

archival
bond

AI Link:

context

Topic Modeling, GCN, Clustering

DIPLOMATICS LENS

- ▶ What elements of a record are or aren't relevant to a task?
- ▶ What are the 'gaps' in these AI approaches?
 - ▶ *How do we bridge them?*

UNESCO RADIO ARCHIVE

In collaboration with Eng Sengsavang

DRIVING QUESTION:

How can AI enable better description of archival audio?

[illegible][illegible][illegible]

UNESCO ARCHIVES COVERAGE

5 Core UNESCO areas:

Education

Culture

Natural Sciences

Communication and Information

Social and Human Sciences

Plus:

UNESCO History



UNESCO ARCHIVES LANGUAGES

70+ recognized languages

French

English

Multilingual



SO FAR...

Sample 10% (n=589):

- Apply baseline model to

- ID Language

- Transcribe

- Translate into English

Analyze subset of English recordings for diplomatic analysis



METADATA SCHEME

57 elements total

Vital for discoverability

Title
Other_lang_title
Third_lang_title
Description
Other_lang_description
Third_lang_description
File location
Source (script)

Coverage_placename
Creator
Personality
Publisher
Contributor_organization
Contributor_person
Rights
Format_length
Program number
Associated Document
Language
Access_category
Rightsholder

ARCHIVAL CHALLENGES

medium

Enriching Descriptive Metadata

form

Example:

content

Generating descriptive metadata
for non-textual records

act

persons

AI Link:

archival
bond

Audio summarization, Speaker ID,
Language ID, Automatic Speech
Recognition

context

DIPLOMATICS

Consistent form across similar types of recordings.

Example: First 30 seconds of interviews almost always include who is being interviewed, and about what. (Protocol)

0.0-8.0: I have with me in the studio today Dr. George Stoddard, Dean of the School of Education of New York University.

8.0-21.0: He's one of the experts who've been convened to a UNESCO meeting to study the effect of mass media, that's films, press and radio, on juvenile delinquency. Dr. Stoddard.

22.0-36.0: Well, really the purpose of the meeting is somewhat broader than that. It's to study all the influences of the mass media, particularly the cinema and television, on the behavior of children.

0.0-7.0: Now here in the studio is Mr. Frederick Bellinger from the United States of America and for

8.18-15.18: the past year he's been in Egypt working for UNESCO Technical Assistance. Now I believe

15.22-22.06: Mr. Bellinger, you are a chemical engineer. What exactly were you doing in Egypt?

22.06-28.64: Under the UNESCO Technical Assistance Program I was asked to go to Egypt to assist the National

28.64-35.64: Research Council in definitely planning and starting a basic and applied research effort

36.24-39.76: in the industrial chemistry field.

DIPLOMATICS

Consistent form across similar types of recordings.

Example: Last ~10 seconds “sign off” for reports and programs, or thanking guests for interviews. (Escatacol)

901.0-905.0: Sound of radio

910.0-916.0: Those noises from beyond the Earth mark the end of this, the fourth program in the series,

916.0-919.0: Signposts for the Atomic Age.

919.0-922.0: They are edited and introduced by Richie Calder.

922.0-927.0: The program was produced by Rex Keating in the studios of UNESCO, Paris.

210.26-217.3: This is Professor C. N. Vakil speaking from UNESCO headquarters in Paris and returning

217.3-220.18: you to UN Radio in New York.

285.84-289.04: That sounds very encouraging. Well thank you very much indeed Mr. Ballinger.

830.0-832.0: Thank you very much, Dr. Stallone.

DIPLOMATICS

Programs, Interviews, and Reports generally carry the necessary information within this brief introductory protocol.

But speeches are problematic!

An anchor would have contextualized who is speaking before broadcast!

0.0-2.0: Thank you.

2.0-12.0: <Applause>

12.0-21.0: Madam President, and fellow librarians, and fellow Texans, and fellow Californians,

21.0-26.0: it's a great pleasure for me to be here again.

26.0-35.0: I think one way we're going to solve this problem of Alaska is to combine Texas and California.

35.0-42.0: <Laughter>

42.0-47.0: Miss Moore said that I would always remain a Texan, but I'm part Californian too,

47.0-57.0: because this is the place where I did my graduate work, and this is the place where I first cast a ballot in an election.

....

DIPLOMATICS TAKEAWAYS

- ▶ Genre of recording potentially important (speeches & meetings vs. programs, reports and interviews)
- ▶ Detection of topic is less relevant for AI tools (explicitly discussed)
- ▶ Protocol contains much of relevant information w.r.t. descriptive metadata
- ▶ Aspects of speech (e.g. tone of voice, “tenor of conversation”) something not fully captured in diplomatics schema designed for text.