Some words and phrases on the slides may be shocking or offensive. They are provided solely as an illustration and explanation of the research results and do not reflect the opinions of the speakers or their organisations.
Culturally Aware AI

Uncovering and modelling cultural controversies in data

Andrei Nesterov, PhD student at CWI / Human-Centered Data Analytics

Promotor: Jacco van Ossenbruggen, VU
Co-promotor: Laura Hollink, CWI
Co-promotor: Marieke van Erp, KNAW

Scientific meeting at CWI, 30 September 2022
Digital cultural heritage collections are vast

- **650 K** objects with metadata
- **17 M** digitised pages of historical newspapers
- **54 M** searchable items

Rijksmuseum

KB National Library

Europeana

*Almost All the Art in the Rijksmuseum (preview)*, Edward Anderson: https://www.youtube.com/watch?v=o1fq-5wsaYs
Controversial language in object descriptions

Schrap de term ‘Bersiap’ want die is racistisch

Dekolonisatie: De term ‘Bersiap’ is te generaliserend om te gebruiken als naam voor de periode na de Japanse capitulatie. Trijana heeft de term daardoor een racistische connotatie. 

'Bersiap' niet gebruikt op Indonesië-tentoonstelling Rijksmuseum

Screenshots. (1) NRC, Schrap de term ‘Bersiap’ want die is racistisch : https://www.nrc.nl/nieuws/2022/01/10/schrap-term-bersiap-voor-periodisering-want-die-is-racistisch-a4077367
(2) NOS, 'Bersiap' niet gebruikt op Indonesië-tentoonstelling Rijksmuseum: https://nos.nl/artikel/2412652-bersiap-niet-gebruikt-op-indonesie-tentoonstelling-rijksmuseum
Contentious terms in museum databases

"Aboriginal"
"Berber"
"Black"
"Causasian"
"Disabled"
"Exotic"
"Gypsy"
"Half-blood"
"Indian"
"Native"
"Primitive"
"Trans"
"Western"

... 55 terms
How can we develop and use computational approaches that capture, process, and represent socio-cultural sensitivities to make digital cultural heritage more inclusive?
Computational approaches to contentious terms

- How to collect training or "ground-truth" data?
- How to formalise contentiousness for knowledge representation and reasoning?
- Surveying the Semantic Web: how are contentious terms used?

- ConConCor: using crowdsourcing to construct a corpus of contentious terms in context
- Developing an ontology and a controlled thesaurus of contentious terms based on "Words Matter"
- Collecting more empirical evidence to identify problematic aspects of contentious terms usage
Building a training corpus
Crowdsourcing for autodetection of contentiousness?

Constructing an annotated Dutch corpus of contentious terms in contexts (ConConCor)

+ Annotator responses:
  - Contentious
  - Non-contentious
  - I don’t know
  - Bad OCR

+ Newspapers metadata
+ Annotators demographics


3K

> 400 laypeople and experts
7 annotators per sample
## Contentiousness by term: majority agreement

In all the given snippets, these terms are contentious according to majority of annotators.
Crowdsourcing contentiousness: main results

1. Context is a deciding factor in the annotators’ judgments of contentiousness

For example, 220 annotators each individually annotated at least 1 term both as contentious and non-contentious across different samples

2. Despite **low overall inter-annotator agreement**, 42% of the samples in the corpus is annotated with a **high percentage agreement (81–100%)** between annotators

Median Krippendorff’s $\alpha$: 0.39 among laypeople annotators; 0.53 – experts (-1 < $K\alpha$ < 1)
*(calculated for every batch of annotated samples)*
Experiments with ConConConCor and future work

● How to capture contentiousness of a term taking its context into account?

An experiment with Linear regression model showed that word embeddings may capture terms' semantic which is indicative of their contentiousness

● Can we detect new (unknown) contentious words or phrases?

Ryan Brate
PhD student
KNAW HuC DHLab
Computational approaches to contentious terms

How to collect training or "ground-truth" data?

ConConCor: using crowdsourcing to construct a corpus of contentious terms in context

How to formalise contentiousness for knowledge representation and reasoning?

Developing an ontology and a controlled thesaurus of contentious terms based on "Words Matter"

Surveying the Semantic Web: how are contentious terms used?

Collecting more empirical evidence to identify problematic aspects of contentious terms usage
Making contentiousnessness machine readable

Modelling relationships between contentious terms, their contexts, suggestions, and alternatives

Contentious terms appear in object descriptions
From expert knowledge to linked data

Glossary of Terms:

**Primitive**

Primitive differs from the Latin word *primitivus*, meaning the first or first of its kind. In European thought, it became synonymous with the recast and sanitized “other” and was applied to cultures that were imagined as existing in a distant past (see Marika Kurunt and Simona Berman in this publication) that lacked qualities that were seen as European, specifically progress and rationality.

The term is still used today to denote someone or something as simple and untrained.

“Primitive?” is a movement in art that commemorates the beauty, natural qualities, or romance of a simpler way of life, in contrast to a more advanced, industrialized Europe.

Both the term “primitive”, like the artistic movement, have received significant criticism from diverse quarters including academics.

**Suggestions**

- The term is not recommended for use.
- The term can be used in a descriptive or historical context, in which case we suggest the use of quotation marks.

For example: There was an artistic movement called ‘primitivism’.

111 Contentious Issues

296 Labels

ContentiousIssue

```
hasContentiousLabel
hasSuggestion
```

Suggestion

```
suggestedFor

hasUsageExample
```

"literal"

skosxl:Label

```
hasSuggestedLabel
hasAltLabelExample
```

skosxl:Label

skosxl:Label
From expert knowledge to linked data

Glossary of Terms:

**Primitive**

- Primitive is derived from the Latin word *primitivus*, meaning the first-born or first of its kind. In European thought, it became synonymous with the racialized and temporal “Other” and was applied to cultures that were imagined as existing in a distant past (see Marijke Kunst and Simone Vermaat in this publication) that lacked qualities that were seen as European, specifically progress and rationality.
- The term is still used today to denote someone or something as simple and uncivilized.
- “Primitivism” is a movement in art that connotes the beauty, natural qualities, or romance of a simpler way of life, in contrast to a more advanced, industrialized Europe.
- Both the term “primitive”, like the artistic movement, have received significant criticism from diverse quarters including academics.

SUGGESTIONS:

- The term is not recommended for use.
- The term can be used in a descriptive or historical context, in which case we suggest the use of quotation marks.
- For example: There was an artistic movement called “primitivism.”

Turtle syntax

```turtle
wsm:132
  a culco:ContentiousIssue, bibo:BookSection;
  dcterms:title "Primitive"@en;
  dcterms:description "Primitive derives from the Latin word primitivus, meaning the first-born or first of its kind. In European thought, it became synonymous with the racialized and temporal “Other” and was applied to cultures that were imagined as existing in a distant past (see Marijke Kunst and Simone Vermaat in this publication) that lacked qualities that were seen as European, specifically progress and rationality. The term is before still used today to denote someone or something as simple and uncivilized. “Primitivism” is a movement in art that connotes the beauty, natural qualities, or romance of a simpler way of life, in contrast to a more advanced, industrialized Europe. Both the term “primitive”, like the artistic movement, have received significant criticism from diverse quarters including academics."@en;
  culco:hasContentiousLabel
    wsm:l_90 ,
    wsm:l_91 ;
  culco:hasSuggestion
    wsm:2_s ,
    wsm:132_s_02 .

wsm:132_s_02
  a culco:Suggestion ;
  rdf:value "The term can be used in a descriptive or historical context, in which case we suggest the use of quotation marks. For example: There was an artistic movement called ‘primitivism’."@en ;
  culco:suggestedFor
    wsm:l_90 ,
```
SPARQL: get suggested terms for contentious

SELECT ?ContentiousLabel ?SuggestedLabel
WHERE {
  ?Suggestion culco:suggestedFor / skosxl:literalForm ?ContentiousLabel ;
  culco:hasSuggestedLabel / skosxl:literalForm ?SuggestedLabel .
}

Slaaf: mensen in slavernij
Caucasian: White
Jappenkamp: Japanese concentration camp
Jappenkampen: Japanese concentration camp
Colored: Black and Non-Black person of color
travestiet: crossdresser
Trans: crossdresser
Oriental: Asian
Blank: Wit
...

Available on TriplyDB
Computational approaches to contentious terms

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Surveying the Semantic Web: how are contentious terms used?

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Modelling relationships between contentious terms, their contexts, suggestions, and alternatives

Contentious terms appear in object descriptions

How are contentious terms used in the Linked Open Data cloud?
Contentious terms in Wikidata

primitive tribal community (Q13165863)

socio-economic unit of primitive society
primitive community, | primitive communal system

In more languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Label</th>
<th>Description</th>
<th>Also known as</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>primitive tribal community</td>
<td>socio-economic unit of primitive society</td>
<td>primitive community, primitive communal system</td>
</tr>
<tr>
<td>Dutch</td>
<td>No label defined</td>
<td>No description defined</td>
<td></td>
</tr>
<tr>
<td>German</td>
<td>No label defined</td>
<td>No description defined</td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>communauté tribale primitive</td>
<td>unité socio-économique d’une société primitive</td>
<td></td>
</tr>
</tbody>
</table>

No information about contentious-ness

Used as training data

"Primitive" in recent anthropological and social studies has begun to fall out of use due to racial stereotypes surrounding the ideas of what is primitive.\[112\] Such a move has been supported by indigenous peoples who have faced racial stereotyping and violence due to being viewed as "primitive".\[113\]\[114\] Due to this, the term "primitive communism" may be replaced by terms such as Pre-Marxist communism.\[115\]

Alain Testart and others have said that anthropologists should be careful when using research on our hunter-gatherer societies to determine the structure of societies in the paleolithic, where viewing contemporary hunter-gatherer communities as "the most ancient of so-called primitive societies" is likely due to a lack of information and perceptions and does not reflect the progress and development that such societies have undergone in the past 10,000 years.\[116\]

There have been Marxist historians criticised for their comments on the "primitivism" and "barbarism" of societies prior to their contact with European empires, such as the comments of Endre Sik. Such views on "primitivism" and "barbarism" are also prevalent in the works of their non-Marxist contemporaries.\[117\]\[60\]\[118\] Marxist anthropologists have criticised and denounced Soviet anthropologists and historians for declaring indigenous communities they were studying for primitive communism as "degenerate".\[44\]
Contentious terms in Wikidata

primitive data type  (Q1188648)

basic data type which can be instantiated and used with the predefined operations of a programming language, or assembled as a building block together with other instances of any type to create more complex composite data types.

<table>
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<th>Label</th>
<th>Description</th>
<th>Also known as</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>primitive data type</td>
<td>basic data type which can be instantiated and used with the predefined operations of a programming language, or assembled as a building block together with other instances of any type to create more complex composite data types</td>
<td>primitive type, basic type, built-in type, machine type, type of the system, native type</td>
</tr>
<tr>
<td>Dutch</td>
<td>primitief type</td>
<td>No description defined</td>
<td>primitief gegevenstype</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>primitief datatype</td>
</tr>
</tbody>
</table>
Main challenge: word sense disambiguation

1. Polysemy and homonymy

The term "primitive" has 7 definitions in Princeton WordNet

2. Lack of linguistic information about the literal values in LOD

3. Automatic sense disambiguation of literals in Knowledge Graphs?
Towards the Cultural AI mission: bringing more contexts and connections to cultural heritage data

See other resources about this term:

Words Matter, Wikidata, Getty AAT, WordNet, more
How can we develop and use computational approaches that capture, process, and represent socio-cultural sensitivities to make digital cultural heritage more inclusive?

AI for Culture

Culture for AI