

Explorations in linked data practice for early music

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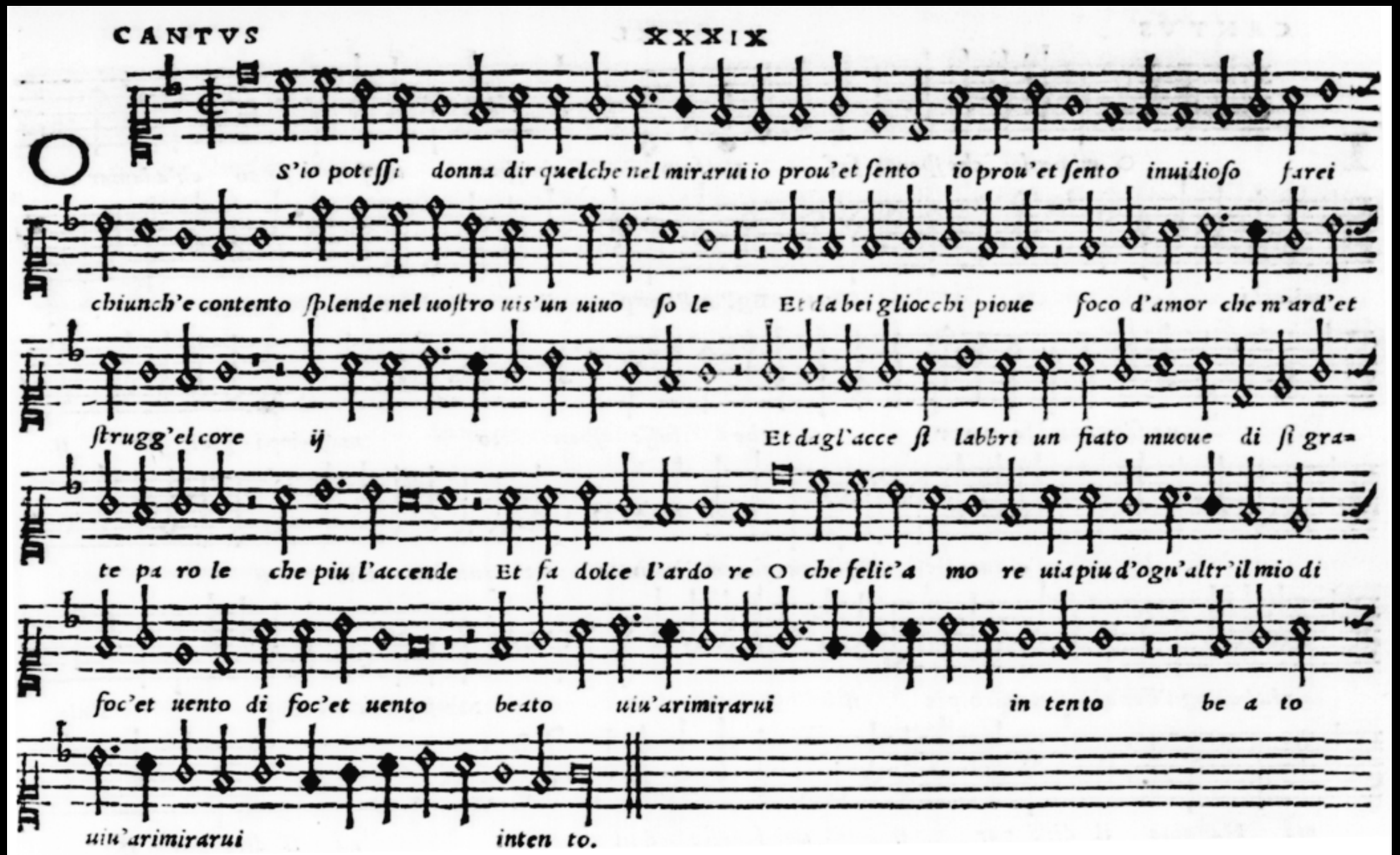
Reinier de Valk, Tillman Weyde
(City University London)

Overview

- Background
 - Some music history
 - Our data sources
 - Why linked data?
- Practicalities: methods and challenges
 - Aspects of our ontology design
 - Existing resources
 - Alignment methods
- Conclusions
 - What we can do now (and some numbers)
 - Further work and opportunities

Some music history

CANTUS XXXIX



S'io potessi donna dir qualche nel mirarui io prou'et sento io prou'et sento inuidioso farei
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strugg'el core ij Et dagl'acce si labbri un fiato mucue di si gra-
te pa ro le che piu l'accende Et fa dolce l'ardo re O che felic'a mo re uiapiu d'ogn'altr' il mio di
foc'et uento di foc'et uento beato uiu'arimirarui in tento be a to
uiu'arimirarui inten to.

Jachet Berchem



Ensemble Dumblis e Puemas

arr. Melchior Neusiedler



Paul O'Dette

Data sources I:

Electronic Corpus Of Lute Music

- Lute music from 16th to 18th century
- Metadata for c. 2,400 pieces
- Symbolic encoding of c. 1,100 pieces

Data Sources II:

Early Music Online

- Digitised microfilm images:
 - 300 printed books from the 16th century
 - c.35,000 pages
 - > 8,000 musical items
- Mostly part books, but includes table books, and lute and keyboard tablatures
- Catalogued in MARC

Data Sources II:

Transcription efforts

- Vocal music:
 - Optical recognition (Aruspix)
- Lute music:
 - Optical recognition (Gamera)
 - Crowd-sourced double-entry correction

Linked Data

- Internal linking
- Building on existing resources
- Making our resource useful to others

Ontology design

- Only a first step
- First stage information criteria:
 - Useful
 - Meaningfully linkable
 - Relatively uncontroversial
 - Limit search space for further linking

Ontology design

- Places
 - Important for studying spread of ideas
 - Available for all EMO books
 - Well represented in external linked data sources
- People
 - Important for almost all historical study
 - Well represented in external sources
 - Helpful for work identification

Existing Resources

- VIAF
 - Library authority files
 - Good match for BL-generated metadata
 - External links vary
- MusicBrainz
 - Potentially useful links to recordings
- DBpedia

Existing Resources

- Other sources:
 - BBC
 - YouTube
 - IMSLP

Alignment methods

- Automatic alignment using string queries via http APIs
- Manual verification
- Sources:
 - VIAF
 - DBpedia

Verifying alignments

Update
Next Page

Balthasar	<div>Waltz, Balthasar</div> <div>Multiple? <input type="checkbox"/></div>		Alptraum Erzählungen; Ein Alibi für Papa Kunze (Un alibi pentru papa Kunze, dt.) Kurzprosa; Heimat - gerettete Zunge Visionen und Fiktionen deutsch- sprachiger Autoren aus Rumänien; Widerlinge; Ein Alibi für Papa Kunze Kurzprosa
Briault	<div>Briault, Marianne</div> <div>Multiple? <input type="checkbox"/></div>		
Claude Emond	<div>Emond, Claude</div> <div>Multiple? <input type="checkbox"/></div>		Nanotechnology and human health, 2014:
Garnier (Grenier)	<div>DuGuernier, Louis 1614-1659</div> <div>Multiple? <input type="checkbox"/></div>	DuGuernier, Louis 1614-1659	
Annibale Marchese	<div>Porrone, Annibale, marchese</div> <div>Multiple? <input type="checkbox"/></div>		
Friedrich Nettesheim	<div>Nettesheim, Friedrich</div> <div>Multiple? <input type="checkbox"/></div>	Nettesheim, Friedrich	Bijdrage tot den veldtogt van prins Willem van Oranje in 1572; Geschichte der Schulen im alten Herzogthum Geldern : ein Beitrag zur Geschichte des Unterrichtswesens Deutschlands und der Niederlande; Geschichte der Schulen im alten Herzogthum Geldern und in den bena*. -; Geschichte der Stadt und des Amtes Geldern ...; Geschichte der Stadt u
Pignard	<div>Pignard, Isabelle</div> <div>Multiple? <input type="checkbox"/></div>		ANALYSE DES SIGNES RADIOGRAPHIQUES DES OS SESAMOIDES DISTAUX SUR UNE POPULATION DE 761 CHEVAUX : EVOLUTION ET TOLERANCE SUR 120 CHEVAUX ENTRE 3 ET 6 ANS; La modernisation de Croizet entre 1870 et 1914
N Piltz	<div>Piltz, Wendy</div> <div>Multiple? <input type="checkbox"/></div>		Play practice : engaging and developing skilled players from beginner to elite; Play practice, c2013:
Prahl	<div>Prahl, Adam.</div> <div>Multiple? <input type="checkbox"/></div>		Projektowanie i synteza analogów bradykininy o spodziewanej czynności antagonistycznej; Projektowanie, chemiczna synteza oraz badania aktywności inhibitorów proteinaz serynowych
Hans Volkmann	<div>Volkmann, Hans Daniel 1878-1944</div> <div>Multiple? <input type="checkbox"/></div>		

Update

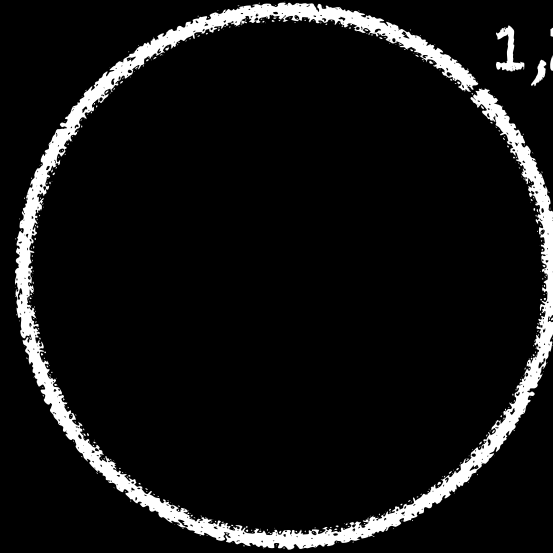
People:

ECOLM: 198

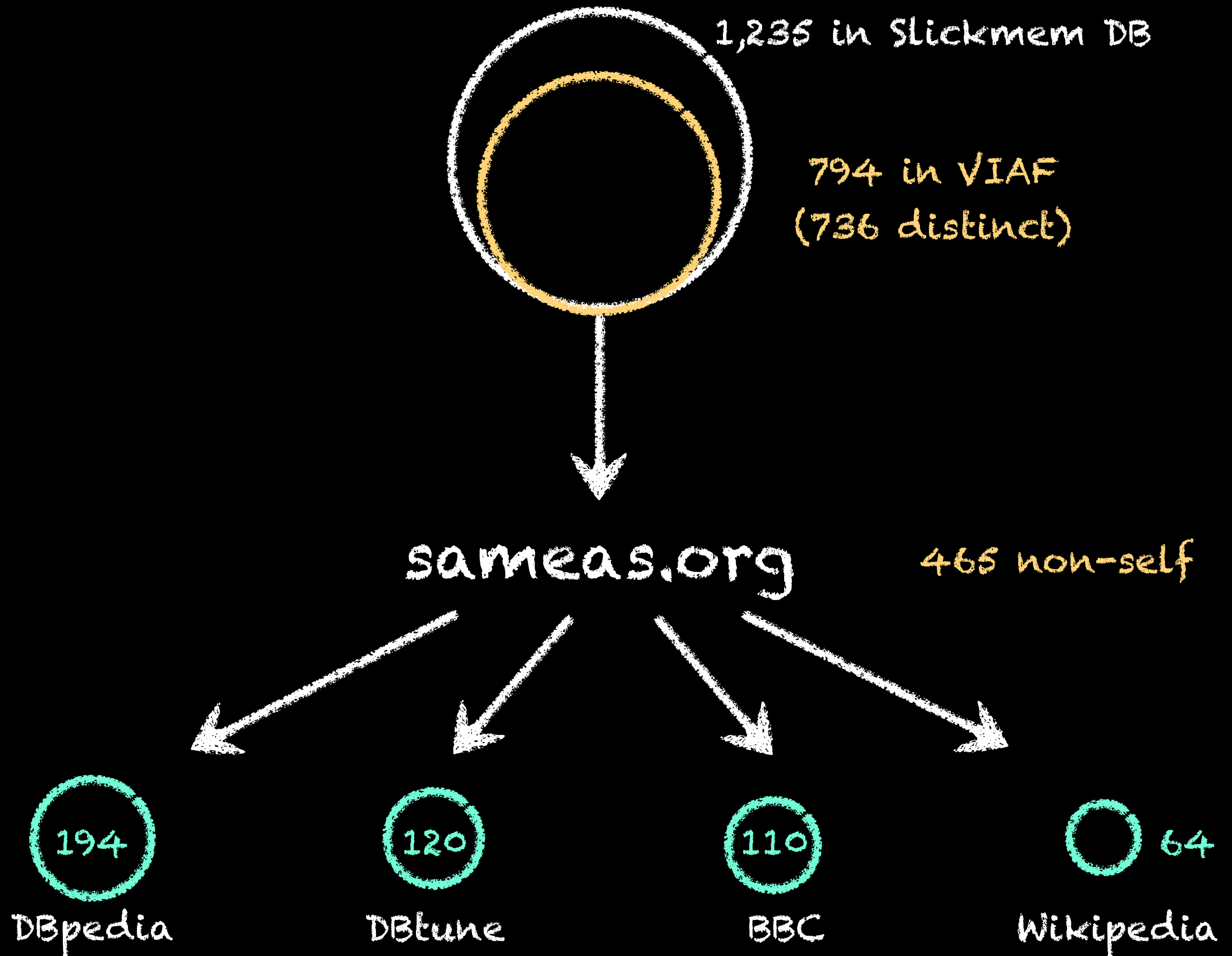
EMO: 1,037

1,235

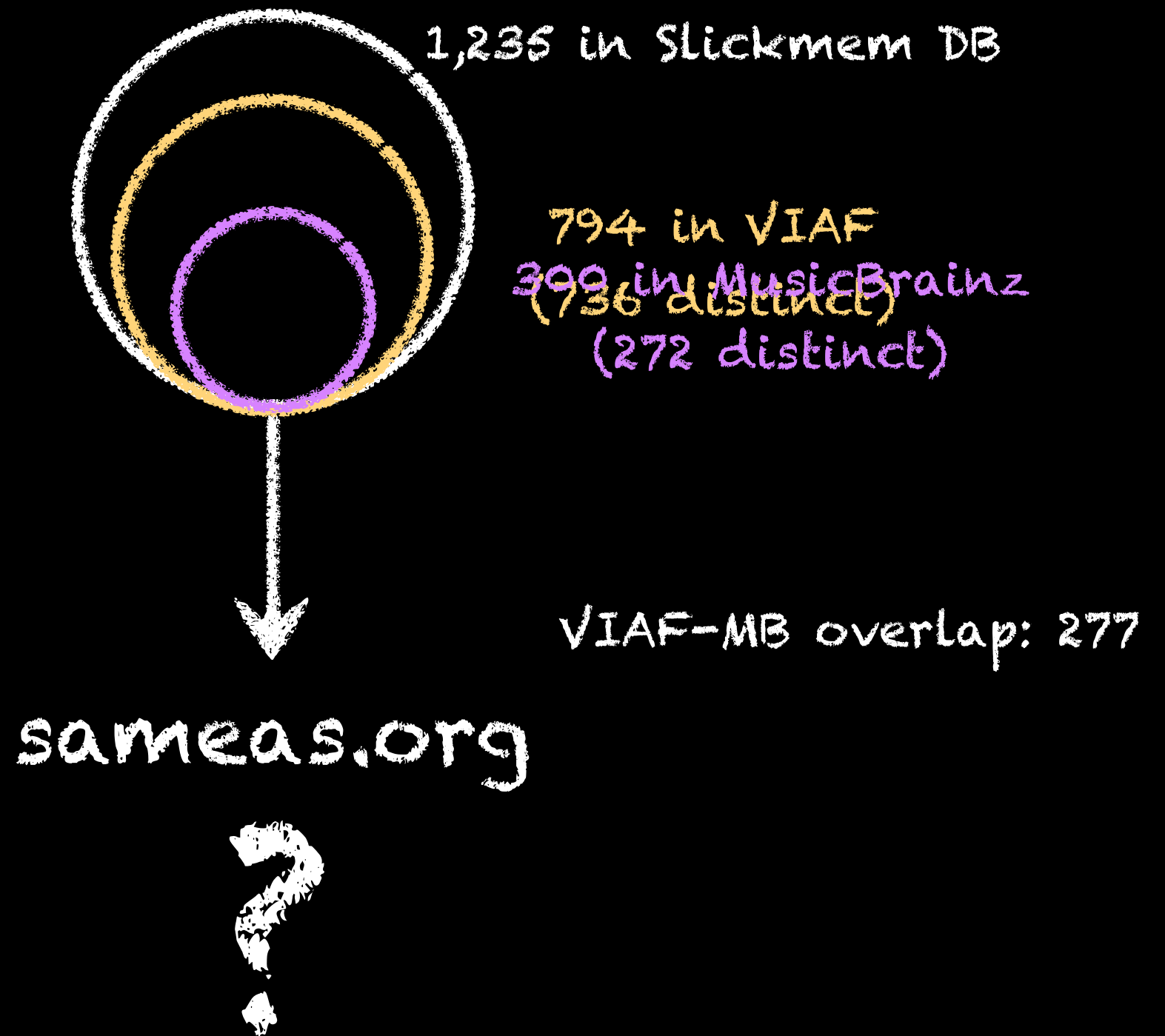
1,235 in Slickmem DB



People:



People:

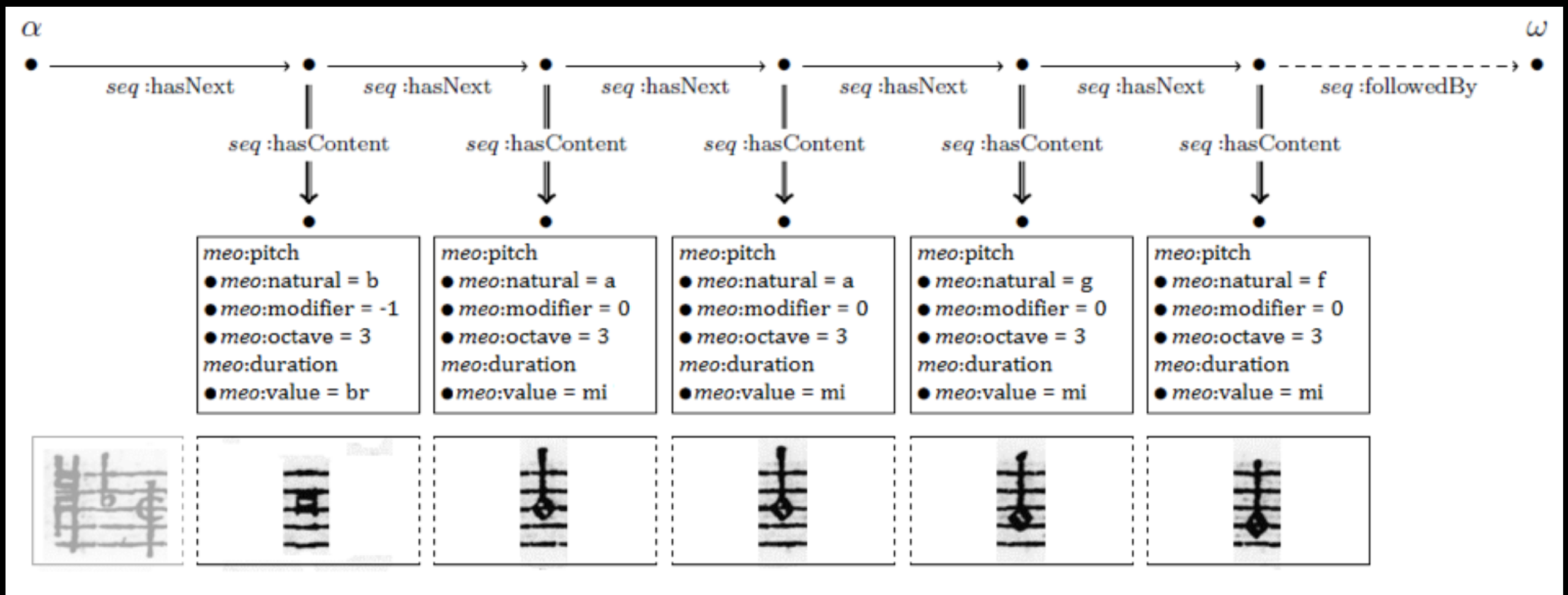


What can we do?

- Publish places and people, and relate them to music books in our collections
- Link outwards to VIAF, MusicBrainz and DBpedia
- Provide new sameAs links between external resources

Representing musical structure in OWL-DL

Example: Incipit in SEQ representation



DL-Based Queries

‘b’ at start

$$[\alpha] \triangleright [meo : \text{natural.b}]$$

‘b’ somewhere

$$[\alpha] \cdots [meo : \text{natural.b}]$$

breve followed by 2 minims

$$[meo : \text{duration.meo : value br}] \triangleright [meo : \text{duration.meo : value mi}] \\ \triangleright [meo : \text{duration.meo : value mi}]$$

breve ‘b’ followed by ‘a’

$$\left[\begin{array}{c} \text{meo:natural b} \\ \sqcap \text{meo:duration.meo:value br} \end{array} \right] \triangleright \left[\text{meo:natural b} \right]$$

- Use of standard DL reasoner
- Also useable with Chord Ontology, Segment Ontology etc.

What will we add?

- Information about works
- Notated musical content
- Links to facsimile images
- And, maybe:
 - Partially automated links to
 - IMSLP
 - Audio sources
 - Concert programs/BBC playlists

...and more

- Linked data in musicology:



www.transforming-musicology.org

Thank you

<http://slickmem.data.t-mus.org>

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