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Knowledge extraction and modelling in the project *Thesaurus Musicarum Germanicarum*

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IREMUS

Knowledge extraction and modelling in the project *Thesaurus Musicarum Germanicarum*

- 1. *Thesaurus Musicarum Germanicarum* in short...**
- 2. Ontologies and their application to music-theoretical sources**
- 3. Benefits from a musicological and historical perspective**
- 4. Current limitations and challenges**

1. *Thesaurus Musicarum Germanicarum* in short...

<http://tmg.huma-num.fr/>



The screenshot shows the homepage of the *Thesaurus Musicarum Germanicarum* (TMG) website. At the top left is the TMG logo with the text "Thesaurus Musicarum Germanicarum". To the right is a snippet of a medieval manuscript showing musical notation on staves with square neumes and Latin text. Below the logo is a navigation menu with the following items: SOURCES, ÉDITIONS, ÉTUDES, COLLABORATEURS, LOGICIELS, DISCUSSION. The main content area is titled "THESAURUS MUSICARUM GERMANICARUM" and contains three paragraphs of text. The first paragraph describes the project's focus on the theory of Germanic music from Conrad von Zabern to Johann Mattheson. The second paragraph discusses the history of electronic editions of music. The third paragraph lists the project's goals, including providing access to sources and creating digital tools. On the right side of the page, there is a "CALENDER" section listing several events, including a workshop in Berlin (2019), a notice update (2018), and presentations at the CNRS forum (2017) and SHS salon (2017).

THESAURUS MUSICARUM GERMANICARUM

Le projet *Thesaurus Musicarum Germanicarum* étudie la théorie musicale allemande de Conrad von Zabern à Johann Mattheson sous l'aspect de l'histoire, de l'évolution et de la théorisation du langage musical. Ces sources constituent une clef essentielle pour la compréhension de la musique occidentale. Elles livrent un accès privilégié aux savoirs musicaux et reflètent, à travers ces connaissances, l'imprégnation croissante de la pensée humaniste qui entraîne au 17^e siècle un bouleversement de premier ordre dans la musique occidentale.

L'édition électronique d'écrits sur la musique a débuté dès les années 1990 à travers des projets portant sur les sources latines, italiennes, anglaises, françaises et espagnoles. En raison de leur complexité théorique, linguistique, mais aussi typographique, les écrits de la sphère germanique se situent cependant en marge de ce processus et n'ont fait l'objet d'aucune exploitation musicologique systématique par les moyens dont nous disposons à l'ère du numérique.

TMG comble cette lacune grâce à une collaboration internationale et pluridisciplinaire, rassemblant musicologues, chercheurs en humanités numériques, historiens (des sociétés, de la philosophie et des sciences), philologues et spécialistes du livre dans le but d'atteindre trois objectifs :

- 1. Fournir un accès intégral aux sources concernées.** Le statut des sources germaniques est lié, en partie, aux caractères d'impression italiens et gothiques qui se soustraient pour l'heure aux logiciels OCR. TMG procède à la saisie avec post-traitement informatisé des textes, exemples musicaux et tableaux. Sur ces bases sont réalisées des éditions électroniques critiques au format XML (TEI.P5) répondant aux standards de l'édition scientifique (fiabilité à 99,95%) et permettant de concilier en plusieurs strates les informations de l'original (variantes typographiques, ponctuation, abréviations) avec l'édition critique moderne.
- 2. Mettre à disposition des outils informatiques pour l'étude des sources.** S'inspirant de la méthodologie du projet **TRéMir**, TMG regroupe les différentes unités textuelles dans des index qui donnent accès à des notes éditoriales assorties de renvois vers des bases de données extérieures (Europeana, Grove, TGN etc.). L'index *generalis* rassemble l'ensemble des noms de personnes, d'œuvres et de lieux et apporte des informations sur les références géographiques, chronologiques, culturelles et intellectuelles. L'index *Exempla*, qui accueille l'ensemble des citations et paraphrases, complète ces informations et pose, avec la première table, les fondements d'un travail sur la circulation des savoirs, les *auctoritates* et les réseaux intertextuels.

CALENDER

04/04/2019 - 15:30
TMG au workshop Kosmos, Berlin.

01/11/2018 - 05:30
Mise à jour des notices bibliographiques

25/11/2017 - 10:00
TMG présenté au Forum CNRS

17/05/2017 - 09:15
TMG au Salon Innovatives SHS du CNRS

17/05/2017 - 09:15
TMG au Salon Innovatives SHS du CNRS

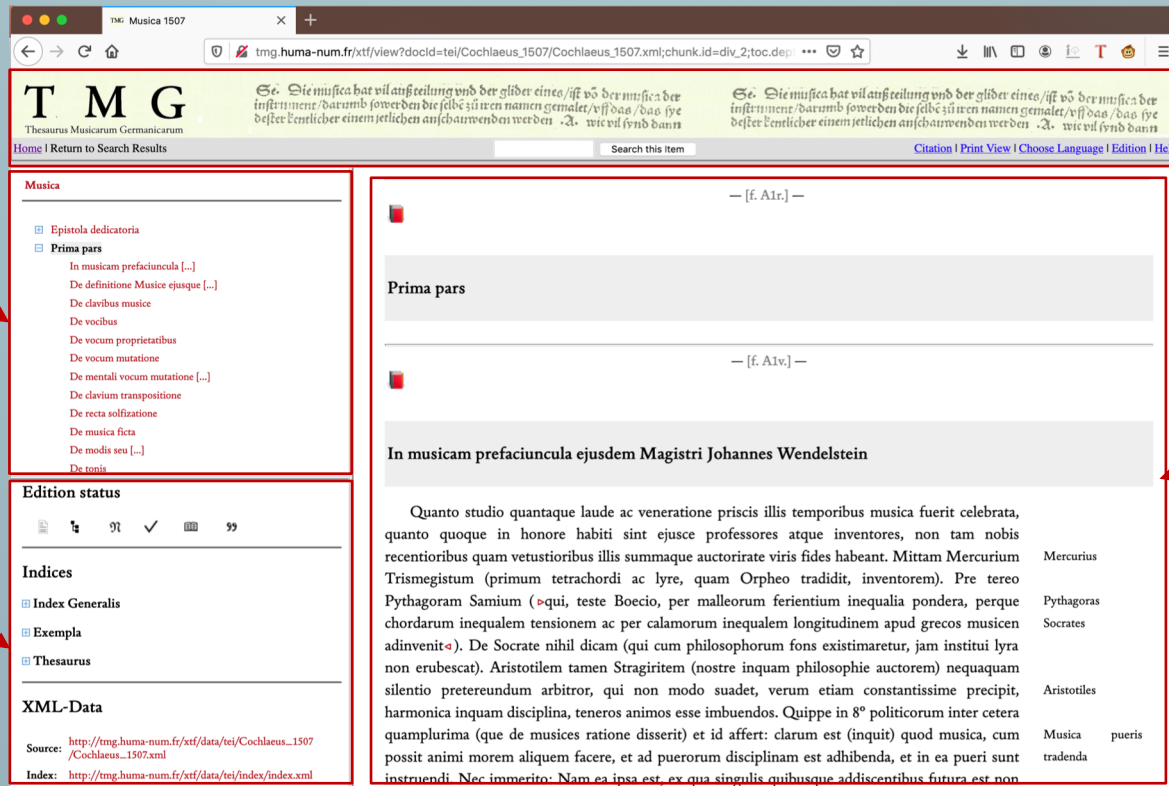
1. Thesaurus Musicarum Germanicarum in short...

<http://tmg.huma-num.fr/>

Menu and search form

Table of contents

Indices and XML-sources



The screenshot shows a web browser displaying the TMG (Thesaurus Musicarum Germanicarum) website. The page is titled "Musica 1507" and contains a table of contents on the left, a search bar at the top, and a main reading interface on the right. The table of contents lists sections such as "Epistola dedicatoria", "Prima pars", "Edition status", "Indices", and "XML-Data". The main reading interface displays the text of the "Prima pars" section, which includes a Latin passage about the history of music and its teaching.

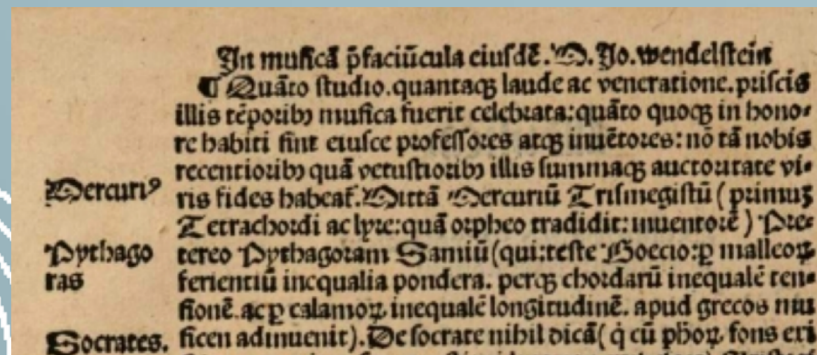
Reading interface

Johannes Cochleaus, Musica, Köln, Landen, 1507, TMG.

1. *Thesaurus Musicarum Germanicarum* in short...

- ❑ Encoding of typographical variants, punctuation and abbreviations in several layers of information from the original to the modern edition.

Johannes Cochleaus, *Musica*, Köln, Landen, 1507, TMG.



In musicam prefaciuncula ejusdem Magistri Johannes Wendelstein

Quanto studio quantaque laude ac veneratione priscis illis temporibus musica fuerit celebrata, quanto quoque in honore habiti sint ejusce professores atque inventores, non tam nobis recentioribus quam vetustioribus illis summaque auctoritate viris fides habeant. Mittam Mercurium Trismegistum (primum tetrachordi ac lyre, quam Orpheo tradidit, inventorem). Pre tereo Pythagoram Samium (qui, teste Boecio, per malleorum ferientium inequalia pondera, perque chordarum inequalem tensionem ac per calamos inequalem longitudinem apud grecos musicen adinvenit). De Socrate nihil dicam (qui cum

Mercurius
Pythagoras
Socrates

Regularization and Normalization:

- Keep abbreviations
- Keep typographical variants
- Keep punctuation
- Keep line breaks

1. Thesaurus Musicarum Germanicarum in short...

☐ Identification of names, places and dates

— [f. A1v.] —

In musicam prefaciuncula ejusdem Magistri **Johannes Wendelstein**

Quanto studio quantaque laude ac veneratione priscis illis temporibus musica fuerit celebrata, quanto quoque in honore habiti sint ejusce professores atque inventores, non tam nobis recentioribus quam vetustioribus illis summaque auctoritate viris fides habeant. Mittam **Mercurium Trismegistum** (primum tetrachordi ac lyre, quam **Orpheo** tradidit, inventorem). Pre tereo **Pythagoram Samium** (▷qui, teste **Boecio**, per malleorum ferientium inequalia pondera, perque chordarum inequalem tensionem ac per calamarum inequalem longitudinem apud **grecos** musicen adinvenit◀). De **Socrate** nihil dicam (qui cum philosophorum fons existimaretur, jam institui lyra non erubescat). **Aristotilem** tamen **Stragiritem** (nostre inquam philosophie autorem) nequaquam silentio pretereundum arbitror, qui non modo suadet, verum etiam constantissime precipit, harmonica inquam disciplina, teneros animos esse imbuendos. Quippe in 8° **politicorum** inter cetera quamplurima (que de musicis ratione disserit) et id affert: clarum est (inquit) quod musica, cum possit animi morem aliquem facere, et ad puerorum disciplinam est adhibenda, et in ea pueri sunt instruendi. Nec immerito: Nam ea ipsa est, ex qua singulis quibusque addiscentibus futura est non modica jocunditas cujus meminit **Aristotiles**, inquiens: fatemur enim omnes musicam esse ex jocundissimis et musicum carmen dulcissimam rem esse mortalibus. Nec minor ex ea expectatur dignitas, de qua mentionem facit **Quintilianus** in primo **institutionis**, dum inquit: ▷Nam quis ignorat? Musicen tantum illis jam antiquis temporibus non studii modo verum etiam venerationis habuisse, ut iidem musici et vates et sapientes judicarentur◀. Utilitas vero musicæ minime parvipendenda est. De qua **Aristotiles** in loco nuper jam dicto inquit: ▷Dicimus autem non unius utilitatis gratia oportere musica uti sed multarum nam et doctrine gratiæ et purificationis. Tertio degendi oculi quietisque causa et remissionis curarum patet omnibus **harmonis** esse utendum. ◀ Antiquitatis autem eminentia musica cunctis prestare videtur disciplinis. Testante **Quintiliano** et **Tymagenes** autor est omnium in literis studiorum antiquissimam musicen exitisse. ◀ ▷Non igitur (inquit ipse) frustra **Plato** civili viro (quem politicum vocant) necessariam musicen credidit. ◀ ▷Atque eam natura ipsa videtur ad tolerandos facilius labores veluti muneris no◀

- Mercurius
- Pythagoras
- Socrates
- Aristotiles
- Musica pueris tradenda
- Jocunditas musicæ
- Aristotiles
- Dignitas
- Quintilianus
- Utilitas
- Aristotiles
- Antiquitas musicæ
- Quintiliano
- Plato

Person

tmg.huma-num.fr/xtf/view?docId=tei/index/index.xml&doc.view=popup& ...

Marcus Fabius Quintilianus

Surname: Quintilianus
Forename: Marcus Fabius
Birth: Calagurris, 30-35 n. Chr.
Death: Rom, nach 94 n. Chr.
GND: 118597396
Grove: ↗
Wikipedia: ↗

Marcus Fabius QUINTILIANUS, "Institutio Oratoria", *Itinera Electronica Du texte à l'hypertexte*. Online: [Link zur Ressource Itinera Electronica](#)

Indices

☐ Index Generalis

Alexander III
▷ S. [f. A2r.]

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▷ S. [f. A2r.]

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▷ S. [f. C3r.]

Methymnaeus, Arion
▷ S. [f. A2r.] ▷ S. [f. A2r.]

Aristoteles
▷ S. [f. A1v.] ▷ S. [f. A1v.] ▷ S. [f. A1v.] ▷ S. [f. A1v.] ▷ S. [f. A1v.]
▷ S. [f. A1v.] ▷ S. [f. A1v.] ▷ S. [f. B2v.] ▷ S. f. C1r. ▷ S. f. C1r. ▷ S. [f. C4r.] ▷ S. [f. C4r.] ▷ S. [f. E3v.] ▷ S. f. F1r.

1. Thesaurus Musicarum Germanicarum in short...

□ Identification of citations and paraphrases

— [f. A1v.] —

In musicam prefaciuncula ejusdem Magistri Johannes Wendelstein

Quanto studio quantaque laude ac veneratione priscis illis temporibus musica fuerit celebrata, quanto quoque in honore habiti sint ejusce professores atque inventores, non tam nobis recentioribus quam vetustioribus illis summaque auctoritate viris fides habeant. Mittam Mercurium Trismegistum (primum tetrachordi ac lyre, quam Orpheo tradidit, inventorem). Pre tereo Pythagoram Samium, qui, teste Boecio, per malleorum ferientium inequalia pondera, perque chordarum inequalem tensionem ac per calamarum inequalem longitudinem apud grecos musicen adinvenit. De Socrate nihil dicam (qui cum existimaretur, jam institui lyra non erubescat). Aristotilem tamen Stragiritem (nostrum auctorem) nequaquam silentio pretereundum arbitror, qui non modo suadet, verum precipit, harmonica inquam disciplina, teneros animos esse imbuendos. Quippe in 8° p. quum plurima (que de musices ratione disserit) et id affert: clarum est (inquit) quod morem aliquem facere, et ad puerorum disciplinam est adhibenda, et in ea pueri sunt instituti. Nam ea ipsa est, ex qua singulis quibusque addiscentibus futura est non modica jocunditas. Aristotiles, inquit: fatemur enim omnes musicam esse ex jocundissimis et musicum carere esse mortalibus. Nec minor ex ea expectatur dignitas, de qua mentionem facit Cochleus institutionis, dum inquit: ▶ Nam quis ignorat? Musicen tantum illis jam antiquis temporibus verum etiam venerationis habuisse, ut iidem musici et vates et sapientes judicarentur, minime parvipendenda est. De qua Aristotiles in loco nuper jam dicto inquit: ▶ Dicitur utilitatis gratia oportere musica uti sed multarum nam et doctrine gratia et purificationis quietisque causa et remissionis curarum patet omnibus harmoniis esse utendum. ◀ Antiqua musica cunctis prestare videtur disciplinis. Testante Quintiliano et ▶ Tymagenes autor studiorum antiquissimam musicen extitisse. ◀ ▶ Non igitur (inquit ipse) frustra Plato civili vocant) necessariam musicen credidit. ◀ ▶ Atque eam natura ipsa videtur ad tolerandos muneris no

Johannes Cochleus, Musica, Köln, Landen, 1507, TMG.

Implicit citation

tmg.huma-num.fr/xtf/view?docId=tei/Cochlaeus_...

Anicius Manlius Severinus BOETHIUS, *De institutione musica*. Lib. 1, 10. **TML**

[Close this Window](#)

BOEDIM1_TEXT

boethius.music.indiana.edu/tml/6th-8th/BOEDIM1

Caput X.

Quemadmodum Pythagoras proportiones consonantiarum investigaverit.

Haec igitur maxima causa fuit cur, relicto aurium judicio, Pythagoras ad regularum momenta migraverit, qui nullius humanis auribus credens, quae partim natura, partim etiam extrinsecus accidentibus permutantur, partim ipsis variantur aetatibus, nullis etiam deditis instrumentis, penes quae saepe multa varietas atque inconstantia nasceretur, dum nunc quidem si nervos velis aspicere, vel aer humidior pulsus obtunderet, vel siccor exsiccaret, vel magnitudo chordae graviorem redderet sonum, vel acumen subtilior tenuaret, vel alio quodam modo statum prioris constantiae permutaret. Et cum idem esset in caeteris instrumentis, omnia haec inconsulta minimaque aestimans fidei, diuque aestuans inquirebat quam ratione firmiter et constanter consonantiarum momenta ^[1177] perdisceret. Cum interea divino quodam motu praeteriens fabrorum officinas, pulsos maleos exaudivit, ex diversis sonis unam quodammodo concinentiam personare. Ita igitur ad id quod diu inquirebat attonitus, accessit ad opus: diuque considerans, arbitratus est diversitatem sonorum ferientium vires efficere. Atque ut id apertius colliqueret, mutarent inter se malleos imperavit. Sed sonorum proprietates non in hominum lacertis haerebat, sed mutatos malleos comitabatur. Ubi igitur id animadvertit, malleorum pondus examinat. Et cum quinque essent forte mallei, dupli reperti sunt pondere qui sibi secundum diapason consonantiam respondebant. Eundem etiam qui duplus esset alio, sesquiertium alterius comprehendit, ad quem scilicet

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Highlight All Match Case Match Diacritics Whole Words 1 of 1 match

1. Thesaurus Musicarum Germanicarum in short...

☐ Identification of musical terms

— [f. A1v.] —

In **musicam** prefaciuncula ejusdem Magistri Johannes Wendelstein

Quanto studio quantaque laude ac veneratione priscis illis temporibus **musica** fuerit celebrata, quanto quoque in honore habiti sint ejusce professores atque inventores, non tam nobis recentioribus quam vetustioribus illis summaque auctoritate viris fides habeant. Mittam Mercurium Trismegistum (primum **tetrachordi** ac **lyre**, quam Orpheo tradidit, inventorem). Pre tereo Pythagoram Samium (►qui, teste Boecio, per malleorum ferientium inequalia pondera, perque chordarum inequalem tensionem ac per calamorum inequalem longitudinem apud grecos **musicen** adinvenit). De Socrate nihil dicam (qui cum philosophorum fons existimaretur, jam institui **lyra** in erubescat). Aristotilem tamen Stragiritem (nostre inquam philosophie auctorem) nequaquam silentio pretereundum arbitror, qui non modo suadet, verum etiam constantissime precipit, harmonica inquam disciplina, teneros animos esse imbuendos. Quippe in 8^o politicorum inter cetera quamplurima (que de **musicis** ratione disserit) et id afferit: clarum est (inquit) quod **musica**, cum possit animi morem aliquem facere, et ad puerorum disciplinam est adhibenda, et in ea pueri sunt instruendi. Nec immerito: Nam ea ipsa est, ex qua singulis quibusque addiscentibus futura est non modica jocunditas cujus meminit Aristotiles, inquis: fatemur enim omnes **musicam** esse ex jocundissimis et **musicum** carmen dulcissimam rem esse mortalibus. Nec minor ex ea expectatur dignitas, de qua mentionem facit Quintilianus in primo institutionis, dum inquit: ►Nam quis ignorat? Musicen tantum illis jam antiquis temporibus non studii modo verum etiam veneratonis habuisse, ut iidem **musici** et vates et sapientes judicarentur◄. Utilitas vero **musicæ** minime parvipendenda est. De qua Aristotiles in loco nuper jam dicto inquit: ►Dicimus autem non unius utilitatis gratia oportere **musica** uti sed multarum nam et doctrine gratia et purificationis. Tertio degendi ocii quietisque causa et remissionis curarum patet omnibus **harmoniis** esse utendum. ◄ Antiquitatis autem eminentia **musica** cunctis prestare videtur disciplinis. Testante Quintiliano et ►Tymagenes autor est omnium in literis studiorum antiquissimam **musicen** extitisse. ◄ ►Non igitur (inquit ipse) frustra Plato civili viro (quem politicum vocant) necessariam **musicen** credit. ◄ ►Atque eam natura ipsa videtur ad tolerandos facilis labores veluti muneri no◄

Mercurius
Pythagoras
Socrates
Aristotiles
Musica pueris tradenda
Jocunditas musicæ,
Aristotiles
Dignitas
Quintilianus
Utilitas
Aristotiles
Antiquitas musicæ
Quintilianus
Plato

Thesaurus

tmg.huma-num.fr/xtf/view?docId=tei/index/index.xml&doc.view=poi ***

Lyra

1 [f. A1r.]	[...] O juvenes? Perparva hunc mole libellum Sumite mente pia, quem pius edit amor. Remacli Florenatis Hexastichon Si tibi threjcium vis conciliare leporem Et testudinee plectra canora	lyre Suscipe dyrceos helyconis gurgite fontes Artificis referes muneta grata chelis Addidit ad musas Coclei cura Johannis Que non livor edax rumpere dente queat. Prima pars In musicam prefaciuncula eju [...]
2 [f. A1v.]	[...] s summaque auctoritate vi Mercurius ris fides habeant. Mittam Mercurium Trismegistum (primum tetrachordi ac	lyre , quam orpheo Orpheo tradidit, inventorem). Pre tereo Pythagoram Pythagoras Sami [...]
3 [f. A1v.]	[...] enit). De Socrate nihil dicam (qui cum philosophorum fons exi stimaretur, jam institui	lyra non erubescat). Aristoti lem tamen Stragiritem (nostre inquam philosophie au [...]

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Indices

☐ Index Generalis

☐ Exempla

☐ Thesaurus

Longa

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 ► S. [f. C2r.] ► S. [f. C2r.] ► S. [f. C2v.] ► S. [f. C3r.] ► S. [f. C3r.]
 ► S. [f. C3r.] ► S. [f. C3r.] ► S. [f. C3r.] ► S. [f. C3r.] ► S. [f. C3r.]
 ► S. [f. C3v.] ► S. [f. C4v.] ► S. f. D1r. ► S. f. D1r. ► S. f. D1r. ► S. {f. D1v.}
 ► S. {f. D1v.} ► S. {f. D1v.} ► S. {f. D1v.} ► S. [f. D2r.] ► S. [f. D2v.] ► S. [f. D3r.]
 ► S. [f. E2r.]

Lyra

► S. [f. A1r.] ► S. [f. A1v.] ► S. [f. A1v.]

Major

2. Ontologies and their application to music-theoretical sources

From terms to concepts

- ❑ Our point of departure is a theoretical source with its musical terms:
 - A term can have different meanings within the same text.
 - Different terms may refer to the same idea.
 - Terms can change their meaning in time.
 - Some ideas may be described without being labelled with a particular term.
- ❑ What we want to do:
 - Grasp the concepts behind the words.
 - Understand how these concepts relate to each other, interact and evolve in time.
 - Define these concepts in a formal way in order to make them machine readable, comparable and sharable.
- ❑ We cannot rely on SKOS (Simple Knowledge Organization System) but need the full expressive power of OWL (Web Ontology Language).
- ❑ BUT: Our ontologies can be reduced to SKOS and made compliant with it.

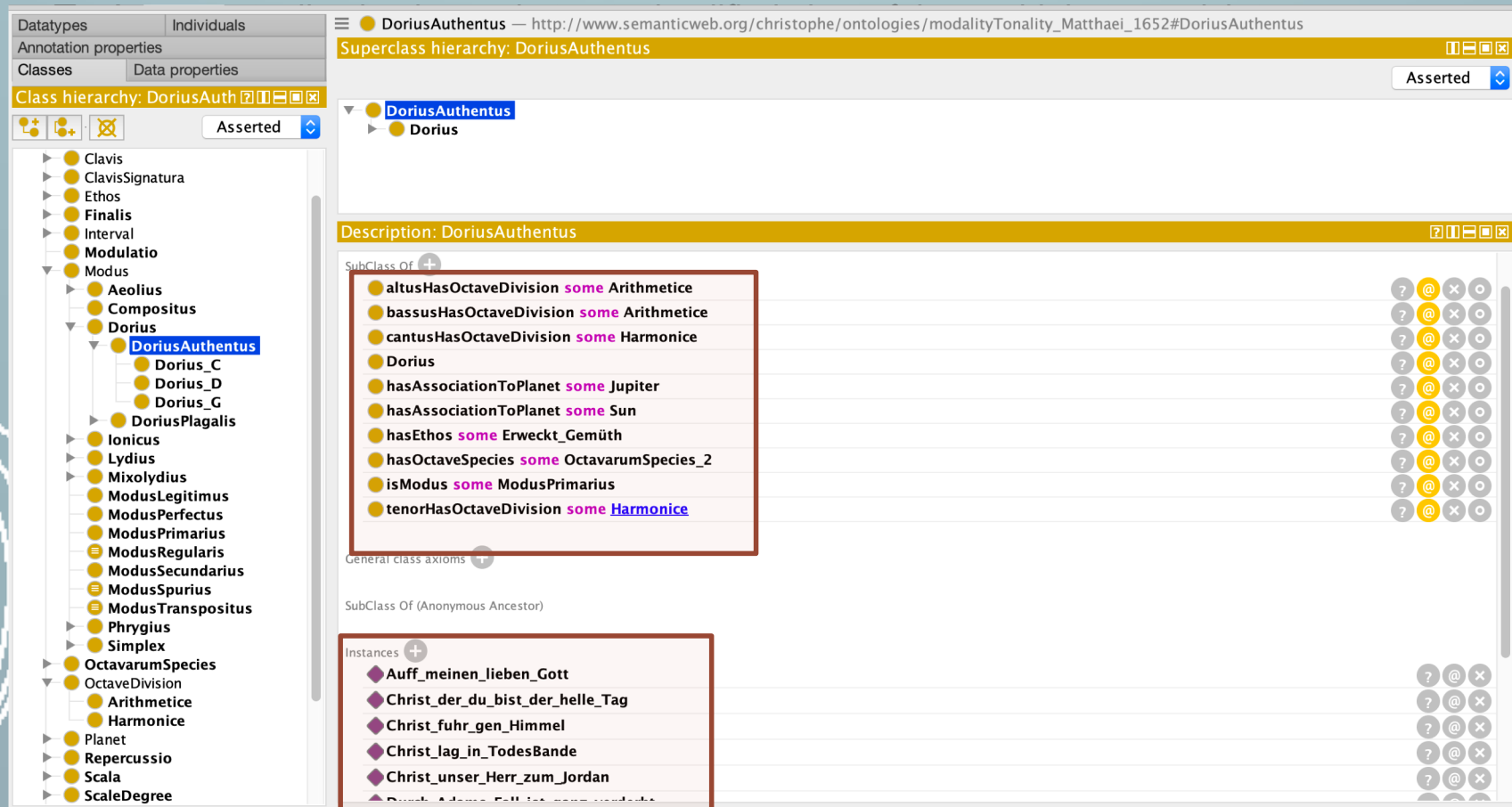
2. Ontologies and their application to music-theoretical sources

Some elements of definition

- ❑ Computational ontologies are a means to formally model the structure of a system, i.e., the relevant entities and relations that emerge from its observation, and which are useful to our purposes (Guarino et al. 2009).
- ❑ The underlying conceptualisation of the system to be modelled is “formal”, “explicit” and “shared” (Studer et al 1998).

2. Ontologies and their application to music-theoretical sources

Conceptualisation



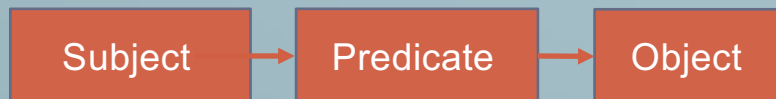
The screenshot displays a Semantic Web browser interface for the ontology `http://www.semanticweb.org/christophe/ontologies/modalityTonality_Matthaei_1652#DoriusAuthentus`. The left sidebar shows a class hierarchy tree with `DoriusAuthentus` selected. The main content area is divided into three sections:

- Superclass hierarchy: DoriusAuthentus**: Shows `DoriusAuthentus` as a superclass of `Dorius`.
- Description: DoriusAuthentus**: Lists the following axioms:
 - `altusHasOctaveDivision some Arithmeticce`
 - `bassusHasOctaveDivision some Arithmeticce`
 - `cantusHasOctaveDivision some Harmonice`
 - `Dorius`
 - `hasAssociationToPlanet some Jupiter`
 - `hasAssociationToPlanet some Sun`
 - `hasEthos some Erweckt_Gemüth`
 - `hasOctaveSpecies some OctavarumSpecies_2`
 - `isModus some ModusPrimarius`
 - `tenorHasOctaveDivision some Harmonice`
- Instances**: Lists the following individuals:
 - `Auff_meinen_lieben_Gott`
 - `Christ_der_du_bist_der_helle_Tag`
 - `Christ_fuhr_gen_Himmel`
 - `Christ_lag_in_TodesBande`
 - `Christ_unser_Herr_zum_Jordan`

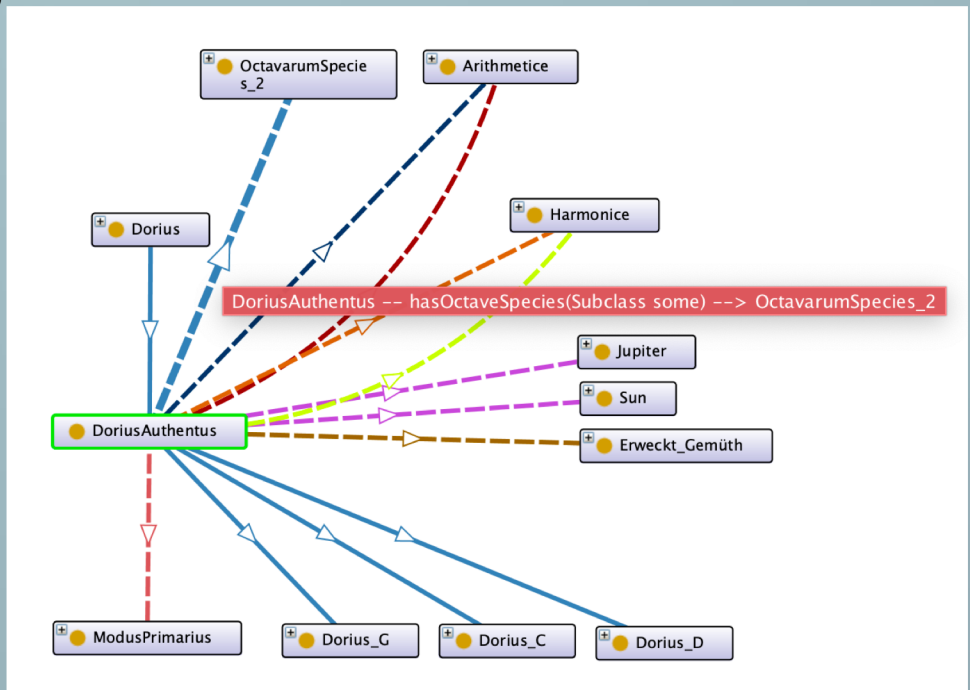
2. Ontologies and their application to music-theoretical sources

Formal and explicit representation

- ❑ The conceptualisation is formal: built on predicate logic with a vocabulary consisting of objects, properties, relations and functions.
- ❑ An atomic sentence is a predicate applied to a set of concepts according to the model:



- ❑ Objects and their relations may be characterised and specified, quantified, etc.
- ❑ The language commonly used for building ontologies – Web Ontology Language (OWL) – builds on RDF, a standard model that uses URIs to name the relationship between things in a triple.



3. Benefits from a musicological and historical perspective

Make things explicit and trackable

So ist auch dieses allhier nötig zu erinnern/ daß Ionius Modus, wenn er in Naturali vnd Regulari Systemate gesetzet/ vmb einen Ton höher; Wenn er aber in Systemate transposito gefunden/ per tertiam inferiorem aufim d. fictē, gar equemlich/ weil er in regulari zu niedrig vnd so schläffrig/ in Transpositio aber zu hoch

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hoch / vnd den Sängern vnbequem zu fingen ist/ kan Musiciret werden/ wie aus folgenden Exemplis zu sehen.

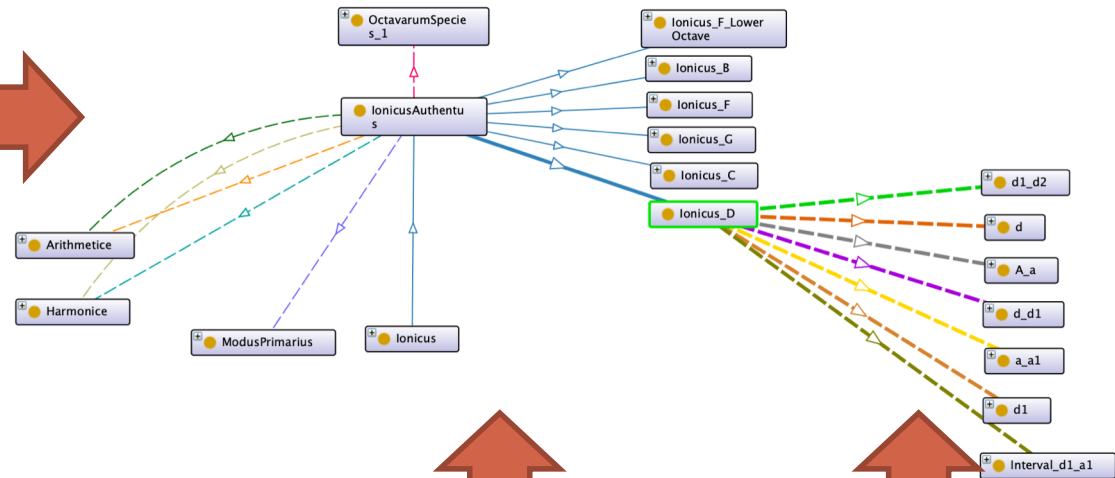
Ionius regularis. Per Tonum minorem elevarus.

Ionius transpositus. Per tertiam depreffus.



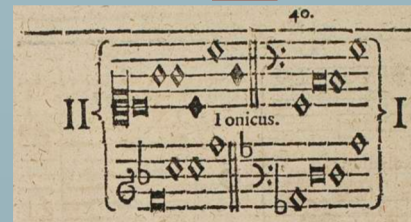
Es ist aber nicht allzeit von nöthen/ daß man in der Noten Partitur, oder auch im Generali/ Daß ein jeden Gesang in quintam oder quartam transponire, sondern nur/ wie es in den Noten an ihm selbst gefunden wird/ dahinfere vnd schreibe: Einmal die Transposition, sonderlich per quintam, in den Noten viel leichter/ als in der deutschen Buchstaben Tabulatur zu observiren vnd zu begreifen ist: dieweil man sich gar leichtlich einen andern Clavem signatam fornen an imaginiren, vnd sich dar nach richten kan. Ob aber einer oder der ander dessen nach vngewohnt/ sich anfangs so bald nicht dar in finden möcht/ der selbe kan den rechten Clavem signatam vff ein klein papirlein schreiben/ vnd fornen mit Wachs an die Linien kleben/ so hat er es vor sich/ wie ers haben wil. Zumassen ich dann in meiner Terpsichore bey etlichen Courranten zweyerley Claves signatas, propter transpositionum vff den Instrumenten fornen an gezeichnet; Vnd etwas davon vmb besserer nachrichtung willen vor die einfältigen allhier bezuzeigen/ nicht vndentlich erachte.

Praetorius, 1619, 82-83



40.

II } Ionius. } I



Praetorius, 1619, 40

Schematismus comere Hypojonici regularis.

B. T. A. C. 12. HYPOL.



Praetorius, 1619, 45

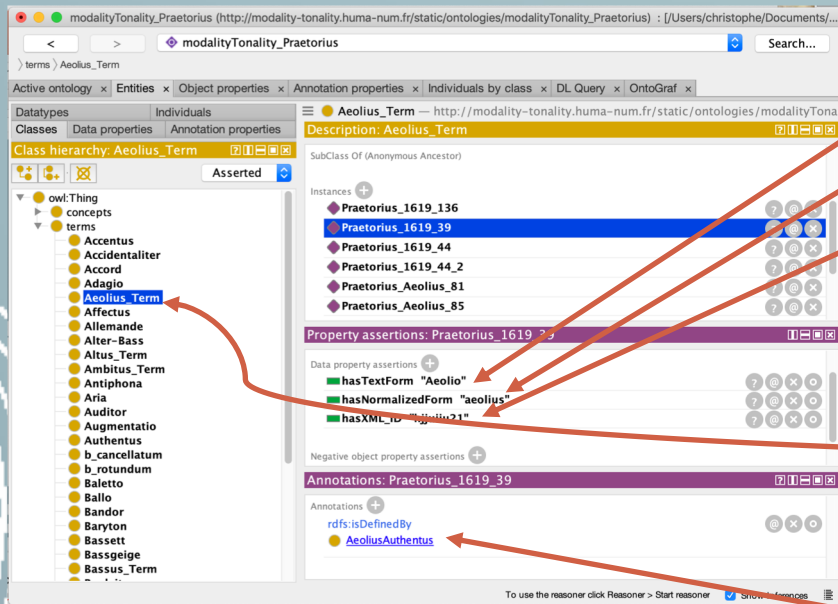
3. Benefits from a musicological and historical perspective

Make things explicit and trackable

```
<hi rend="an"><rs ref="#durus" type="thesaurus">dur</rs><pc type="t2" part="N">,</pc> per <rs ref="#quarta" type="thesaurus">quarta</rs><pc type="t2" part="N">.</pc>
<hi rend="an"><rs ref="#modus" type="thesaurus">Modi</rs> per <rs ref="#quarta" type="thesaurus">quarta</rs><pc type="t2" part="N">.</pc>
<rs ref="#tranzpositio" type="thesaurus">transponiert</rs></hi> werden<pc type="t1" part="N">.</pc>
```

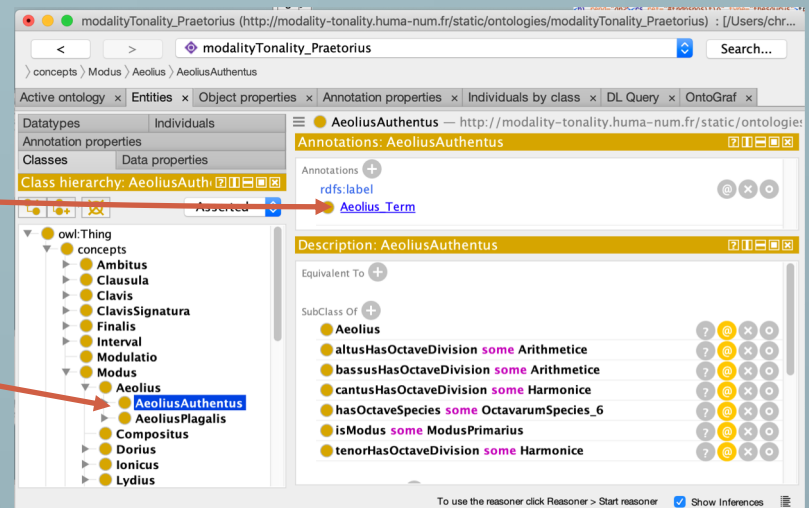
also befunden wird, Wenn er *mol, per quartam inferiorem in durum*, Wenn er aber *dur, per quintam inferiorem in mollem, naturaliter* in die *Tabulatur* oder *Partitur* von Organisten, Lautenisten und allen andern, die sich der *Fundament Instrumenten* gebrauchen, gebracht unnd *transponiret* werden muß, So befindet sich doch, daß in etlichen *Modis*, Als in *Mixolydio, Aeolio* und *Hypoionico*, wenn sie *per quintam transponiret*, eine *languidior et pigrior harmonia propter graviore sonos generiret* werde. Darumb es dann ungleich besser, und wird auch der Gesang viel frischer und anmuthiger zuhören, wenn diese *Modi per quartam ex duro in durum transponiert* werden.

Praetorius (1619), TEI edition, tagging of the term aeolius.



The screenshot shows the 'modalityTonality_Praetorius' ontology in a web browser. The left pane shows a class hierarchy with 'Aeolius_Term' selected. The right pane shows instances of 'Aeolius_Term', including 'Praetorius_1619_136', 'Praetorius_1619_39', 'Praetorius_1619_44', 'Praetorius_1619_44_2', 'Praetorius_Aeolius_81', and 'Praetorius_Aeolius_85'. Below the instances, there are sections for 'Property assertions' and 'Annotations' for the selected instance 'Praetorius_1619_39', showing data property assertions like 'hasTextForm "Aeolio"', 'hasNormalizedForm "aeolius"', and 'hasXMLID "1619_39"', and an annotation 'rdfs:isDefinedBy AeoliusAuthentus'.

Ontology of Praetorius (1612 and 1619), the term Aeolius and its instances.c

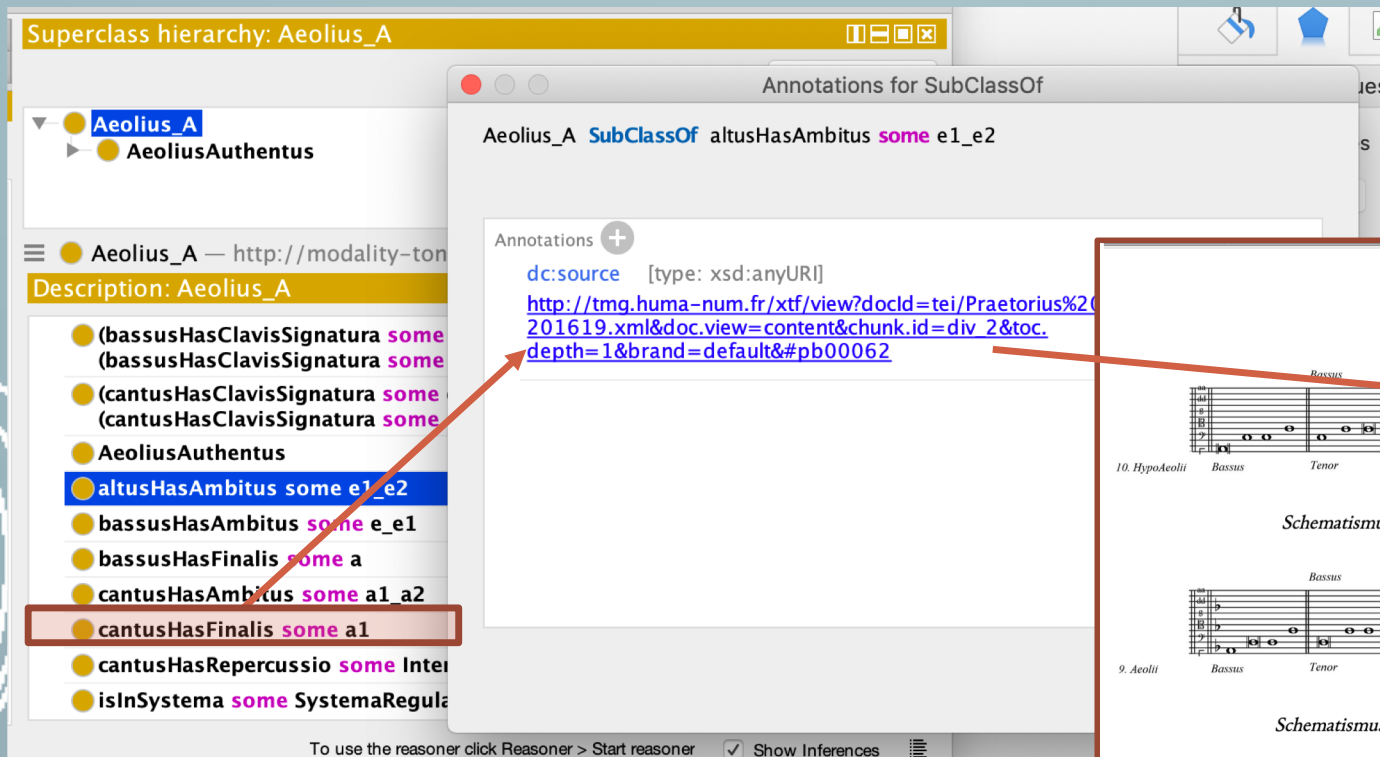


The screenshot shows the 'modalityTonality_Praetorius' ontology in a web browser. The left pane shows a class hierarchy with 'AeoliusAuthentus' selected. The right pane shows the description of 'AeoliusAuthentus', including its subClassOf relationships with 'Aeolius' and various 'hasOctaveDivision' and 'hasOctaveSpecies' properties with values like 'some Arithmetic', 'some Harmonice', and 'some OctavarumSpecies_6'. The 'Aeolius' class is also visible in the left pane.

Ontology of Praetorius (1612 and 1619), the concept aeolius and its properties.

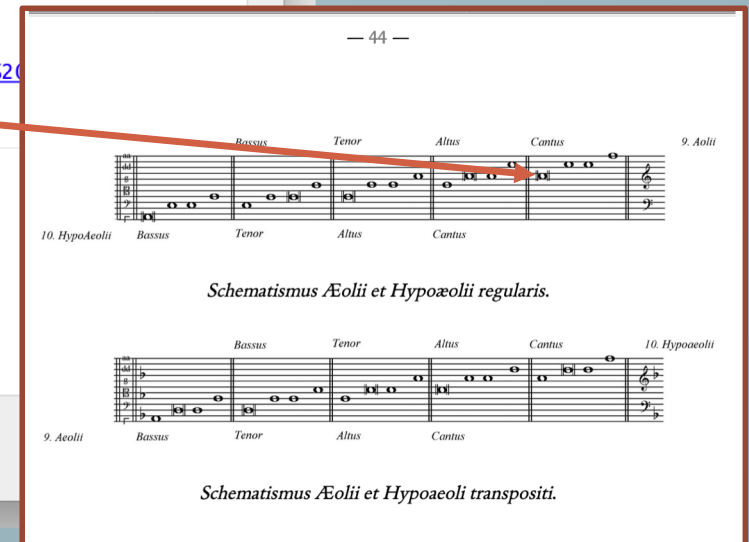
3. Benefits from a musicological and historical perspective

Make things explicit and trackable



The screenshot shows a software interface for an ontology. On the left, a tree view displays the hierarchy for 'Aeolius_A', including 'AeoliusAuthentus' and various properties like 'altusHasAmbitus some e1_e2'. A central window titled 'Annotations for SubClassOf' shows the property 'altusHasAmbitus some e1_e2' with a source URL: http://tmg.huma-num.fr/xtf/view?docId=tei/Praetorius%20201619.xml&doc.view=content&chunk.id=div_2&toc.depth=1&brand=default&#pb00062. An orange arrow points from this URL to a specific musical score in the bottom right.

Ontology of Praetorius (1612 and 1619), the concept Aeolius_A and its properties.



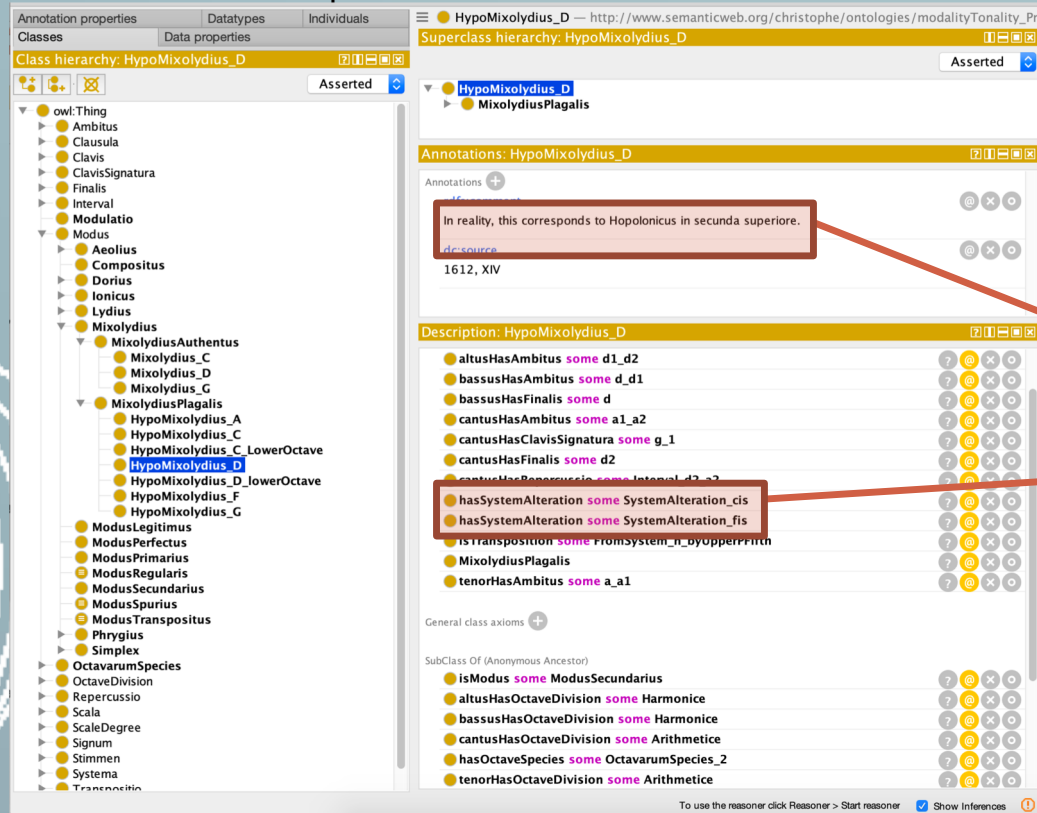
The image shows two musical staves from Praetorius's work. The top staff is labeled '10. Hypoæolii' and the bottom staff is labeled '9. Aëolii'. Both staves are divided into four parts: Bassus, Tenor, Altus, and Cantus. The title 'Schematismus Aëolii et Hypoæolii regularis.' is centered between the staves. An orange arrow from the ontology screenshot points to a specific note in the Cantus part of the top staff.

Praetorius (1619), TEI edition, p. 44.

3. Benefits from a musicological and historical perspective

Make things explicit and trackable

Comment concepts:



The screenshot shows the IREMUS ontology editor interface. On the left is a class hierarchy tree for **HypoMixolydius_D**. The main panel displays the **Annotations: HypoMixolydius_D** section, which includes a text annotation: "In reality, this corresponds to Hoplonicus in secunda superiore." with a *dc:source* of "1612, XIV". Below this is the **Description: HypoMixolydius_D** section, listing various properties such as **altusHasAmbitus**, **bassusHasAmbitus**, **cantusHasAmbitus**, **cantusHasClavisSignatura**, **cantusHasFinalis**, **hasSystemAlteration**, **isTransposition**, **MixolydiusPlagalis**, and **tenorHasAmbitus**. A red box highlights the **hasSystemAlteration** properties: **some SystemAlteration_cis** and **some SystemAlteration_fis**. Red arrows point from these highlighted properties to the corresponding musical notation in the adjacent image.



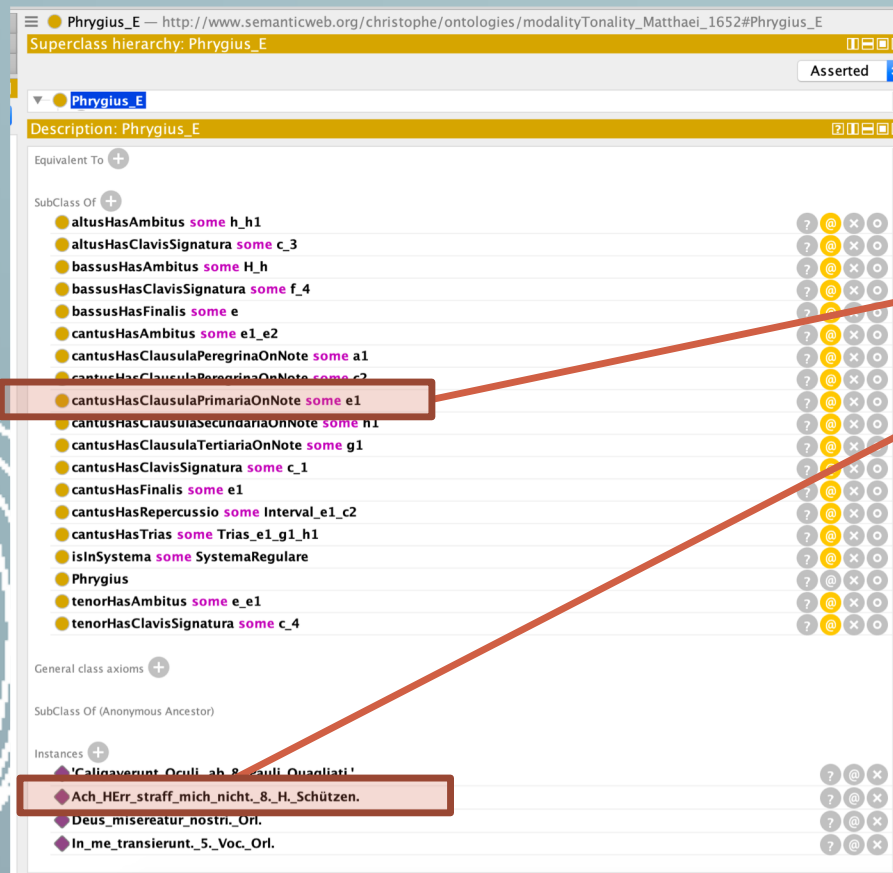
This image shows a page from Praetorius's *De Organographia* (1612, XIV), featuring musical notation for various modes. The page is divided into columns for different modes: **Hypolonicus**, **HypoMyxolydius**, and **Aeolius**. Each mode is represented by a staff with notes and clefs. The notation includes various clefs (soprano, alto, tenor, bass) and notes with accidentals. A red box highlights a specific notation: "4.2. in Quinta superiore." with a clef and notes, which is linked by a red arrow from the ontology screenshot to the **hasSystemAlteration** properties.

Ontology of Praetorius (1612 and 1619)

Praetorius (1612, XIV)

3. Benefits from a musicological and historical perspective

Relate theoretical descriptions and musical sources



Phrygius_E — http://www.semanticweb.org/christophe/ontologies/modalityTonality_Matthaei_1652#Phrygius_E
Superclass hierarchy: Phrygius_E

Asserted

Phrygius_E

Description: Phrygius_E

Equivalent To

SubClass Of

- altusHasAmbitus some h_h1
- altusHasClavisSignatura some c_3
- bassusHasAmbitus some H_h
- bassusHasClavisSignatura some f_4
- bassusHasFinalis some e
- cantusHasAmbitus some e1_e2
- cantusHasClausulaPeregrinaOnNote some a1
- cantusHasClausulaPeregrinaOnNote some c2
- cantusHasClausulaPrimariaOnNote some e1**
- cantusHasClausulaSecundariaOnNote some n1
- cantusHasClausulaTertiariaOnNote some g1
- cantusHasClavisSignatura some c_1
- cantusHasFinalis some e1
- cantusHasRepercussio some Interval_e1_c2
- cantusHasTrias some Trias_e1_g1_h1
- isInSystema some SystemaRegulare
- Phrygius
- tenorHasAmbitus some e_e1
- tenorHasClavisSignatura some c_4

General class axioms

SubClass Of (Anonymous Ancestor)

Instances

- 'Caligaverunt Oculi ab 8 oculi Quagliari'
- Ach_Herr_straff_mich_nicht_8_H_Schützen.**
- Deus_misereatur_nostri_Orl.
- In_me_transierunt_5_Voc_Orl.



50

Der 6. Psalm
Ach Herr, straf nicht nicht SWV 24
(aus Psalmen Davids op. 2) Heinrich Schütz

Psalm 6

Cantus I

Altus I

Tenor I

Bassus I

Cantus II

Altus II

Tenor II

Bassus II

Continuus

CHORUS I

CHORUS II

6 4 6 4 # 6

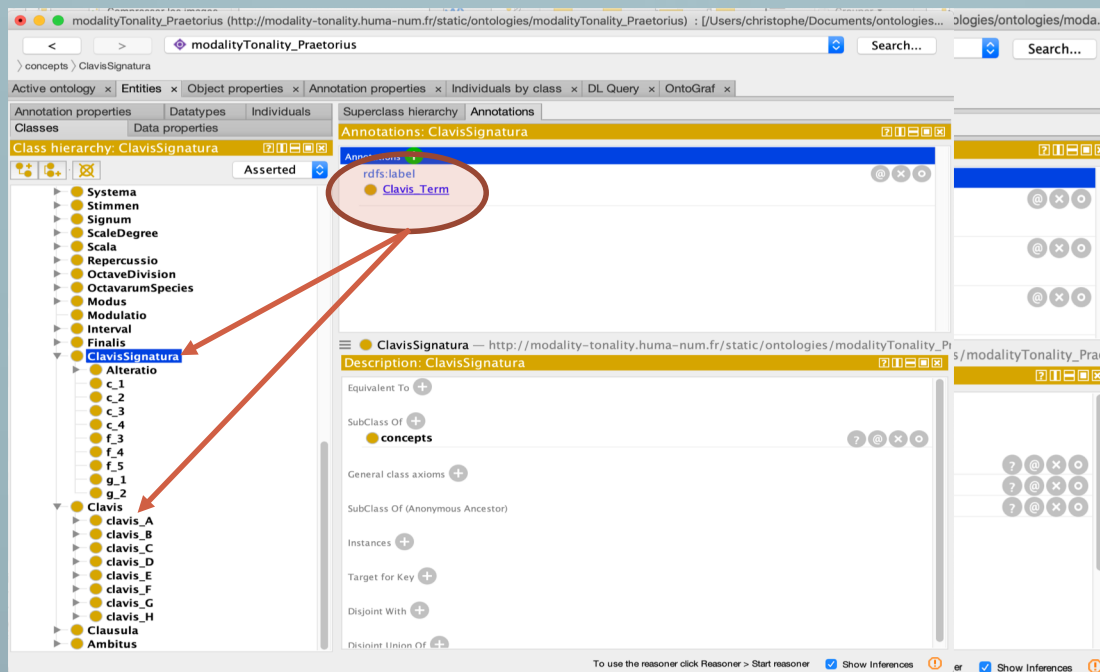
Ontology of Matthaei (1652)

IREMUS Schütz (1619), *Ach Herr, straf nicht nicht*, SWV 24, Alexander Reuter (2018)

3. Benefits from a musicological and historical perspective

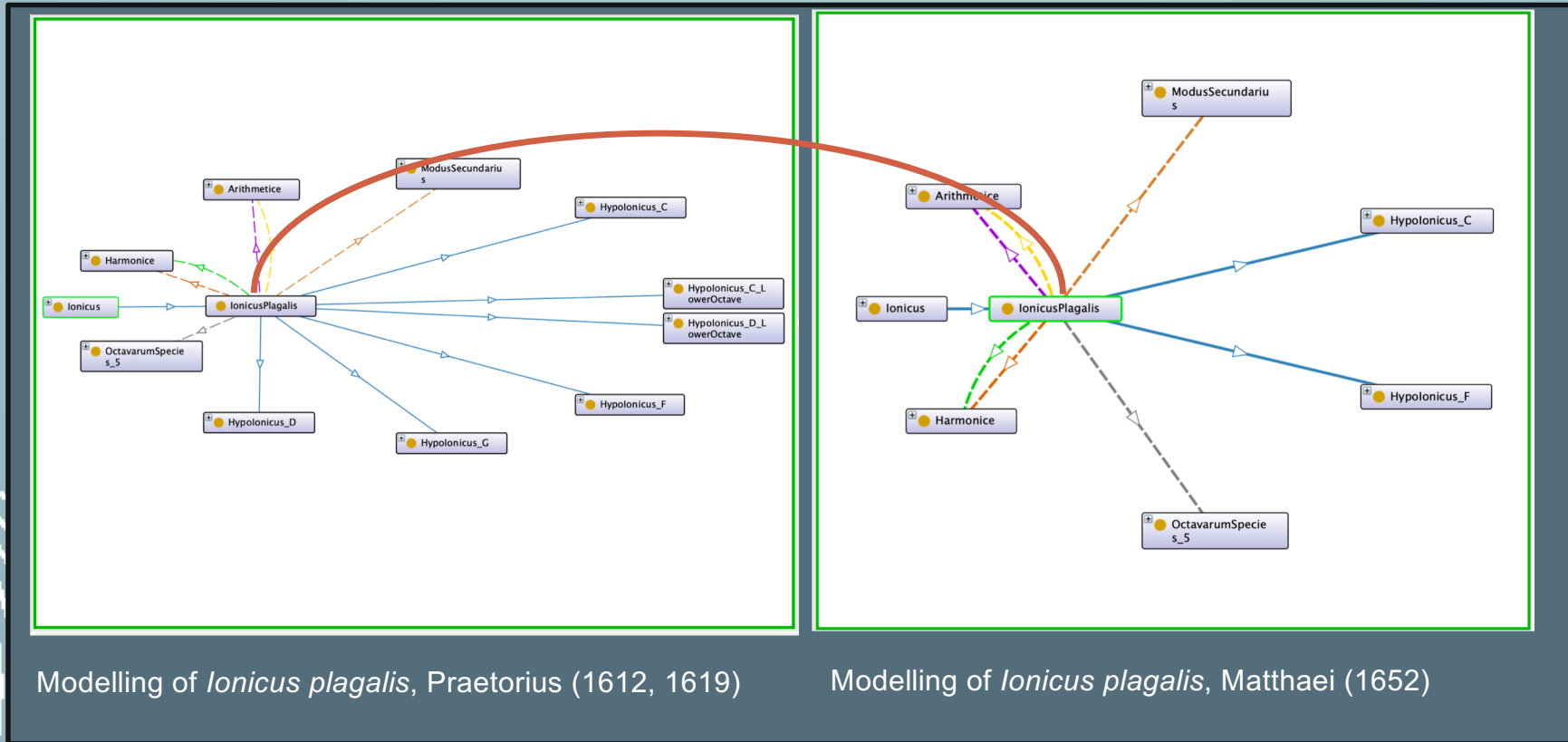
Explore, analyse and compare theoretical frameworks

- ❑ Make a clear distinction between the way a concept is labelled and its formal definition: A concept may have different names (“labels”), which all relate to the same thing. On the contrary, a single label may relate to different concepts.

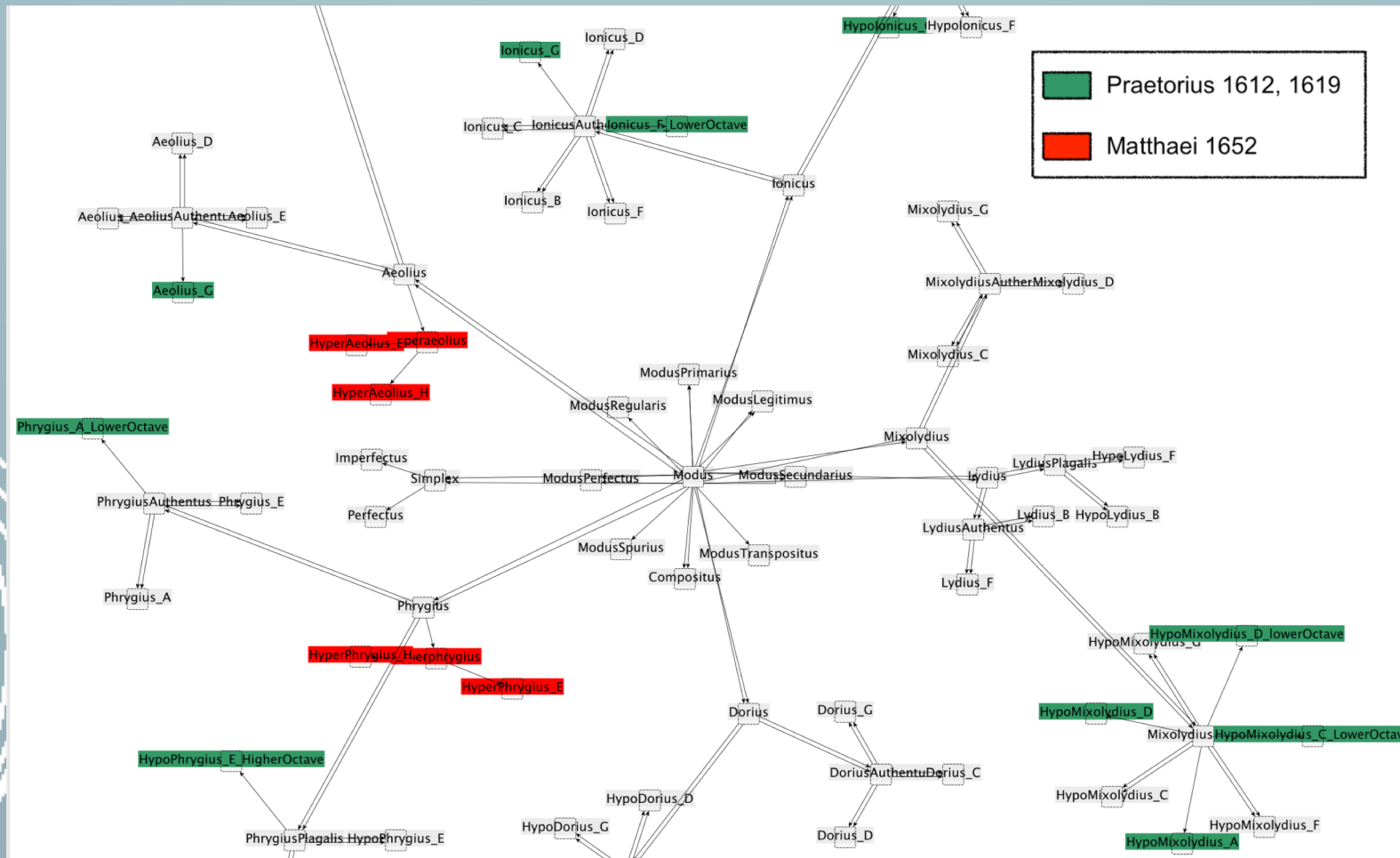


Ontology of Praetorius (1612 and 1619)

3. Benefits from a musicological and historical perspective



3. Benefits from a musicological and historical perspective



4. Current limitations and challenges

Addressability, Ontology comparison, and standards

- ❑ Necessity to address very heterogeneous material – texts, images, musical examples, schemata, etc. – at various micro- and macrostructural levels.
- ❑ As ontologies grow, it becomes difficult to compare them and to grasp their inner structure effectively.

Technical need to:

1. make highly heterogeneous material addressable at a granular level;
2. conceive additional tools to effectively grasp conceptual variations.

4. Current limitations and challenges

Close and distant reading

- ❑ Identifying concepts and definitions, writing properties, and annotating an ontology are highly time-consuming tasks.
- ❑ A computer assisted exploration of the sources, in order to find (a) a definition, characterisation, observation or description), is a good point for conceiving an ontology.

Methodological need to:

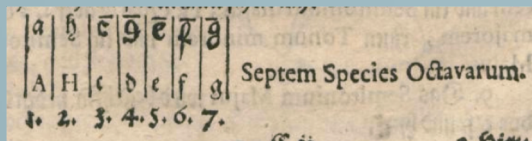
1. combine close and distant reading;
2. articulate hand-made modelling with computer-assisted semantic analysis.

Glarean_1557_2.txt	EST INFIMA DIAPEN... TE CHORDA... Primus igitur	Modus est ex D, in d. Secundus
Dedekind_1590.txt	§ doctrina Modorum... Artificum	Modus est inventio docta bono
Dedekind_1590.txt	as aut Quintas illa frequenter... Tertia quemgenerat,	modus est rarissimus ille...
Listenius_1515.txt	m%/iton(os)#G-, siue) ut... alij uocant) semitoniū, qui	modus est tenuis & remis=...
Listenius_1537.txt	CAPVT IX... De Modis seu interuallis...	MOdus est uocis ad uocem, cert
Listenius_1515.txt	#G+G#G... #G+G#G... DE MODIS MVSICAE...	Modus est uocum inter se ab utro
Glarean_1557_1.txt	Von Hypoeolio dem zehenden Modos... DJser	Modus ist Aeolio vnderworffen / mitt... wölichem er ein gemein Quint hatt / Rel
Glarean_1557_1.txt	Von Phrygio dem drit=... ten Modos... DJser	Modus ist auch einer von den furtref=... fenlichsten von den vöckeren Phryges
Glarean_1557_1.txt	ypomiyolydio dem... achten Modos... DJser	Modus ist dem sibenden vnderworffen /... mitt wölichem er die gemein Quint / v
Glarean_1557_1.txt	o hatt / bedejit es... einen von der gleichen zal. Diser	Modus ist... Dorio vnderworffen / mitt dem er die gemein... Quint Re la / vo
Herbst_1642.txt	... Hypodorius... Diser	Modus... ist einfältig vnd trawrig / vnd ist dem ersten gar entgegen: Jener ist f
Glarean_1557_1.txt	Octau / Hypophrygio / wie im... xv. cap. anzeigt. Diser	Modus ist etwas ruch / itē tra... tzecht / claghafftig / als in Apuleius neñet. Luci
Glarean_1557_1.txt	: / re la / hatt mi la / nitt re sol / wie Dorius. Di=... ser	Modus ist fast der erst inn der Kirchen gewest /... aber nur inder Tieffe / als Sy
Glarean_1557_1.txt	nffzehen... den capittel mer daruō gemeldet ist. Diser	Modus... ist gar gericht vff klag / wezen vnnd tru=... ren / als sind Hieremie
Herbst_1642.txt	...VI. Hypolydius... Diser	Modus... ist von Natur gelind / trawrig / vnd klaghaftig / bequem zu den Vor
Herbst_1642.txt	...IV. Hypophrygius... Diser	Modus... ist von Natur niderträchtig / demütig vnd zum Weinen geneigt / den
Herbst_1642.txt	...oæolius... Diser zehende	Modus... ist von Natur trawrig / seufftzend / weinend vnd versöhnlich: Schi=
Herbst_1642.txt	...XII. Hypojonicus... Diser	Modus... ist von Natur trawrig / weinend vnd demütig / vnd schicken sich zu c
Herbst_1642.txt	...Phrygius... der dritte	Modus... ist von Natur Zornig vnd Saurzapffig: Vnd ein Martiali=... scher

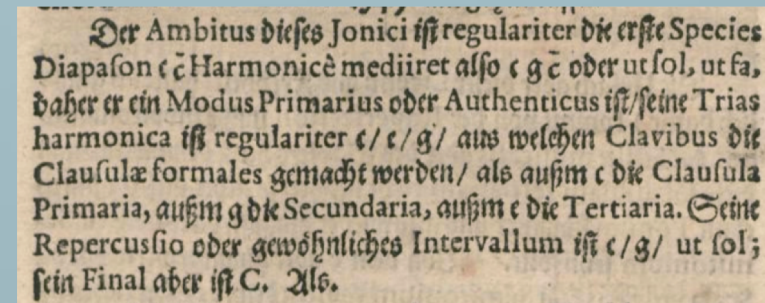
4. Current limitations and challenges

Dynamic and context-dependent knowledge production

- ❑ The knowledge captured in an ontology is static in nature. However, signification arises dynamically and is context dependent:
 - ❑ Significations can change within the source.



Matthaei, 1652, p. 19



Matthaei, 1652, p. 75

4. Current limitations and challenges

Dynamic and context-dependent knowledge production

- ❑ The knowledge captured in an ontology is static in nature. However, signification arises dynamically and is context dependent:
 - ❑ Significations can change within the source.
 - ❑ Some elements are implicit and have to be completed.
 - ❑ Different, sometimes conflicting, levels of description can coexist.

121.
Das XLI. Cap.
Von der Versetzung der Modorum.

Udem Ende soll alhier ein Tabellichen angefiget werden /
Wie die reduction geschehen könne/ die Erkenntniß derselben
geschiehet allemahl durch die progression des semitonii, ein-
mahl in der quinta, zum andern in der quarta, als:

	hat in	3	1	2	3	4
Jonicus	seiner	2	cd	de	ef	fg
Dorius	quinta	1 Grad	ef	fg	ga	ah
Phrygius	das Se-	4	fg	ga	ah	hē
Lydius	mito-	3	ga	ah	hē	cd
Mixolydius	niū im	2	ah	hē	cd	de
Æolius			Quinta			

123.

tig hievon zuhandeln/ so wollen wir es bey diesem wenigen betwen-
den lassen. Denn wenn wir nach unserm temperirten Clavier /
da eine octava 12. claves hat / gehen würden / so könnten wir jedem
clavi wieder 12. modos nach der alten disposition zu eigenen /
und hätten also in gesamt 144. modos. Dieses nun alles anzu-
führen / ist ganz unnöthig und zu weitläufftig. Vide Conra-
dum Mathæi de Modis Musicis,

124.

F. G. 2e. niitet/ oder ob der Jonicus, Dorius, Phrygius oder ein-
ander der erste sey / worüber unterschiedliche Zwistigkeiten ent-
standen sind; gnung wenn wir die Natur der Harmonia und was
dem Anhängig ist/ verstehen; Weil aber die Music (wie schon ge-
dacht) heutiges Tages ganz anders / und nur etwa 4. modi im
Gebrauch sind/ als Jonicus, mit dem mixolydio. und Dorius
mit dem Æolio, mehrentheils in dem ambitu der quartæ verni-
schet/ so können dannhero nicht mehr als 2. modi anjeto statui-
ret worden/ und ist auch so gar unnatürlich nicht / wenn wir fein
ordentlich damit verfahren. Sehen wir an den Lydium, so ist

4. Current limitations and challenges

Dynamic and context-dependent knowledge production

- ❑ The knowledge captured in an ontology is static in nature. However, signification arises dynamically and is context dependent:
 - ❑ Significations can change within the source.
 - ❑ Some elements are implicit and have to be completed.
 - ❑ Different, sometimes conflicting, levels of description can coexist.
 - ❑ The interpretation of a sign as a concept heavily relies on the reader.
 - ❑ Could predicate logic affect the way a source is read and modelled ?

Epistemological need for multifaceted ontologies where:

1. different readings can at the same time coexist and lead to shared representations;
2. knowledge completion by the analyst could be made more explicit;
3. viewpoints derived from historical sources can engage into dialogue with a 21st century perspective.

4. Current limitations and challenges

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