

OMAC: Ontology for Music Analysis and Criticism

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Ontology of Musical Analysis and Criticism (OMAC) Value, Similarity, Structure, Meaning, Ascription, Date

We want to describe “musical qualities and effects” as observed by listeners, performers, and composers. These are “critical claims” about music.

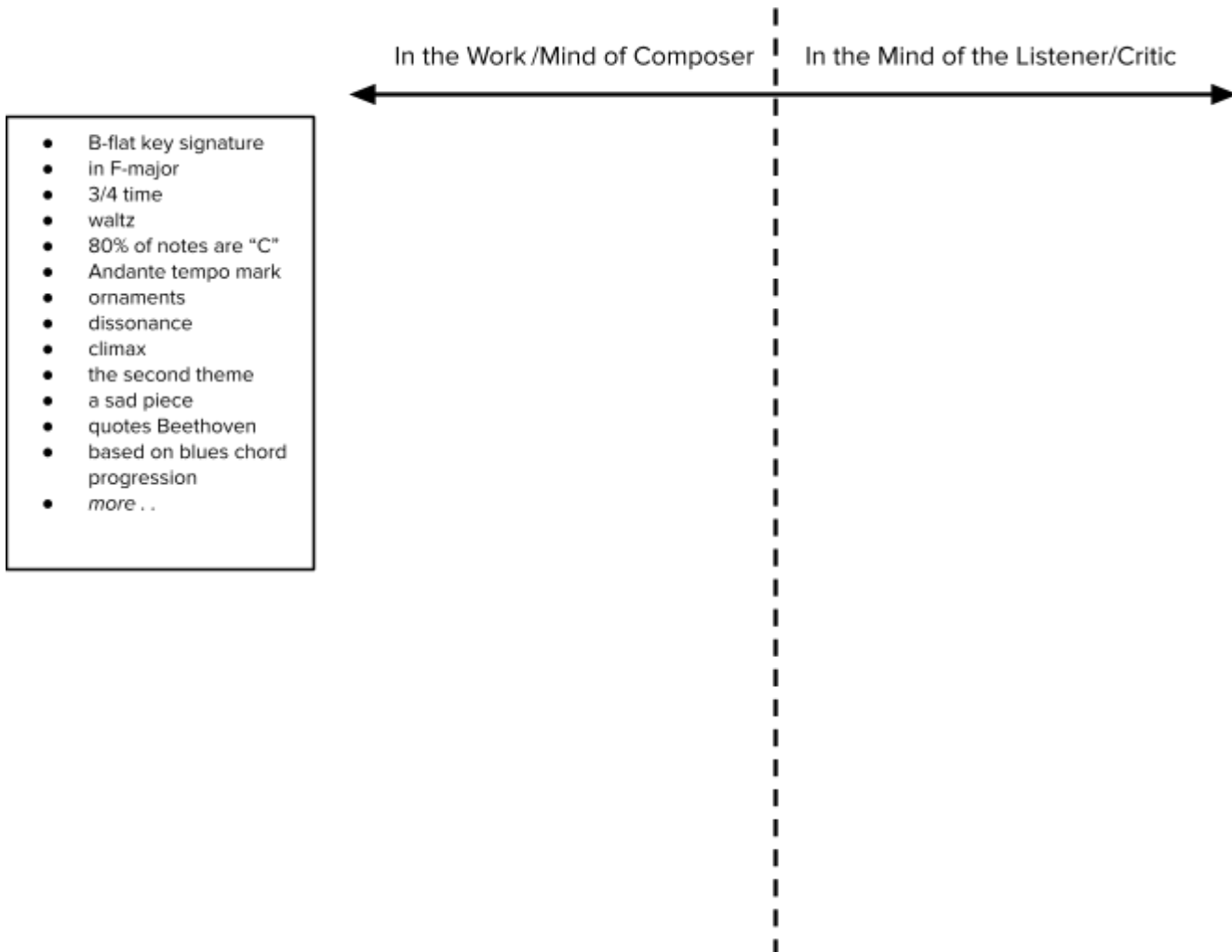
- The **claims** will be:
 - made by **particular person(s) or authorities**
 - at a **particular time and place**
 - in some **source** (a book, article, or digital resource)
- The **claims** will:
 - involve some **musical work(s)**--manifest in scores, recordings, or performances (which might be described via some kind of FRBR model that will both connect and distinguish between different musical ‘objects’ of the same kind, but still linked them to the work concept as needed)
- And **claims** will have some **musical location(s)**. This could be a *WorkExpression*, or *Self-ContainedExpression*, or *ExpressionFragment*.
 - certain bars (even: “all of them” in the case of the *WorkExpression*).
 - An EMA reference
 - a rehearsal mark
 - some timecode (in a recording or digital file)
 - other verbal means of designation or informal reference (“near the end”)

- Finally, and perhaps most importantly, these **claims** assign some *aesthetic quality or effect* to the passage, such as:
 - **Value**
 - “This part is excellent.”
 - “This aria is truly ugly.”
 - **Similarity:**
 - How it relates to (or does not relate) to some OTHER *WorkExpression*, or *Self-ContainedExpression*, or *ExpressionFragment*.
 - “This phrase is an inversion of what we heard earlier at X in this work”,
 - “This is a quotation of the opening line of the “Habanera” from Bizet’s *Carmen*.”
 - How it relates to (or does relate) to some **genre, style, or type**
 - “This is not in Baroque style”
 - “This is typical of Nocturne endings.”
 - “Romanescas like these are everywhere.”
 - **Structure** (some set of forms or processes in time, including harmonic patterns, sections, etc).
Examples of related concepts might include:
 - segmentation or section
 - “The development begins in bar X.”
 - “This is Phrase 2”.
 - “This is fuga.”
 - “This piece is in sonata-allegro design”
 - pattern or schema
 - “This rhythmic ostinato is fast.”
 - “This cadence is incomplete.”
 - “Here we modulate to a minor key.”
 - beginning (prelude, introduction)
 - “These 10 measures serve to introduce the main key.”
 - continuation (or development, variation)
 - “The second motive is repeated in different instruments.”
 - climax (or low point)
 - “The arrival of the tonic is important.”
 - repetition (immediately after X) or reprise (after some intervening event)
 - interruption (or truncation)
 - closure (ending, coda)
 - **Meaning** (representing some idea, mood, image, character, or event)
 - “This passage evokes the pastoral.”
 - “This tune is melancholy.”
 - **Ascription** (some assertion about *who* created the work)
 - “This piece is probably not by Josquin des Prez, despite the fact that it is attributed to him in Source X.”
 - “This anonymous work is probably by Dittersdorf.”
 - **Date** (some assertion about *when* the work was created)

- “On the basis of its harmonies, I think this piece dates from the 1860s, and not before.”
-

In the Work, or In the Claim:

Objective or Subjective?



OMAC will build upon FRBRoo Ontology for Works

From a general perspective, we rely on the following basic classes from FRBRoo:

- Work (F1)
- Expression (F2)
 - Self-Contained Expression (F22)
 - Expression Fragment (F23)
- Type (E55, CIDOC-CRM)
- Person (F10)

The OMAC proposes to extend these classes as follows (*this is work in progress*):

- Work (F1)
 - Musical Work
 - **Claim** Work [The critical or analytic idea *per se*]
 - ...
- Expression (F2)
 - Self-Contained Expression (F22)
 - **Claim** Self Contained Expression [The idea as found in a given edition, source, file]
 - Musical Self-Contained Expression
 - Expression Fragment (F23)
 - Musical Expression Fragment
- Type (E55)
 - Value Type (good, ugly, etc.)
 - Similarity Type
 - Genre Type (e.g., mazurka, pastoral)
 - Style Type (e.g baroque)
 - Allusion Type
 - Meaning Type
 - Structure Type
 - Date Type
 - Ascription Type
 - etc.
 - ...
- Person (F10)
 - Editor
 - Arranger
 - Composer
 - Critic
 - Analyst
 - Performer
 - Violinist
 - Pianist
 - Cellist
 - ...

Some Comments on the Ontology Classes

- **Persons** (without which could not ascribe responsibility for any claim or work; in FRBRoo, class Person F10), and
- **Roles** (Editor, Arranger, Composer, etc. which will allow us to distinguish among the various ways in which the same person might take part in the creation, performance, publication, or evaluation of a work of art).
 - FRBRoo does not cover the modeling of roles.
 - Individuals instantiating classes like Editor, Arranger, Composer, etc. are persons satisfying certain conditions; e.g., a composer is a person who composed at least one musical work.
 - The same person can satisfy multiple roles; e.g., John being both a composer and a cellist.
- **Claims:**
 - The same *claim-work* may be reported in multiple books or resources (*claim-expressions*).
 - A claim *is about* a work, or a work's expression or a work's quality (e.g., the genre)

Claims, Formalized:

A) Data about a **musical work** (i.e., chopin_op17_no 4)

- chopin_op17_no 4 *instance_of* Musical Work
- chopin_op17_no 4 *composed_by* Chopin

B) Data about a **claim work** (i.e., John the Musicologist in the role of Critic states that the genre of Chopin's op17 no 4 is Mazurka)

- John *instance_of* Critic
- omac_claim_similarity_id12 *instance_of* Claim Work
- omac_claim_similarity_id12 *made_by* John the Musicologist
- omac_claim_similarity_id12 *made_on* 10/05/2019
- omac_claim_similarity_id12 *is_about* chopin_op17_no 4
- omac_claim_similarity_id12 *attributes_genre_type* mazurka

Claims, Exemplified in Scholarship

Here is a narrative version of a claim about “similarity”, in this case an argument about how a particular work follows (or does not) the ‘rules’ of a given genre. The example from the **works of Bach, and the author is a noted musicologist, Lawrence Dreyfus** [Dreyfus, Laurence. “J. S. Bach and the Status of Genre: Problems of Style in the G-Minor Sonata BWV 1029.” *The Journal of Musicology*, vol. 5, no. 1, 1987, pp. 55–78. *JSTOR*, www.jstor.org/stable/763824.] Here is one chart-like example concerning the second movement of BWV 1029:

J. S. BACH AND THE STATUS OF GENRE

TABLE
National Identities in BWV 1029/2

Feature	Signs of French Sarabande	Signs of Italian Adagio
Surface melodic vocabulary	a) prevalent step-wise motion b) runs in style of <i>double</i> c) <i>die wesentlichen Manieren</i> = (essential ornaments, e.g. <i>tièrres de coulè</i>)	(a) large leaps (e.g. tenth in m. 8) b) arpeggiated and scalar flourishes c) <i>die willkürlichen Manieren</i> = arbitrary ornaments)
Phrase organization	marked 4-bar phrases	unmarked (clear divisions avoided)
Rhythmic markers	a) stress on second beats b) dotted pattern at phrase ends: ♩ ♩ c) hemiolas preceding cadence	a) long sustained notes tied over bar line b) running notes starting off the beat
Bass functions	bass outlines hemiola at cadence	bass ostinato often accompanies Adagio

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And here is the **narrative that Dreyfus weaves** concerning these relationships between individual works and collective constructions such as **National Styles or various dance genres**:

Consider next Fux's trio from his *Concentus musico-instrumentalis* (1701). (See Example 3.) Here the genres of the Italian *giga* and the French *entrée* coincide but hardly interact: each voice proceeds as if oblivious to the presence of the other.¹⁹ Either could be played alone with the bass or together. The piece in fact depends on a clear delineation of identities: otherwise, the combination, designed as a clever trick, would fail. What is truly synthetic about this stylistic addition is that the original genres remain palpably intact.

Returning now to the center movement of the gamba sonata, the contrast between these hybrids and Bach's own could not be more striking. For the identities of French Sarabande and Italian solo Adagio do not inhabit the surface of the work; on the contrary, they hibernate in a structure guaranteed to cover them up. In one sense, Bach's reconciliation of French and Italian styles tends to cancel their individual identities. One could even argue that Bach has articulated the signs of style and genre as to be inaudible. One thing is sure: each style adversely affects the other. The walking quarter-note motion of the ostinato bass, although a plausible accompaniment to an Adagio, compromises the identity of the Sarabande, premised on a measure of three pulses that shuns rhythmic subdivision. The Sarabande, in turn, prevents the Italian voice from appearing to improvise since the melodic ornamentation is confined within a rigid metrical frame. The Sarabande itself cannot be heard, because the tempo needed in mm. 4 and 8 to allow the Adagio voice to sound like an expressive flourish is too slow to dance even a grandiloquent *Sarabande grave*. Finally, Bach eclipses even the French-Italian antinomy starting in m. 21 when the final phrase expands to six

And here is more from an **essay about Mahler, by Vera Micznik** [Micznik, Vera. "Mahler and 'The Power of Genre.'" *The Journal of Musicology*, vol. 12, no. 2, 1994, pp. 117–151. JSTOR, www.jstor.org/stable/763985.]

Here, too, she shows how a **single work alludes to, juxtaposes, and synthesizes a series of dances** that all ‘work’ as pieces in triple meter, but which each consitute their own ‘types’ in the work of **Austro-Hungarian music** of the 19th century.

MAHLER AND “THE POWER OF GENRE”

FIGURE 1. Mahler, Ninth Symphony, Mvt. 2. Conventional Outline of the Movement.

	Ländler1	Waltz1	Menuet1	Waltz2	Menuet2	Ländler2	Waltz3	Ländler3	
Tempo	I	II	III	II	III	I	II	I	Coda
Mm. Nos.	1	90	218	261	333	369	423	523	578
Section	A1	B1	C1	B2	C1	A2	B3	A3	
Key	C	E–E♭	F	D	F	C	E♭	C	c–C

woodwinds, all this with fortissimo dynamics. In terms of key structure, the local switch to G-flat major from the E-flat major context brings the movement to its farthest removed tonal excursion. At the same time, the dissonance is increased to an extreme level, coupled with short polytonal effects, such as that resulting from the superimposition of the G-flat-D-flat open fifth with implications of F major in the inner contrapuntal voices (mm. 446–47). The tempo, too, reaches a maximum of speed, although Mahler’s indication “Tempo II” does not change: a written out accelerando results from the condensation of the three quarter-note pulses in the previous measures into one dotted half-note articulation per measure. Both melody and accompaniment seem to have fallen into repetitive, mechanical patterns as if losing control, and thus projecting a sense of distress. All these dimensions contribute to a paroxysmal effect.⁵

But what is actually crucial for the overall meaning of the passage is that these configurations together accomplish a generic transfiguration: without notice, the ongoing waltz has taken a distraught, even sinister turn, grinding away mechanically and mindlessly in a shrieking, choking voice, thus leaving the realm of the “street waltz” in which it originated and becoming a close relative of an out-of-tune hurdy-gurdy-type music (see below, pp. 137 and 145). It is clear that Mahler brings in these most remote genre associations to reinforce the movement’s tonal and dynamic climax. One suspects that this “generic climax” might be part of a larger generic plot that needs yet to be explored.

This is not an isolated case: in many Mahlerian scherzi the dances rebelliously refuse to comply with the traditional labels they have been assigned. Yet, as our example shows, while Mahler’s materials defy

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Finally, let's put this in the context of the **CRIM project**, in which we make Claims about:

- **Musical Patterns that we find in individual pieces** (these are ‘contrapuntal [musical] types’, small building blocks that come in conventional schemas involving pairs of voices). There are our Observations.
- And **Pairs of Works that bear some direct and specific borrowing to each other**--not just because they share the same universe of patterns, but rather because there is some clear evidence that one alludes to the other. In this sense the connections are both “generic” and “specific”, just as any given work can be both conventional and unique.
- Moreover, these **“allusive pairs” demonstrate certain “transformational” procedures**, in which old materials are shifted around, or new materials added to old ones. These are our Relationships.
- This is nicely illustrated in this **“Relationship” by Peter Schubert**:
 - Specifically: the Fevin mass Transforms (non-mechanical transformation) a motive (soggetto) from Josquin’s motet, by adding a New CounterSubject to the original soggetto. BOTH excerpts represent the SAME “contrapuntal [musical] type”, but they are not the same music.

Clip from CRIM Project: <https://crimproject.org/relationships/2401/>

Relationship <R2401> [Edit this relationship]

Observer: **Peter Schubert**

Non-mechanical transformation

Embellished: False
Reduced: False
Amplified: False
Truncated: False
New counter-subject: True
Old counter-subject shifted: False
Old counter-subject transposed: False
New combination: False

Model: **Josquin Des Prés, Ave Maria**

< highlight >

<4801>

Non-imitative duo

Voices:
[Superius]
Altus
Strict: False
Flexed: False
Flexed, tonal: False
Sequential: False
Invertible: False
Remarks: mass has new csh, 8ve leap retained.

Derivative: **Antoine de Févin, Missa Ave Maria: Gloria**

< highlight >

<4802>

Non-imitative duo

Voices:
Sup[erius]
Altus
Strict: False
Flexed: False
Flexed, tonal: False
Sequential: False
Invertible: False

Music Encoding Conference discussion notes

During the CRIM Workshop

- **There was some skepticism expressed about the need for such an ontology**, or at least anything more detailed than simply acknowledging (in logical form) the fact that a particular observation about music was made by some authority.
- But there was also good discussion about what else might be needed in such a system:
 - **How can we balance the general and the specific? Should we focus on the ‘middle ground’ of interoperable terms and concepts?** Simply formulating all insights as ‘claims’ is too broad. Doing so with great technical specificity that might reflect a particular analytic vocabulary, on the other hand, will be too specific. The various categories under discussion here aim to fill that middle ground. There was support for the idea of formulating a ‘common core’ and then allowing users to adapt the ontology to their needs. Thus the URI could be one of our proposed categories, to which individuals would then link their particular terms. [“Harmonic Prolongation” would thus be a kind of “Structure”.]
 - To the extent that scholarship often involves debate and revision, we will need to understand that **Claims can be made about *other* Claims**, no less than about Works or their Manifestations or individual items.
 - **Claims will also need some measure of reliability or certainty.** It is not clear how these values would be assigned.
 - **One could argue that an Edition is itself a kind of Claim**, since it builds upon (and selects ‘truth’ from) particular texts or objects in order to posit some version (Manifestation) of a Work.
 - **Indeed, MEI is “claim” based**, since it is an encoding of what the signs mean, and also because it embodies detailed information about who is responsible for what in terms of editorial choices.
 - **But MEI scores cannot say much about the relatedness of several pieces** (of the sort we see in our Similarity Claims). **Nor would it be simple to incorporate detailed information for analytic claims about patterns or structures in XML encodings**, with their disparate presentation of staves and bars. We can ‘mark’ notes in MEI, but we cannot include in MEI all of the varied information that the scholarly community would want to say about each piece, or about groups of pieces.
 - **What about Performances as Claims? Or Claims about Performances?** FRBRoo models tend to privilege the Work Concept rather than aspects of rendition, or traditions in which the renditions are more important than the work. But we need some way of marking the “how” of performance (vs the “what” of works).
 - Maxim: In classical musical, the work is often presumed to be richer than any individual rendition of it (this is the kind of thing we say about Shakespeare, for instance), where as in popular music and in the great oral traditions, it’s the realization or rendition that matters more than the work (as in The Ballad of Lady Margaret, or any blues song, or a cover of a Tin Pan Alley tune).
 - **Example from Vienna:**
 - Eduard Hanslick’s writings and those of his contemporaries in the Viennese musical press contain *different* claims about the same piece. The vocabularies for describing these might of necessity be part of some database of his writings. But we can model them externally, too, with URIs that will connect Hanslick as authority with the Works or Events he describes, and the Claims he makes about them.

- **Linking In and Linking Out** is the big aim of our work. How in relation to MEI?
 - One model is offered by **MELD**: <https://github.com/oerc-music/meld> which allows users to link media and images to specific passages or spans in MEI encodings.
 - Another approach can be seen in the **EMA** system: <https://github.com/umdmith/ema>, which creates URI-style “coordinates” for any common music notation score that can in turn be ‘resolved’ to any structured representation of that score, including MEI.
- But **what space is afforded in each of these systems for the details of the Claims we might make** concerning what these passages represent, mean, or do? The OMAC ontology seemed to offer some promise in this context, pointing to ways in which the character of the assertions might be structured in a logical way, and thus open them to discovery and re-use. Specific points about OMAC included:
 - The **‘middle ground’ as the focus of our work**, as noted above.
 - Any **claim about Value will also need a connection to some System of Values**. Otherwise ‘This is Best’ will be meaningless.
 - **Authorities: what about crowd source data**, such as Folksonomies?
 - **What is the research goal of such an ontology?** If we cannot see how it advances research, we should not spend too much time on this. [The goal is to make interpretive claims and insights durable, discoverable, and interoperable; these goals seem especially important as digital projects (with their assemblages of collective, small-scale insights) grow.
 - **Claims about Claims** (since scholarship is often founded on the revision or repetition of other judgments). Reliability will be an attribute of the agent.
- **Possible Outcomes and Priorities for 2019-2020:**
 - **A Best Practices Document**, highlighting a Common Core of concepts and areas for further work)
 - **Some Practical Examples** (of LOD and some Semantic concepts and classes)
 - **Tutorials** (on how to advance any of this) [Perhaps these could be part of the MEI Tutorial area?]