The conceptualization of music categories in word sketches

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Croatian music terminology

- *Problems of basic contemporary musical terminology in Croatia* (CONMUSTERM), 2014 – 2018, Croatian Science Foundation (HRZZ)

- inconsistency in terminology use within the system of formal music education (parallel elementary and secondary music education, high-school level, music academies)

aim: propose a contemporary lexical norm which would correspond with the demands of the musical domain.

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Specialized knowledge categories

- dynamic nature of categorization, concept storage and retrieval, and cognitive processing
- categories of specialized knowledge: have fuzzy boundaries and evolve over time; generic or base-level and peripheral
- categories such as *agent, process, patient* or *instrument* – concept roles characteristic of a specialized domain (Faber 2011)
- defined on the basis of concept relations extracted out of contextual information

Dynamics of specialized knowledge categories (DIKA)

- installation research project, HRZZ, 2018 – 2023

research: terminological units and specialized knowledge categories at conceptual and linguistic levels; syntactic and semantic analyses of the syntagmatic term relations; communicative functions of terms in discourse

> - theoretical framework of Frame Semantics and Frame-based Terminology

results:

- English–Croatian parallel corpus in the domain of air traffic

- terminological database of semantic frames in aviation (*AirFrame*)

Semantic frames

- Frame Semantics (Fillmore 1976, 1982, 1985; Fillmore and Atkins 1992)

frame = „(…) a system of categories structured in accordance with some motivating context" (Fillmore 1982: 119)

- users share knowledge of categories – the basis for understanding each other

- **use** is a necessary prerequisite for structuring of categories

words: „(…) lexical representatives of some single coherent schematization of experience or knowledge" (Fillmore 1985: 223).

Music in semantic frames

To „organize" music into semantic frames:

- take into account domain characteristics (diachronic conceptual change, overlapping of general and specialized knowledge, abstract objects, metaphorical organization of basic music categories)

- distinguish between complex categories and specific concepts

- construction of semantic frames: semiautomatic corpus based methods and manually analysed data

Analysing word sketches

- small corpus of textbooks in music theory compiled in Sketch Engine
- word sketches (WS) for most frequent terms (*tempo, tonality, tone, pitch, scale, rhythm, melody, harmonic,* etc.)
- automatic linguistic description offered by word sketches followed by an analysis of term concordances
- how much information is terminologically relevant?
- **expert validation** – terms in green
- frame elements defined on the basis of FrameNet methodology

pitch

(noun) Alternative PoS: verb (48)
birmigham conference freq = 2,595 (1,780.86 per million)

modifiers of "pitch"		
		34.68
low	80	10.87
the lower pitch		
high	36	10.03
higher pitch		
upper	32	9.58
the upper pitch		
same	46	9.55
the same pitch		
specific	23	9.35
or as a specific pitch in a melody		
stationary	17	9.23
a Stationary Pitch		
chromatic	30	9.18
chromatic pitches		
single	22	9.09
a single pitch		
different	21	8.97
different pitches .		
tonic	20	8.79
the tonic pitch		
first	28	8.59
the first pitch		
more	16	8.46
or more pitches		
diatonic	15	8.44
diatonic pitches		
third	14	8.37
the third pitch		
additional	10	8.27
additional pitches		
other	20	8.19
other pitches		
concert	8	8.14

nouns and verbs modified by "pitch"		
		23.70
class	76	11.55
pitch classes		
pattern +	137	11.51
PITCH PATTERN		
content	25	10.10
the pitch content of the		
collection	16	9.53
pitch collection		
level	16	9.22
pitch level		
name	17	8.99
pitch names		
space	10	8.59
pitch space		
organization	8	8.40
material	10	8.33
pitch material		
classes	6	8.30
realm	6	8.27
prominence	5	8.02
domain	5	7.91
combination	5	7.85
range	5	7.81
system	9	7.77
repertoire	4	7.66
c	8	7.58
structure	8	7.58
d	8	7.58
relation	5	7.57
interval	9	7.53
letter	4	7.50
relationship	5	7.49
duration	4	7.45

verbs with "pitch" as object		
		29.02
give	70	10.53
the given pitch		
raise	27	9.72
raises the pitch		
start	19	9.46
the starting pitch		
lower	18	9.29
hear	17	9.00
identify	13	8.69
notate	11	8.65
use	31	8.61
pitches used		
sound	10	8.60
find	15	8.57
involve	11	8.55
pitches involved		
contain	14	8.54
alter	10	8.48
relate	9	8.33
sing	10	8.32
add	11	8.28
remain	8	8.22
represent	10	8.20
produce	10	8.20
have	18	8.16
possess	7	8.11
double	7	8.02
adjust	6	8.00
distribute	6	7.98
ignore	6	7.95

verbs with "pitch" as subject		
		13.53
sound	16	9.95
be +	184	8.85
pitch is		
create	8	8.74
step	4	8.43
want	4	8.42
belong	4	8.33
represent	5	8.19
form	4	8.08
have	16	8.03
pitch has		
seem	4	8.02
become	5	7.98
follow	5	7.78

"pitch" and/or ...		
		10.56
pitch	28	10.71
duration	8	9.59
rhythm	13	9.45
root	6	8.80
line	7	8.58
interval	6	8.57
inversion	5	8.24
mode	5	8.11
note	7	7.97
harmony	5	7.75
scale	4	7.71
triad	4	7.61
example	4	7.48
g	4	7.38

prepositional phrases		
... of "pitch"	266	10.25
"pitch" in ...	115	4.43
"pitch" of ...	89	3.43
... to "pitch"	84	3.24
... on "pitch"	52	2.00
"pitch" as ...	46	1.77
... between "pitch"	46	1.77
... for "pitch"	30	1.16
... with "pitch"	28	1.08
... from "pitch"	24	0.92
"pitch" with ...	21	0.81
"pitch" on ...	21	0.81
... in "pitch"	20	0.77
"pitch" by ...	19	0.73
"pitch" to ...	19	0.73
... as "pitch"	18	0.69
"pitch" above ...	12	0.46
... by "pitch"	10	0.39
... above "pitch"	10	0.39
"pitch" within ...	10	0.39
"pitch" from ...	9	0.35
... before "pitch"	8	0.31
"pitch" between ...	8	0.31
... below "pitch"	8	0.31

adjective predicates of "pitch"		
		1.97
retrograde	8	12.11
high	6	10.85

"pitch" is a ...		
		1.39
degree	4	11.19
root	4	11.02

possessors of "pitch"		
		0.62
note	5	12.41

Pitch (1)

modifiers of *pitch* according to the WS:

- pitch height: *low pitch, high pitch, stationary pitch, upper pitch, lowest-sounding pitch*

- context description (type of): *diatonic pitch*, *chromatic pitch* – in Croatian these are not full terms! (AE)
  - e.g. *diatonic pitch set, diatonic pitch class, chromatic pitch shift, chromatic pitch material…*

- role of pitch in context: *final pitch, tonic pitch, dominant pitch* (in concordances)

- false terms: *same pitch, single pitch, first pitch, more pitches, third pitch, additional pitch, different pitch, specific pitch, second pitch, original pitch, virtual pitch*

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the lower pitch			pitch classes			the given pitch			be ✚	184	8.85
high	36	10.03	pattern ✚	137	11.51	raise	27	9.72	pitch is		
higher pitch			PITCH PATTERN			raises the pitch			create	8	8.74
upper	32	9.58	content	25	10.10	start	19	9.46	step	4	8.43
the upper pitch			the pitch content of the			the starting pitch			want	4	8.42
same	46	9.55	collection	16	9.53	lower	18	9.29	belong	4	8.33
the same pitch			pitch collection			hear	17	9.00	represent	5	8.19
specific	23	9.35	level	16	9.22	identify	13	8.69	form	4	8.08
or as a specific pitch in a melody			pitch level			notate	11	8.65	have	16	8.03
stationary	17	9.23	name	17	8.99	use	31	8.61	pitch has		
a Stationary Pitch			pitch names			pitches used			seem	4	8.02
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chromatic pitches			pitch space			find	15	8.57	follow	5	7.78
single	22	9.09	organization	8	8.40	involve	11	8.55	appear	4	7.62
a single pitch			material	10	8.33	pitches involved			use	4	7.12
different	21	8.97	pitch material			contain	14	8.54			
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first	28	8.59	domain	5	7.91	add	11	8.28			
the first pitch			combination	5	7.85	remain	8	8.22			
more	16	8.46	range	5	7.81	represent	10	8.20			
or more pitches			system	9	7.77	produce	10	8.20			
diatonic	15	8.44	repertoire	4	7.66	have	18	8.16			

Pitch (2)

modified by *pitch*

- sets: *pitch class*, *pitch collection*, *pitch content* (hr. *tonska zaliha* nekog skupa), *pitch material* (hr. *tonski materijal* sastavljen od različitih visina tonova), *pitch pattern, pitch events* (in concordances); NO *pitch class set* that is one of the basic terms, but *pc set* and *pcs*

- relations between pitches: *pitch proximity, pitch organization, pitch combination*

- areas defined by pitch: *pitch space, pitch realm, pitch domain*

- pitch characteristics: *pitch spelling, pitch name, pitch height, pitch prominence, pitch information, pitch duration, pitch structure* (Having analyzed the long-range pitch structure of "Clementine")

Verbs with *pitch* (1)

pitch as an **object**

- height: *raise pitch, lower pitch*; *starting pitch* → should be in the group with modifiers (*final pitch*); *given pitch* – not a term

- pitch as an object that can be manipulated or owned: *give pitch, contain pitch, use pitch, involve pitch, find pitch, add pitch, possess pitch, double pitch, distribute pitch, have pitch, play pitch, arrange pitch, sustain pitch* – not terms!

- pitch characteristics: *represent pitch, notate pitch, identify pitch, associate pitch, ignore pitch, indicate pitch* – not terms!

Other constructions

pitch as a **subject**

pitches sound / pitches follow (a pattern) / *pitches create*, *pitches form* (a class) – personification

pitch **and/or (coordination)**

- pitch and/or rhythm, pitch and/or duration, pitch and/or time – opposites that relate to the duration, independent of pitch

- *interval*, *harmony*, *chord*, *scale*, *time*... – depend on pitch

prepositional phrases with *pitch*

all related to the spatial conceptualization of pitch: *on pitch, between pitch, from pitch, in pitch, at pitch, above pitch*...

Semantic frame Pitch

- core elements
  - value: the position or area on the feature scale
  - attribute: *low pitch*, *high pitch*
- non-core elements
  - relation: *diatonic pitch*, *chromatic pitch*, *enharmonic pitch*, *pitch organization*
  - name: A – G
  - direction: *tonic pitch*, *final pitch*
  - location: *pitch space*
  - set: *pitch class*, *pitch set*, *pitch collection*, *pitch class set*
- related frames: Tonality, Scale, Harmony, Melody, Chord

Spatial relations

- music conceptualized in terms of two types of spatial conceptual relations: pitch and time (duration)
- most semantic frames display both modes of conceptual organization
- semantic frame of Pitch is a subframe of the larger frame of Tonality – conceptualization of music in terms of spatial organization
- frames Meter, Rhythm and Tempo show the conceptualization of music in terms of temporal relations
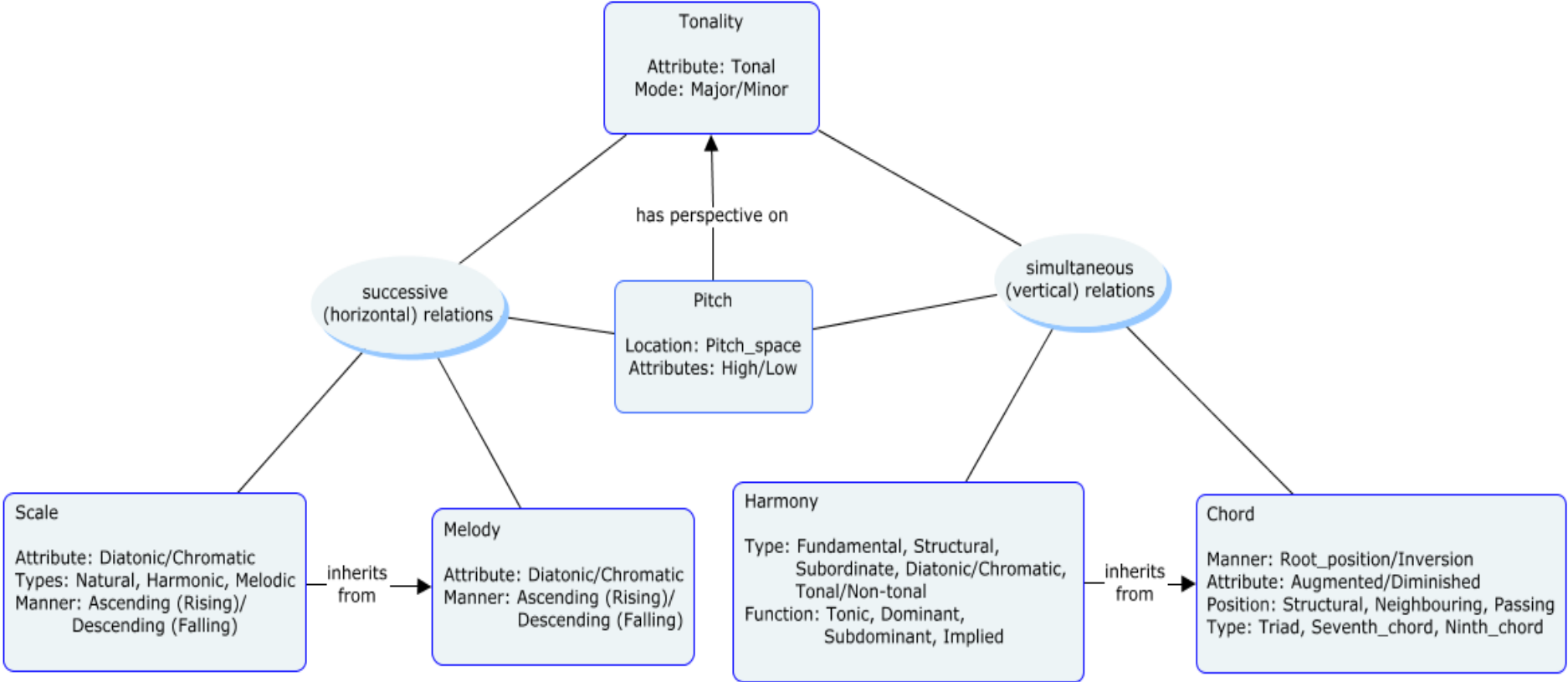
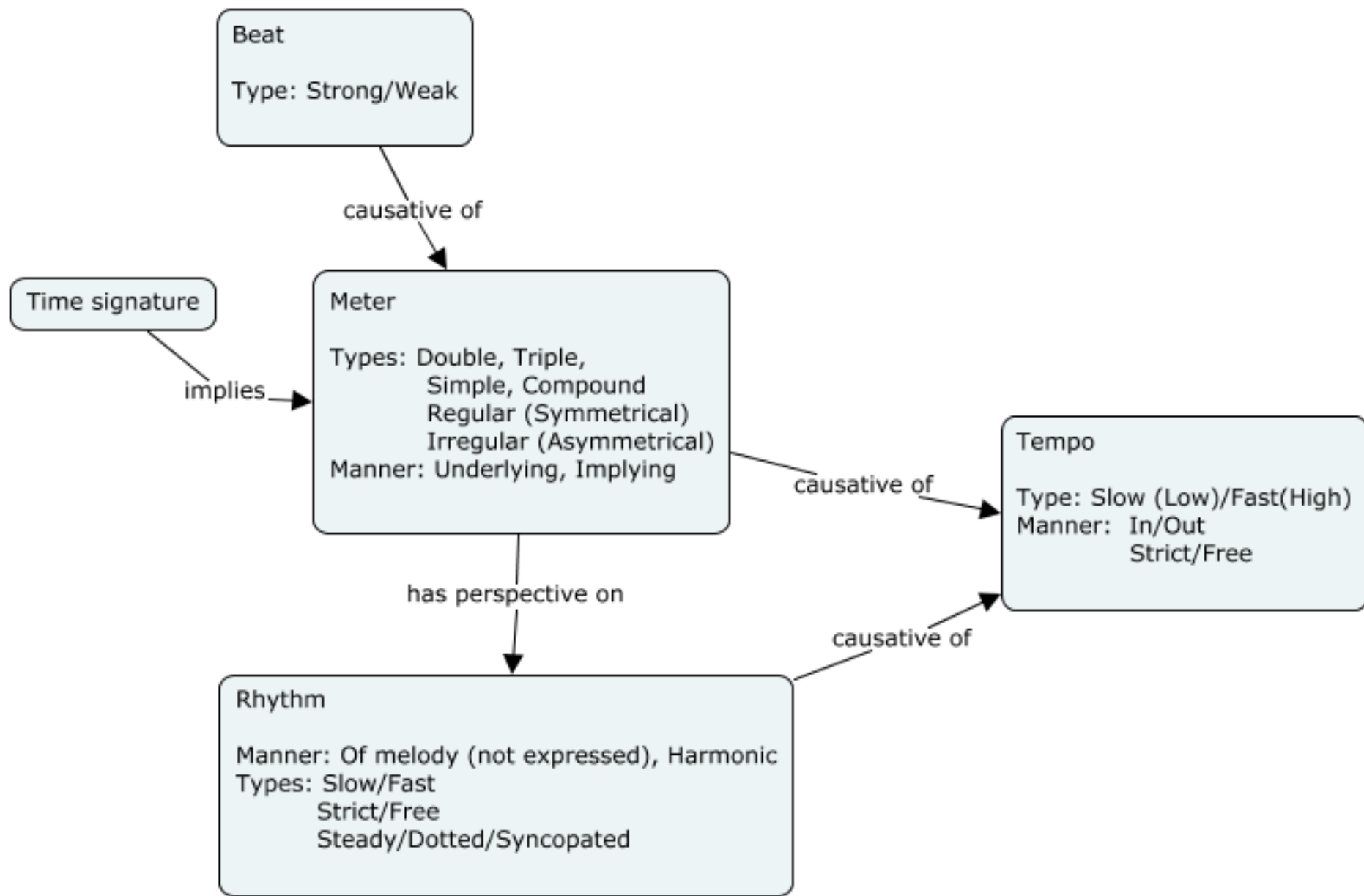Figure 4. Schema of the semantic frame **Tonality**

Figure 5. Schema of the frames **Meter**, **Rhythm** and **Tempo**

Results

- results of Sketch Engine analysis compared to Grove Music Online music database

	SkE	GMO
low pitch	46	107
high pitch	23	202
chromatic pitch	21	17
diatonic pitch	14	6
stationary pitch	17	0
dominant pitch	10	2

Some proposed terms not validated (only multiword units, not terms): *second pitch, third pitch, distinct pitch, upper pitch, single pitch*.

Application

- terminological description of knowledge categories on all levels: conceptual, linguistic (multilingual) – intercultural differences
- growing need for merging general language and specialized language linguistic resources
- development of computational tools and specialized translation
- semantic frames in LSP teaching
- frames as explicit connection between conceptual and linguistic level

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