

Perceptual Analysis of Gesture Interaction Typologies in Acousmatic Music

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- Acousmatic music
 - Complex gestural interaction between sound units.
- Typological examination of gesture interaction
- What constitutes “successful” gestural interactions?
- How do these interactions develop

- Assembly of a typological database of existing models of gesture interaction
- Suggestions of structural relationships; an “acousmatic grammar”
- Applied in:
 - Composition and pedagogy (Blackburn 2009)
 - Musicology of acousmatic music (Thoreson 2009, Young 2004, Roy 1998).
 - Musical interaction with computational systems (Young and Bown 2009)

Three works were selected for analysis:

- Francis Dhomont - *Novars* (1989)
- Dennis Smalley - *Wind Chimes* (1987)
- Jonty Harrison - *...et ainsi de suite...* (1992)

- Canonical works.
- Created with digital means.
 - Contemporary processing techniques.
- Represent different - though related - traditions in acousmatic music:
 - extended musique concrète, francophone tradition
 - British acousmatic style.
- Works are generally of an abstract aesthetic.

- Aural analysis
 - Enacted from a perceptual standpoint
 - Albeit with knowledge of compositional and processing techniques.
- Graphic sketch
 - Identification of gestures
 - Separation of gesture to constituent parts
- Repeated listening
 - Noting variations of sound parameters
 - Noting interaction between gestures.
- Typological extraction
 - Structural and functional relationships

- Typological databases emerge from analyses of individual works
- Emphasis is placed on comparative analysis and cataloguing of shared typologies.
- Modeling by observation.
- What comprises successful gesture interactions in acousmatic music?

- Gesture:
 - A perceptual sound unit, broadly following gestalt rules.
 - May be comprised of a collection of perceptual units (gesture elements).



Attack-decay archetype
as single gesture.



Attack-decay archetype
as gesture element in
accelerando gesture.




Attack-decay archetype
as gesture element in
Attack-decay to texture gesture.

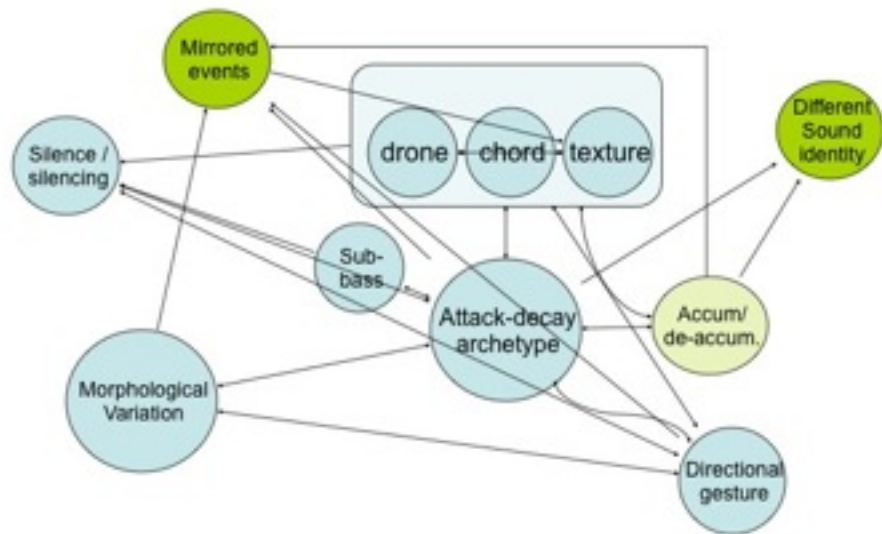
- Findings can be categorized in three levels of typological databases.
- Each typological database corresponds to different compositional levels:
 1. Causal typologies or Morphological Strings (Smalley 1986) [*micro-level*]
 2. Co-existing Gestures [*meso-level*]
 3. Temporal Evolution [*macro-level*]

Transient →	?	Function of movement	Examples
	Drone	Transient to sustained sound.	Novars 00:19 JH 02:50, 17:47 WC 00:00, 06:46
	Chord	Foreground/background movement.	Novars 00:56, 06:20, 18:37 JH 4:50 WC 00:08, 04:42
	Texture	Movement to different compositional section.	Novars 01:32 JH 04:19, 14:20, 18:15 WC 00:10, 00:38, 01:05, 01:24, 04:16
	Sub-bass rumble		Novars 00:01, 02:08, 05:57, JH 17:38 WC 00:25, 00:45, 08:35

Results - *micro level*

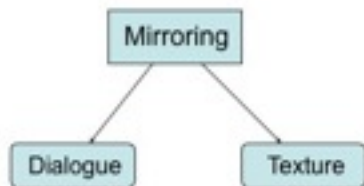
Transient →	?	Function of movement	Examples
	Directional gesture/cloud 	Causal event within morphological string.	Novars 13:20, JH 05:27, 05:36, 10:15, 12:25, 13:17 WC 03:34, 05:16, 09:26
	Accumulation/de-accumulation		Novars 03:49 JH 00:57, 13:47, 16:16 WC 00:17, 03:24, 07:10, 12:07
	Morphological variation (e.g. reverse)		Novars 04:07, 11:18 JH 00:08, 04:32, 04:42 WC 05:32, 07:45, 11:20
	Mirrored gestures	Catalyst for mirrored gestures.	Novars 03:50, 05:00, 09:55 JH 00:08, 00:47, 07:40 WC 03:12, 07:10

Results - *micro level*



Mirroring

- Adapted from Young and Bown (2009)
- "The source is reflected in the result"
- Repetition, motivic development, call and response.

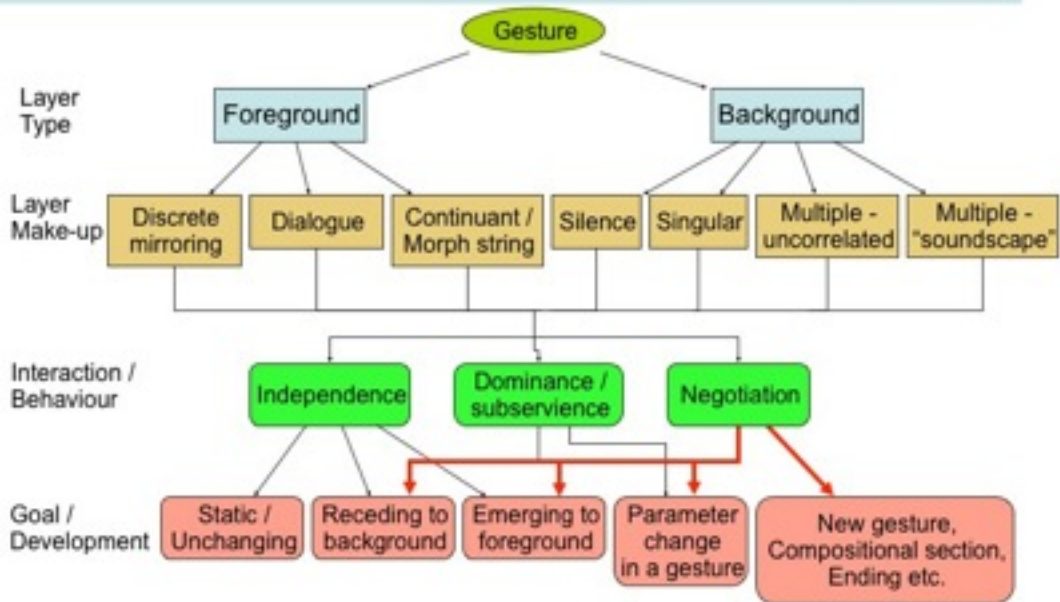


Interaction of gestures that are:

- perceptually separate
- Occur simultaneously / temporally overlapping
- Layers

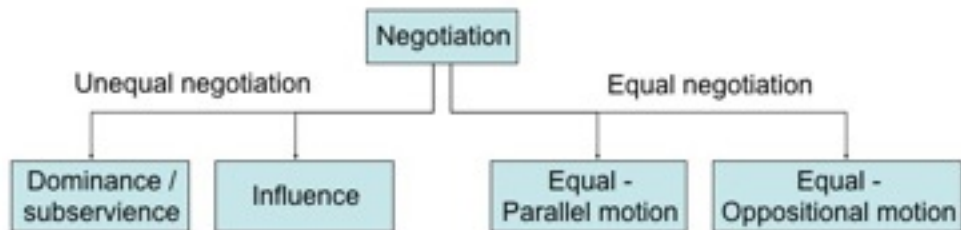
Two models:

1. Foreground vs. Background
2. Negotiating gestures (sub-category)



Negotiating Gestures

- Adaptation of terminology by Young and Bown (2009)
- Gestures negotiating towards a common goal.

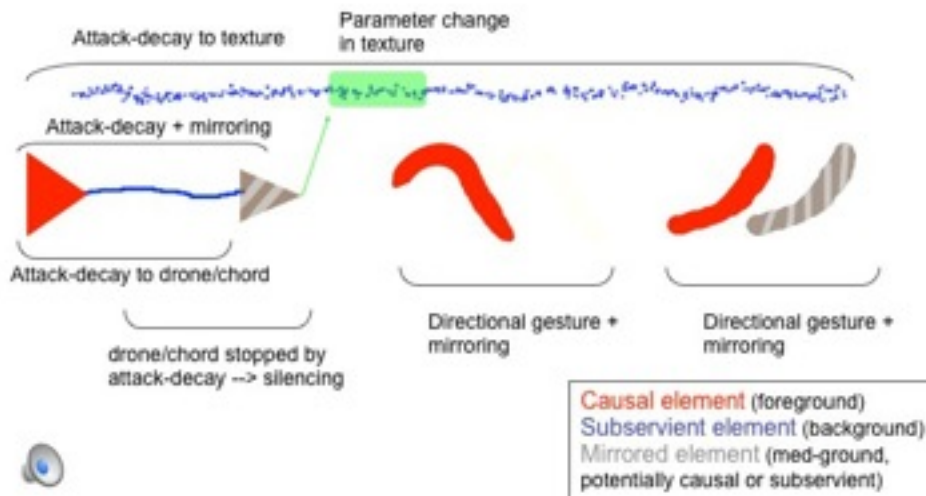


Temporal Evolution

- How do the above two levels (micro and meso-levels) evolve and interact over time?
- Preliminary results:
 - Show that the micro and meso level typological databases are applicable to analyses of works.
 - Show some possibilities of macro-level typologies of temporal evolution.
- Future work.

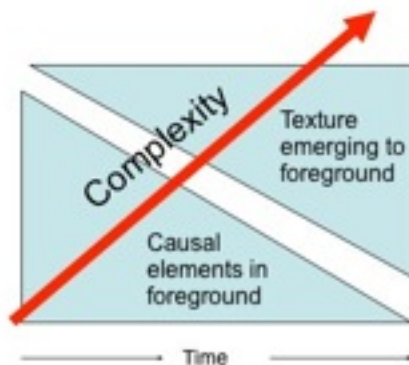
Novars (1st Section) - Typological Analysis

"Recipe"/Formula for each of the first six phrases of the work.



Novars (1st Section) - Temporal Evolution of Gestures

- Complexity:
 - pitched elements grow in complexity
 - Attack-decay elements are processed with increasing complexity
 - Texture varies in response to causal elements.
- Foreground/background relationship:
 - Texture occupies background, then increases in independence and moves towards foreground
 - Causal elements recede to med-ground.



- Continued analysis, with particular concentration on macro-level compositional design of gesture interactions.
- Application of existing typological databases for generative music creation, where the composer could adjust the “weight” or probability of each typology.

- Blackburn, M. "Composing from spectromorphological vocabulary: proposed application, pedagogy and metadata", EMS 2009.
- Eigenfeldt, A. "Future Intelligence in Live Electroacoustic Music", EMS 2009.
- Roy, S. "Functional and implicative analysis of Ombres Blanches". *Journal of New Music Research*, 27.1 (1998), 165-184.
- Smalley, D. "Spectromorphology and structuring processes". *The Language of Electroacoustic Music*. Ed. S. Emmerson. London: Macmillan, 1986. 61-93.
- Thoresen, L. "Sound-objects, Values and Characters in Åke Parmerud's *Les objets obscurs*, 3rd Section". *Organised Sound* 14.3 (2009): 310-320.

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