

Instrumental affordances, crossadaptivity as instrumental gesture

Marije Baalman

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Instrumentality of crossadaptive processing

performance practices

- Audio processing musician
- Augmented instruments
- Interactive music machines / live algorithms
- Group improvisation

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notions of instrumentality

- agency
- shared instrumentality
- transferring instrumental skills
- meta-instrumental skills

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How to make the 'invisible instrument' visible. Sonically distinct from the instrumental sound. (Naphtali 2016)

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- Acoustic sound of the instrument is captured with a microphone, so it can be processed
- Sensors or controllers are used to switch between effects or give additional control over the intensity of the effects
- Sometimes ancillary movements (picked up by sensors) are used to guide the processing (e.g. movement of the flute)
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Design of the instrument (processing and sensors) and performance are often done by the same person.

Interactive music machines *or* live algorithms

A live algorithm can (Lewis 2007)

- collaborate actively with human performers in real-time performance without a human operator
- make apt and creative contributions to the musical dimensions of sound, time and structure
- contain a parametric representation of the aural environment which changes to reflect interaction between machine and environment.

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Often they also operate on a longer timescale, giving musical phrases back in response to phrases that were played by the human performer

Group improvisation

A group of musicians (can be both acoustic and digital instruments, or combinations) plays together to create a sonic texture together.

The notion that the total sound is created together and is more than the sum of its parts.

Similarities with crossadaptive processing

Crossadaptive processing has elements of each of these practices

- one musician processing sound of another musician
- augmenting the sound of an instrument through processing
- creating fixed algorithms and mappings that create connections between analysis and processing
- improvisation with several musicians

But there are also contrasts

- not guided by a human operator
- control through the musical qualities produced with an (acoustic) instrument
- mappings are direct (except for the live convolver) — operating in the moment
- through the connections between the instruments, it seems more like a group of people playing an instrument together

Instrumentality

“It is like giving away some part of what you’ve played, and it must be capable of being transformed out of your own control”

- Live convolver: control over timing — control over sonic material
- Control intimacy : how close is your physical gesture to the sound
- Reactive inertia : how fast can you change the sound you are playing

“Pianist: It felt like there was a 3rd musician present.”

Agency of the crossadaptive processes?

Instrumentality (Alperson) I

(Peters 2016) discusses (Alperson 2008) concept of instrumentality:

“(…) the musicality of instruments, in the sense that (…) music making is not the sheer mechanic activity of producing a sound, but a **personally and socially**, hence culturally and historically meaningful, **intentional activity** that turns the instrument into a musical one. This activity includes the body in a way that ‘in some cases, it is difficult to know where the body ends and where the instrument begins’, so that ‘the performer’s musical instrument is better understood as **an amalgam of material object, the performer’s body, and bodily dispositions as habituated by the developments of various musically related skills**’ (p. 46).”

Instrumentality (Alperson) II

“Alperson’s words, ‘we must understand musical instruments as culturally freighted objects, that is, as objects that arise in the context of the history of musical practice’ (p. 46). With this, Alperson arrives at an advanced understanding of musical instruments as **‘instrumentalities in the context of human affairs’** (p. 47).”

Instrumentality (Alperson) III

“The second direction in which Alperson enlarges the commonsense conmusical instruments is towards what he calls the ‘instrumentality of music’ (p. 46). This is an exquisite effort to view **performativity, performer, and performed instrument as intimately intertwined with the work**. Alperson recognises the performance as an aesthetically appreciable terms of its instrumental accomplishment, giving rise to the ‘work-in-performance’(p. 47) — in this understanding, a work is doubly bound in consciousness.”

Field of Musical Improvisation

A theory which understands musical improvisation as a nonlinear, dynamic and complex system (Cobussen 2017).

“(. . .) during an improvisation more actants are “at work” than musicians alone: space, acoustics, instruments, audience, technicians, musical and socio-cultural backgrounds, technology, and the like all play a significant role. However, not all of these actants determine every improvisation to the same extent; some are more prominent and active than others in certain situations (periods, styles, cultures, as well as more singular circumstances). (. . .) FMI emphasizes singularity: **each improvisation thus yields a different network of actants and interactions, a unique configuration or assembly.**”

Shared instrumentality (Peters)

(Peters 2016) extends Alperson's concept with *shared instrumentality*

- *distributed* instrumentality (many instruments join up to form a single instrument - e.g. an orchestra)
- instrumentality can *shift* between its *individual* (monadic) and *distributed* (shared) forms
 - negotiating *individual* sonic territories
 - *interdependence* of decision-making, creating *shared* gestures
- environmental agency can enter and contribute its instrumentality
- appreciation of interpersonal accomplishment and virtuosity

Shared instrumentality in context of crossadaptive processing

- interdependencies of decision-making are constructed through the crossadaptive processing setup
- the crossadaptive processing setup can perhaps be seen as an environmental agency
- the musician has to balance her own *individual* sonic territory (the direct sound of her instrument) with the *shared* sonic territory, while the other musicians are doing the same: the *individual* gesture is always also a *shared* gesture

Transferring instrumental skills

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- This takes time
- It requires playing together with other musicians within a particular setup

Meta-instrumental skills

Meta-instrumental skills of musicians being experienced to play in ensembles using crossadaptive processes.

- familiarity/knowledge/implementations of analysis for their (acoustic) instrument and playing style(s)
- familiarity/knowledge/implementations of processing for their (acoustic) instrument and playing style(s)
- experience in setting up mappings of analysis to processing (negotiating these with other musicians)
- experience in playing in different constellations (with different musicians playing different instruments)

Related to the concept of *second order virtuosity* (Marques Lopes, Hoelzl, and De Campo 2016)

What does this mean in practice?

Development of the toolbox

- identifying which analysis methods work well for particular instruments and particular musicians
- identifying which processing methods work well for particular instruments and particular musicians
- designing mapping strategies
- close collaboration with the musicians to find these (as they are personal)

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Playing

- often: with a stable configuration (same musicians, same crossadaptive processing setup)
- in changing configurations (more likely to happen in practice) to develop meta-instrumental skills further

Other questions?

- Is a particular crossadaptive setup a composition? (like *Voyager* of George Lewis is?)

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- Is it crossadaptive if signal of musician A is affecting processing of musician B but not vice versa?

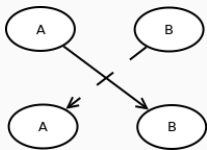


Figure 1: Crossadaptive processing

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