Signification system as artificial intelligence: Berio's "eternal path between sound and sense"

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Disciplinary background A. This paper examines the relations among music, language and theater primarily from the perspective of historical musicology.

Disciplinary background B. The paper has a secondary focus on linguistics.

Abstract

The study investigates the signification model devised by the twentieth-century Italian composer Luciano Berio, who explored how music conveys meaning throughout his career. The utopian vision was described as the "eternal path between sound and sense." I argue that Berio was consciously designing a system based on a hybrid of intellectual discourses surrounding human's innate linguistic ability. Similar to artificial intelligence, this system, I suggest, is able to "think"—it can analyze incoming materials based on given principles, while allowing chances to create an open-ended schema to generate infinite number of materials. On the other hand, in the two symphonic works _Sinfonia_ and _Coro_ I investigate, "theater of the mind" is evoked to elicit the audience's participation of the sense-making.

As Berio stated, his interest in linguistics was driven by a need to explore the connection between sound and meaning. He described his exploration of language in relation to the human cognitive capacity to process music as a series of "linguistic projects." Although the search for "universality of experience" remained inconclusive, it allowed Berio to develop what he called "music of musics" or "language of languages" in music. As I show, the "meta-music" he developed is a signification system that can be identified in the third movement of _Sinfonia_ (1968) and _Coro_ (1974). Both works involve multiple pre-existing musical, textual elements and diverse musical styles as compositional materials. "Distinctive features," similar to those in phonological analysis, are filtered out by juxtaposing new materials each time. The identity of these pre-existing materials is recalled through a catalogue of abstract musical features. These features are then combined and developed to generate new materials. Chance is also allowed during the generating process so that the system becomes an open schema. The system demonstrates the motto "infinite use of finite means" discussed by linguists in the mid-century. On the other hand, the ever-generating musical and textual materials form diverse situations which evoke a "theater of mind." The final step of the signification, I illustrate, is the interpretation of this invisible theater that requires the audience's active meaning-seeking process. The audience's task is to connect diverse images derived from the musical and the textual levels to imagine different situations.

Interdisciplinary implications. The relationship between music and language has been perennial problem throughout centuries. As paradigm shifts in the study of language were witnessed in the twentieth century, new ideas emerged to explain the way music functions as a system to convey meaning. As I demonstrate, Berio's automatic, open-ended signification system is designed specific to music, and is supported by intellectual discourses ranging from linguistics, literature and literary theory on language. The system sheds lights on the possibility of automation of music with its own guiding principles to operate, so that new musical elements can be generated infinitely similar to the productive nature of language. Despite its imperfection, the signification model may provide

inspirations for composers and computer engineers to analyze and generate music. Pre-existing materials or musical styles are identified and abstracted into "musical signs" or "distinctive features." These units can be further analyzed, modified and re-created.

On the other hand, Berio's exploration of "theater of the mind" is closely related to Berio's conviction of the existence of "universality of experience." Such hypothesis assumes the audience have the innate cognitive capacity to analyze music and text unconsciously and project images in their mind. The existence of "universality of experience", which was inspired by the notion of "linguistic competence" discussed in the mid twentieth century, was so far inconclusive. Berio's quest for the innate musical ability of humanity can be a topic or a case study for future research.

References

Benedictis, Angela Ida De. (Ed.). (2013). *Luciano Berio: Nuove Prospettive*. Florence: Casa Editrice Leo S. Olschki.

Berio, Luciano. (2013). *Scritti sulla musica.* Edited by Angela Ida de Benedictis. Turin: Giulio Einaudi Editore.

___. (2017). *Interviste e colloqui.* Edited by Vicenzina Caterina Ottomano. Turin: Giulio Einaudi Editore.

Blacking, John. (1971). Towards a theory of musical competence." In EJ De Jager (Ed.), *Man: anthropological essays presented to O F Raum* (pp. 19–34). Cape Town: Struik.

Chomsky, Noam. (1965). *Aspects of the theory of syntax*. Cambridge, Massachusetts: The MIT Press.

Davis, James. (2019). 'Come and see the blood in the streets': Luciano Berio, 'Coro', and the affective staging of the one-crowd. *Music and letters 100*(4), 685–712.

Jakobson, Roman and Halle, Morris. (1971). *Fundamentals of language*. Berlin: Mouton de Gruyter.

Osmond-Smith, David. (1985). *Playing on words: A guide to Luciano Berio's Sinfonia*. London: The Royal Musical Association.

Ruwet, Nicolas. (1967). Musicology and linguistics. *International social science journal, XIX* (1), 79–87.