

Sound Plasma

Annotation

The Romanian composer Horațiu Rădulescu (1942–2008) was one of the leading pioneering figures in the development of spectral music in the closing decades of the last century. In 1972 Rădulescu's music formalised the aesthetics arising from his earlier compositions into one key idea: 'Sound Plasma' ('Sound Plasma, Music for the future sign, My High D Opus ∞ ' – Horațiu Rădulescu 1972–1973). This is a form of music in which sound, harmony, colour, texture and structure are all combined together. There are four key elements: the Sound Compass, Global Sources, The Narrow Frequency Band and Spectrum Pulse. All four of these elements combine to form the architecture of the work arising from them. This in turn gives way to Evo-Involution, the term used to describe the life of Sound Plasma which defines seven basic directions. This article explores the basic concept, outlined above, of Sound Plasma and demonstrates its application in the "Capricorn's Nostalgic Crickets" Op. 16 (1972, rev. 1980).

Keywords: spectral music, Horațiu Rădulescu, Sound Plasma, *Capricorn's Nostalgic Crickets*, Romanian music.

1. Who was Horațiu Rădulescu?

Horațiu Rădulescu was, arguably, one of the most important composers of the past fifty years. Born in 1942 he wrote some of the most imaginative and original works of the twentieth century. His most notable output was his string quartets, piano concerto and piano sonatas. Often associated with the Spectralists, Rădulescu's music constantly drew on the harmonic series, but never in the manner that became typical of other spectral composers.

In 1969 Rădulescu left Romania and was instantly drawn to the works of Stockhausen, Messiaen and later Scelsi. The attraction to Stockhausen mostly hung in the fact this was the first composer Rădulescu found who was interested in the harmonic series. Stockhausen's "Stimmung" (1968) a remarkable work in its own right, was written around the same time as Rădulescu's "Credo" (1969) which was written while he was still in Romania. The similarity between the two works is the fascination with the harmonic series, but Rădulescu's "Credo" explores forty-five partials of the harmonic series, whereas "Stimmung" only really explores nine.

The association with Stockhausen's work is what ultimately led to Rădulescu to write his book "Sound Plasma" (Rădulescu (1972–1973). Sound Plasma, Music for the future sign, My High D Opus ∞).

2. What is Sound Plasma?

In short "Sound Plasma" describes how to create this new music Rădulescu envisaged. This ideal is a form of music which transcends harmony and counterpoint entirely. This occurs because the "music" becomes almost like a physical object, where sound, harmony, colour, texture and structure all combine together into one.

This is made possible by understanding all the influencing forces Rădulescu identified: The Sound Compass, Global Sources, Narrow-Frequency Bands (NFBs), Spectrum Pulse and Evo-Involution.

2.1. The Sound Compass

The Sound Compass is a device mirrored on Jung's compass of psychological types. The Sound Compass defines sounds and textures but can also be used to map out new musical structures. It is built on two opposite extremities. One is Noise and Sound, Noise being a complex and unclear sound like white noise; whereas Sound is clear and easy to identify like a trumpet. Then there is Width and Element, Width is quite simply a thick texture like in Ligeti's Sonoristic music and Element is a thin texture like Byzantine Chant.

All sounds, both naturally occurring and musical, can be placed on the Sound Compass. For example, we can understand that a sine wave is both pure Sound and pure Element as it is an identifiable sound and it is a single voice in the texture. We can also see that white noise would be pure Noise as you cannot identify a single sound in it and it is pure Width as it is the thickest texture that can be achieved. If we take a traditional texture like Sixteenth century polyphony we can understand it to be pure Sound, as the voices are easy to identify, and closer to pure Width as the texture is relatively thick. If we also take Varese's *Ionisation* we can see it is pure Noise due to the complexities of the percussion but the texture is relatively thin throughout most of the work so it can be seen as closer to pure Element.

2.2. Global Sources

Rădulescu went on to define sounds further; he identified them as Global Sources. There are five Global Sources: Instrument or Object, these as sounds produced by an item like a violin or twigs; Human Source, these are defined as all sounds made by a humans excluding language; Nature is all sounds produced by the natural world like bird calls, the wind blowing or the sea; Electronic sounds are all sounds produced electronically like sine wave, distortion or feedback; Concrete Human Source or Language is all languages or sounds produced by languages.

2.3. NFBs and Spectrum Pulse

Beyond this, Rădulescu identifies two plasmic devices: the Narrow Frequency Band (NFBs) and Spectrum Pulse. These two devices give Sound Plasma its energy. Rădulescu refers to NFBs as the “cell” or “Micro Plasma”. An NFB is a compressed band of multiple sound waves which are constantly oscillating around a small difference in tone (between 1/3 and 3/4 tone). Because of the interference in these sound waves the fundamental becomes unstable, this one, can create an equivalency to consonance and dissonance, and secondly, makes a sound which constantly evolves and adapts on itself without the need of traditional development.

Spectrum Pulse is the second plasmic device. In short Spectrum Pulse can be described as a phenomenologically produced rhythm. This occurs under two circumstances firstly when another sound is introduced, producing NFBs and secondly, variable multiphonic treatment of a single source. In the first we hear two fundamentals trying to dominate creating a new pulsating spectrum. The latter is a where a fundamental is trying to evolve and change or multiple spectra trying to produce a relatively stable NFB.

2.4. Evo-Involution

With the understanding of sound and the plasmic devices Rădulescu combines them all to form the architecture of the work. He refers to this as Evo-Involution, this describes the life and evolution of sound plasma. There are seven basic directions:

1. Towards Noise from Sound Width and/or Sound Element;
2. Towards Width from Noise Element and/or Sound Element;
3. Towards Sound from Noise Width and/or Noise Element;
4. Towards Element from Noise Width and/or Sound Width;
5. Simultaneously towards all limits of the sound space;
6. Simultaneously towards the central sound space;
7. The purest form of Evo-Involution, a combination of the previous six processes or at least the combination of five and six.

3. How Rădulescu portrayed this in his scores

3.1. Capricorn's Nostalgic Crickets for Seven Identical Woodwinds Op. 16 (1972, rev. 80)

How did Rădulescu put this aesthetic into practice?

This analysis of his work “Capricorn's Nostalgic Crickets” will give you some idea of how Rădulescu put his aesthetics into practice (see Fig. 1). The piece, even though orchestrated for any seven identical woodwinds, was written for the clarinetist Susan Stephens. The score is very typical of Rădulescu at that time. At first glance the score looks very free and aleatoric but it is not quite the case. Rădulescu is very stringent on the performers but there is a lot of room for interpretation and naturally occurring phenomena.

The most basic level of the piece is a 96 note canon in seven parts. Every note has duration of 11 time units; this could be seconds or something else. Every note is assigned a timbre or colour. Rădulescu described the work as “Canonic Simultaneous Permutation”. What this means is the 96 note microtonal canon, combined with the complex colours, produces a circling haze of overtones where the single pitches become almost indefinable. This is produced because of the complex colours combined with the very close harmonies, producing unclear combined spectra or NFBs. If we look at the opening chord we see that it is a microtonal cluster spread of a ninth. The entries of each voice in the canon is spread unevenly, this needs to be highlighted because the graphic depiction of the score is heavily focused on symmetry or other patterns.

As we can see there are three lines of symmetry Horizontally, Vertically and one line Diagonally. The symmetry ties in with this idea of “Canonic Simultaneous Permutation” as well as the visual element of the performance as the performers follow their line around the score.

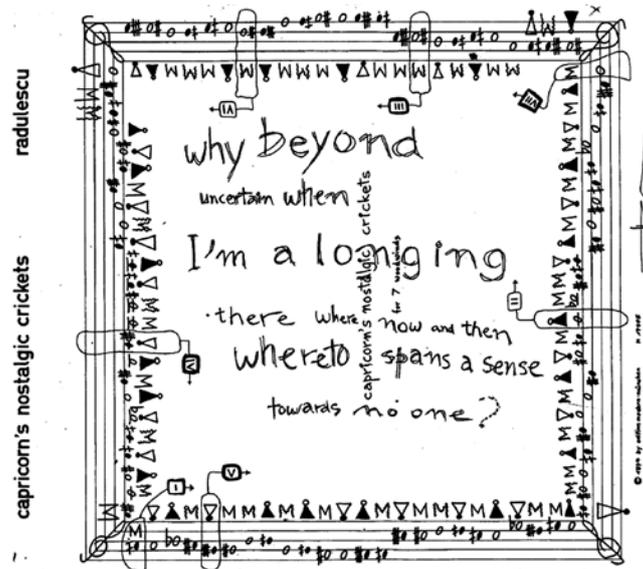


Fig 1. Horațiu Rădulescu, excerpt from the score of *Capricorn's Nostalgic Crickets*

Symmetry is not the only pattern being used in this piece. The importance of the number 8 is very significant. This is originally derived from the syllables in the title Cap-ri-corn's Nos-tal-gic Cric-kets. Bearing this in mind we can see that the sides of the score can be divided into three eight note chords. "Rhythmically" they are varying emphasis of the phrase: cap-RI-CORN'S nos-tal-GIC CRIC-kets or CAP-ri-CORN'S NOS-tal-gic cric-KETS. Each side follows this form of pattern. Another pattern begins to emerge but not quite as symmetrically as some of the others. The lines have small oscillations around a singular point. These points change irregularly but what they give the piece is a focal point to focus on.

This is only the musical level that is influencing the production of Sound Plasma. There are further levels of influence, the next point to look at is the central text:

Why Beyond
 Uncertain when
 I am a longing
 There where now and then
 Where to spans a sense
 Towards no one?

This text, written by the composer, is used as an influencing device for the performers. The piece does not programmatically depict the text, but instead the performers must contemplate every element of it (phonetically, literally, musically and instrumentally). Rădulescu's intention with this is so the performers can further define the "intrinsic sound microgitation accompanying the real I/O sound". What he means by this is he wants the performers to use the words to expand the basic sounds of the instruments away from their original sound, to create something more plasmic.

With this in mind the performers can focus on the next key device Concealing Sound Source. Doing this will disassociate the listener from conventional sound and bring the piece closer to Sound Plasma. This is achieved by the way Rădulescu directs the performers to play each note. First each note must have no attack and gradually crescendo, then diminuendo hiding the point when the note starts and finishes. Secondly each performer is directed to make their sound appear like it is either a human sound turning into an instrumental sound or vice versa. The use of the complex colours allows the performers to really make this more achievable because the original instrumental sound is warped.

This combination of elements is what gives the work its plasmic sound and shows a whole world of possibilities within this sphere of composition. The devices used in this piece are not the only way to produce Sound Plasma; Rădulescu himself kept trying new or alternative ways to produce Sound Plasma. The one constant was the aesthetic. This was even the case later on in his life when writing works like his piano concerto "The Quest".

4.1. How can Sound Plasma be used today?

Any composer wanting to draw on Sound Plasma as a way to compose will need to constantly consider all the elements previously mentioned in this talk: Sound Compass, Global Sources, NFBs, Spectrum Pulse as well as use the harmonic series to expand their music. These elements have no specific techniques or devices so the thinking can never become dogmatic. Like early Spectralism the only thing to keep unity is the aesthetic.

References

- Horațiu Rădulescu (1972–1973). *Sound Plasma – Music for the Future Sign, My High D Opus ∞*
 Horațiu Rădulescu (1972, rev. 1980). *Capricorn's Nostalgic Crickets – for Seven Identical Woodwind Op. 16*

Garso plazma

Santrauka

Rumunų kompozitorius Horațiu Rădulescu (1942–2008) paskutiniiais praėjusio amžiaus dešimtmečiais buvo vienas iškiliausių ir novatoriškiausių spektrinės muzikos kūrėjų. 1972-aisiais jis suformulavo savitą muzikos estetiką, grįstą savo ankstesnėmis kompozicijomis, ir ją apibendrino sąvoka „garso plazma“. Visa tai jis išdėstė teoriniame traktate „Sound Plasma: Music of the Future Sign“ [Garso plazma, Ateities ženklo muzika], o jo muzikine išraiška tapo kompozicija „My D High Opus 19∞“ [Mano viršutinis D, op. 19∞] (1972–1973).

„Garso plazma“ – tai muzikos forma, kurioje susilieja garsas, harmonija, faktūra ir struktūra. Šią muzikos koncepciją grindžia keturi pagrindiniai elementai: garso diapazonas, pasauliniai šaltiniai, siauro spektro garso dažniai ir spektro pulsas. Iš šių keturių elementų formuojama kūrinio architektūra. Iš jų sąveikos taip pat atsiranda „evo-/involiucija“ – sąvoka, apibrėžianti „garso plazmos“ gyvybinį ciklą, besiplėtojančią septyniomis pagrindinėmis kryptimis.

Šiame straipsnyje aptariama anksčiau minėta „garso plazmos“ koncepcija ir jos pritaikymas kūrinyje „Capricorn's Nostalgic Crickets“ [Nostalgiški ožiaragio virpliai], op. 16 (1972, nauja versija 1980).

Reikšminiai žodžiai: spektrinė muzika, rumunų muzika, Horațiu Rădulescu, garso plazma, *Capricorn's Nostalgic Crickets*.