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Rădulescu: the other spectralist

ABSTRACT

Compared to the central figures of French spectral music, Horaţiu Rădulescu has received relatively little critical attention. Contrasting temperaments, writing styles and surface musical features have led to a tendency to place Rădulescu in opposition to Grisey in particular. In this article I will analyse some of Rădulescu's theoretical writing and demonstrate important shared values with the spectral 'mainstream'. I will then examine *Das Andere* for solo viola, Op. 49 (1983) in detail and compare it to Grisey's solo viola masterpiece, *Prologue* (1976). In so doing I hope to reveal not only the inner workings of one of Rădulescu's most compelling and approachable pieces, but also to show some common strategies with Grisey, regardless of their radically different aural results.

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Horaţiu Rădulescu (1942-2008): composer, violinist, lover of cars, inventor (perhaps) of 'the spectral technique of composition', polymath. His compositions – over one hundred works – range from traditional genres such as string quartet and piano sonata (six of each) to near-utopian one-offs like *Byzantine Prayer*, Op. 74, for 40 flautists on 72 flutes, or *Dr Kai Hong's Diamond Mountain*, Op. 77, for 61 spectral gongs and soloists. This is music of astonishing originality, richness and beauty, vast shimmering pillars of sound in constant motion. Often couched in terms of meditation or ritual, much of the output is conceived for extended durations and large, resonant spaces. Performing his works requires one to adapt to a highly precise and detailed notational practice that simultaneously demands near continuous improvisation, an approach described by viola player Vincent Royer as ‘open[ing] a door on the performer’s creativity.’[1] This goes hand in hand with Rădulescu’s unusual approach to sound production, which, for string players in particular, requires a complete renewal of one’s relationship with the instrument. Whatever one’s views on his music, it is hard to argue with the late Bob Gilmore when he describes him as ‘one of the most fascinating and individual creative figures of his generation.’[2]

Despite this, in accounts of the ‘spectral moment’ of late 1970s Paris, Rădulescu tends to appear as a marginal figure, if at all. Compared to the central personalities of Murail and Grisey his music is infrequently performed, let alone written about.[3] As a consequence, while we know with some clarity the ideas behind the spectral attitude of Murail, Grisey and others associated with Ensemble L’Itinéraire, the situation for Rădulescu is considerably more opaque. Thus, although there are competing definitions for just what is required to make a piece spectral (or pre- or post-spectral for that matter), we can with certainty highlight the following characteristics as priorities for Grisey, Murail, et al.:

- thinking in terms of continuous, rather than discrete, categories (corollary: the understanding that everything is connected);
- a global approach, rather than a sequential or 'cellular' one;
- organizational processes of a logarithmic or exponential, rather than linear, type;
- construction with a functional, not combinatorial, method; and

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[1] Bob Gilmore, ‘Dübendorf : Radulescu’s “Cinerum”’, *Tempo* 59, no. 233 (July 2005), pp. 52–54.

[2] Ibid.

[3] Flammer laments this situation in Germany, just as Gilmore had done in the UK. It should be noted that thanks to the efforts of enthusiastic supporters such as Gilmore, Rădulescu’s music has reached a wider audience, at least in the academic sphere; my personal thanks are to composers Julian Anderson and Christian Mason who introduced me to this fascinating and alluring sound world, as they have for many other composers.

- keeping in mind the relationship between concept and perception.[4]

This list is Murail's but closely related versions of it fully or partially appear in a wide range of both primary and secondary literature.[5]

Such clarity and consistency is not apparent in the limited literature on Rădulescu. While Rădulescu himself regarded his work as being concerned with the 'spectral technique of composition', Bob Gilmore informs us that 'the path he followed [was] quite distinct from the spectrally-based techniques of Grisey or Murail.'[6] Surianu refers to Rădulescu's 'neo-Byzantine style'[7] (whatever that might be), while Dougherty describes a 'sound world constructed firmly on principles of nature, science and ancient philosophy,'[8] though what these principles are, and in what sense the construction is firm are not revealed. To a large extent Rădulescu must take the blame: his predilection for convoluted, jargon-heavy writing, in both performing notes and theoretical texts, and an all-embracing view of the world that incorporates Jung, Taoism and a mystically flavoured phenomenology within his technical discussions does not make for clarity of discourse. In fact, the contrasting rhetoric of Rădulescu and his French colleagues leads to something of a credibility gap, conditioned as we are to respond more favourably to quasi-scientific language than spiritual circumlocutions. This is not science, however, but music. Murail and Grisey's sound-as-it-is-objectively-measured principles are no more or less metaphorical in their application than Rădulescu's more flowery speculations, yet this contrast in language, along with a strikingly different sounding surface has led to a stereotyped opposition emerging, where Rădulescu and Grisey (in particular) are regarded as antipodes, seer versus scientist.[9] There is an element of truth in this compartmentalisation but it rejects the possibility of shared principles that may enrich our understanding of spectral music. Recent archival research by Julian Anderson (as yet unpublished) shows that for a time in the late 70s and early 80s, Rădulescu worked regularly with Ensemble L'Itineraire, and indeed they commissioned his remarkable piece for 33 strings, *Thirteen Dreams Ago*, Op. 26 (1977). Regardless of the fact that 25 years later he was describing them as 'the Mafioso,'[10] clearly Rădulescu, Murail and Grisey had much to do with each other as the spectral aesthetic was being established.

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[4] Tristan Murail, 'Target Practice', *Contemporary Music Review* 24, no. 2/3 (2005), p. 152.

[5] Including, for example: Gérard Grisey, 'Did You Say Spectral?', trans. Joshua Fineberg, *Contemporary Music Review* 19, no. 3 (2000), pp. 1–3; Hughes Dufourt, 'Musique Spectrale', in *Musique, Pouvoir, Écriture* (Paris: Borgois, 1991); Viviana Moscovich, 'French Spectral Music: An Introduction', *Tempo* 200 (1997), pp. 21–27.

[6] Gilmore, 'Dübendorf'.

[7] Horia Surianu, 'Romanian Spectral Music or Another Expression Freed', trans. Joshua Fineberg, *Contemporary Music Review* 19, no. 2 (2000), p. 30.

[8] William Dougherty, 'On Horatiu Radulescu's Fifth String Quartet, Before the Universe Was Born OP. 89', *Tempo* 68, no. 268 (April 2014), p. 34.

In this article I will analyse some of Rădulescu's theoretical writing and demonstrate important shared values with the spectral 'mainstream'. I will then examine *Das Andere* for solo viola, Op. 49 (1983) in detail and compare it to Grisey's solo viola masterpiece, *Prologue* (1976). In so doing I hope to reveal not only the inner workings of one of Rădulescu's most compelling and approachable pieces, but also to show some common strategies with Grisey, regardless of their radically different aural results.

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[9] Ernst Helmuth Flammer, 'Horaţiu Rădulescu: Klangvisionär Der Comedia Divina', *Musik & Ästhetik* 17, no. 66 (2013), pp. 79–95; Bob Gilmore, *Horatiu Radulescu: Sound Plasma and Spectral Music*, Tentative Affinities, n.d., accessed 14 April 2017.

[10] Guy Livingston, 'Horatiu Radulescu - Interview', 4 September 2007, http://www.paristransatlantic.com/magazine/interviews/radulescu.html, accessed 6 February 2013.

In addition to comments in interviews and CD liner notes, Rădulescu published three major theoretical works outlining his approach to composition: *Sound Plasma, Music Of The Future Sign* (1975), 'Musique de mes univers' (in *Silences* 1, 1985), and 'Brain and Sound Resonance: the world of self-generating functions as a basis of the spectral language of music' (in *The Annals of the New York Academy of Sciences* 999, 2003). His theoretical standpoint remains remarkably consistent across these three texts, in spite of their near thirty-year span. *Sound Plasma*, the most abstract of the three, is primarily concerned with setting out a field of possibilities for composition, and contains relatively few references to specific music. 'Musique de mes univers' is essentially a highly abridged rewriting of *Sound Plasma* with the addition of references to relevant works that illustrate each technical device. 'Brain and Sound Resonance,' at 42 pages the longest of these texts by some distance, moves further in this direction, presenting mini-analyses of a wide range of pieces in the manner of a glossary, perhaps inspired by Fineberg's appendix to the Spectral Music special issue of *Contemporary Music Review* (2000).[11] Whereas Fineberg's intent is to demystify some of the terminology-heavy discussion in the *CMR* volume, the proliferation of jargon in Rădulescu's article has entirely the opposite effect. Headings such as 'Complex [ϱ] Ring Spectra and Scordatura, Plus Explicit/Compact Spectrum [ε], with Microagogic Rhythm, Macrorandom Spectra [Π], and Multiplication of Multiples [μ]' seem to be items on the spectral menu from hell, and the subsequent discussions rarely clarify matters.[12] That said, the insights Rădulescu offers into his compositional processes are on the whole not dependent on this terminology, and often the problematic vocabulary can be set to one side. Furthermore, this article contains a wealth of Rădulescu's own analytical diagrams, generally under-discussed in the text but offering a rich resource for future investigation.

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[11] Joshua Fineberg, 'Guide to the Basic Concepts and Techniques of Spectral Music.', *Contemporary Music Review* 19, no. 2 (2000), pp. 81–113.

[12] Horatiu Rădulescu, 'Brain and Sound Resonance: The World of Self-Generative Functions as a Basis of the Spectral Language of Music', *Annals of the New York Academy of Sciences* 999 (2003), p. 354.

None of these three texts is a standard statement of compositional intent or reflection, and *Sound Plasma* is perhaps the strangest. A dual-form work, both concept and prose composition (in which case its name is *My D High opus 19* ∞),[13] Rădulescu's characteristically gnomic writing is further defamiliarised by 'STAR-DUST POETRY' overwritten across the prose text like graffiti.[14] Other orthographic oddities include the use of short two- to seven-word verses – rather like isolated lines from haiku – in place of page numbers. Thus, instead of twenty pages numbered from one onward, the book runs from page 'intimate hope invasion' to page 'and errors.' Each double-sided sheet explores a single topic, announced as a page heading. The exception to this is the final sheet, on which Rădulescu draws ten further pages, each with topic title and page-number-verse but with no content saving the final page-within-a-page and a single earlier diagram. The book presents the following sequence:[15]

(Heading)	*(Page-number-verse)*
EXPLANATIONS & DIRECTIONS	
ENTER THE SOUND	*intimate hope invasion*

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[13] I have very much enjoyed the occasions on which I've played this with my students, though I cannot vouch for them meditating on the words of the title for seven days as Rădulescu requests, or whether anyone felt 'UTOPIA surging and tending to overcome REALITY' (Horatiu Radulescu, *Sound Plasma - Music of the Future Sign or My D High Opus 19* ∞ (Munich: Edition Modern, 1975), p. 2.

[14] The second page of this overlayed stardust poetry may serve as an example: CREDO / snow bound calm, / sublime. / towards / loves and birches / our barbaric stars! (Ibid., [intimate hope invasion], verso).

[15] Those familiar with Rădulescu's output will spot a couple of work titles (yet to be composed when this text was written) amongst the page-number-verses, which suggests that these verses had more than passing significance for Rădulescu.

CARDINAL POINTS OF THE SOUND COMPASS	*crushing the crumbled skies*
GLOBAL SOURCES	*vague lament and wave*
THE NARROW FREQUENCY BAND	*again an ash sun weeping*
SPECTRUM PULSE	*thirteen dreams ago*
MACRO & MICRO SOUND PLASMA	*oddly enough*
CONCEAL CAUSE & EFFECT, ie SOURCES & SOUND PARAMETERS	*these occult oceans where melancholy*
EVO-INVOLUTION	*pre-existing soul of THEN*
[10 pages nested on this sheet]	*sceptical cloud*
MONISM ⟷ DUALISM ⟷	*is music drunk on death?*
⟷ DUALITY ⟷ TRINITY ⟷	*white shadows for a recluse, for credence*
⟷ TRINITY ⟷ QUADRITY ⟷	*dizzy divinity I*
INFINITY	*try other infinities*
FURTHER MICRO & MACRO ie NUCLEI & SPHERES' MUSIC	*between none and nirvana*
SIGN SENSE SIGNIFICANCE	*through thought fumes*
PARACONSCIOUSNESS & SOUND PLASMA	*icons caress your breathing*
⇲ TIME ↗(GO IN, THROUGH & OUT OF TIME)	*when creeping towards a bloody star*
MUSIC IS RITUAL OF ALL SENSES & OF THE BEYOND SENSES	*translate world into love*
MAGIC STATE	*and errors*

This arrangement is described as a 'free galaxy,' and we are invited to approach the structure non-linearly: 'The reading should start from any planet and follow a spiral design.'[16]

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[16] Rădulescu, *Sound Plasma*, p. 2.

This book, in both text and structure (and alternative musical interpretation), is problematic. The ten imaginary extra pages written into the final sheet are probably an indication that the book is incomplete.[17] The suggestion to traverse the structure 'spirally' seems gimmicky – though because of the dense cross-referencing it would be possible to re-order any of the completed sections after 'ENTER THE SOUND' without loss of coherence. The idea that a book can be both concept and prose composition may seem weak – although Rădulescu asks that the concept proposed in the book be used as the basis for an improvisation based on a single pitch, *not* to perform the text as music – and at first glance the list of headings and page-number-verses seems, frankly, bonkers. Nevertheless, there is a great deal of interesting speculative compositional thought contained in the book. In many ways this is a work of genuine 'speculative music theory' in the tradition of Pythagoras, Keppler and Fludd.[18] In other words, far from being an isolated piece of outsider art in music theory form, this is actually a contribution to a long occult bibliography that until relatively recently was highly respected, fascinating such figures as Newton, Fourier, Debussy and Hindemith, among many others.[19]

Sound Plasma is therefore not merely theorising in a purely musical realm. The convention of the music of the spheres underlying this work demands that the music will have a tangible impact, on us and, presumably, the cosmos as well. Or, more modestly and more feasibly, that it might bring us as performers and listeners into a new understanding of our relationship with the world. It is perhaps for this reason that Rădulescu incorporates Jungian psychological types into his theory, for this reason that he wishes to integrate all possible 'global sources' of sound, for this reason that he is so concerned (in his later work) with making audible the resonances that are theoretically present in the brain. And so he can claim of music made in response to his guidelines:

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[17] Apparently, Rădulescu intended at one stage to submit a different version as a doctorate. (Gilmore, *Horatiu Radulescu: Sound Plasma and Spectral Music*.)

[18] The text begins by stating that Pythagoras knew all this already, and this is far from an isolated reference in Radulescu's output. A fondness for Fibonacci series and Trinitarian numerology in his music, hidden messages such as the title *Thirteen Dreams Ago* embedded into the α and γ musics of the eponymous piece (pp. 29-30), the use of 'magic' shapes (e.g. the square of *Capricorn's Nostalgic Crickets*) and symbols, and a recurrence of 'cosmic' terminology all serve to link Radulescu to the speculative music tradition.

[19] See for example, Joscelyn Godwin, *Music and the Occult: French Musical Philosophies, 1750-1950* (University of Rochester Press, 1995); Jamie James, *The Music Of The Spheres: Music, Science and the Natural Order of the Universe*, New Edition (London: Abacus, 1995).

> 'you can get an inkling of the BEAUTY ENERGY being released in the process of the global sources' fusion, of the micro and macroplasma evo-involution, the gravity – – imponderability of the sound plasma gliding into the psyche space, extending senses into beyond senses.
> […]
> the music CREATES […] A MAGIC STATE OF THE SOUL. This is its single aim and reason to exist.'[20]

Or more prosaically, the music will ask you to listen in a new way: such is the poetic conclusion to the book. The opening section, on the other hand, ('ENTER THE SOUND') is concerned with the description and justification of a new approach to music that might generate such an effect, and it is within this surprisingly simple proposal that I believe significant parallels can be drawn to the 'mainstream' spectral group.

Rădulescu begins by declaring that 'sound in itself is an endless ocean of vibrations,' both continuous and ever-changing. He notes, however, that music has generally been built up from combinations of discontinuous, static elements: the discrete units of scale steps and rhythms, 'sound as points and lines.' This disconnection between 'sound in itself' and sound as it is used is magnified by traditional musical rhetoric, described by Rădulescu as 'ACTION and PANTOMIME with sounds,' the continued use of which is merely ‘hypertrophying’. A particular note of disappointment is reserved for electronic music’s adherence to these old modes of thought despite opening up new vistas of timbral possibilities and furthering our understanding of sound through its decomposition and recomposition. Against this unsatisfactory state of affairs he proposes the idea of ‘special state music’, a music founded on continuity that rejects the old rhetoric and reflects the properties of sound itself on to the musical structure: ‘As if the ABSTRACT sound vibrations had obliged a more CONCRETE sound activity and mimeticism in relation to reality.’[21]

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[20] Rădulescu, *Sound Plasma*, [and errors].

To summarise: Rădulescu believes that a consideration of the internal structure of sound can form the basis for a new type of music in which traditional rhetorical and structural categories are bypassed in favour of continuity and constant transformation. This is very close to what Hugues Dufourt proposes in his famous 1979 article ‘Musique spectrale’, though Dufourt explores these ideas in considerably greater detail and highlights serial music as the extreme manifestation of music based on the concatenation of discrete elements. Like Rădulescu, Dufourt seizes on the importance of electronics for allowing an investigation into sound itself; indeed for Dufourt technology is the prime mover for the new approach to composition, which he eventually names spectral music. The analytical possibilities opened up by new technologies, in particular the ability to ‘zoom in,’ observe (and alter) the microstructure of sound, change our conception of sound itself. No longer a sequence of discrete tones, sound becomes instead a dynamic field of forces that cannot be separated out into individual elements.[22] This in turn requires a fundamental change in compositional thought. Musical material should likewise eschew discontinuous units in favour of a new conception as a dynamic field of volumes, densities, directions and clouds. It is the composer’s role to plot the paths that will govern the transformations of these forces.[23] These are the same issues that motivated Rădulescu: a music of continuity that takes as its model sound’s endless ocean of vibrations.[24]

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[21] Ibid., [intimate hope invasion], recto.

[22] Dufourt, ‘Musique Spectrale’. ‘Il s'agit d'abord d'un changement d'échelle. L'électronique procède à une sorte de microanalyse du phénomène sonore, qui lui découvre de nouvelles structures d'ordre et un champ de possibilités insoupçonnées.

This sequence is echoed by Murail: ‘New analytic tools […] allow us to journey to the interior of sounds, to observe their internal structures. In this way, we immediately discover that a sound is not a stable and self-identical entity, as traditional notation might have us believe. […This] allows us to develop a compositional approach based on the analysis of sounds, and to make of their internal forces a starting point for the composer’s task.”[25] Again: 1) examine sound,

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Les techniques de représentation optique du son - du spectrographe à l'ordinateur - permettent d'intervenir avec précision sur les détails de l'onde acoustique et de lui imprimer les plus légères modifications. […] L'objet sonore change également d'allure. Il apparaît comme un champ de forces spontanément réparties selon une configuration dynamique dont on ne peut dissocier les facteurs ni fragmenter les étapes.’

[23] Ibid. ‘Les catégories de la pensée musicale se renouvellent également dans leur base. Elles ont à contrôler des situations de transition et d'interaction, des jeux de variables interdépendantes, des propriétés de réseau. Le processus de la composition musicale s'apparente à cet égard à un mouvement ininterrompu de différenciation et d'intégration. La matière sonore se présente, Si l'on veut, comme une structure dynamique de champ. Ce sont des volumes complexes, des rapports de densité, des orientations, des configurations nuageuses. Le rôle du compositeur est alors de tracer des axes, de dessiner des circuits, de trouver des chemins conducteurs qui régleront le jeu des différences et des variations.’

[24] Although Rădulescu was happy to take Pythagoras’ word on the internal structure of sound rather than needing his world turned upside down by a microcomputer.

[25] Tristan Murail, ‘The Revolution of Complex Sounds’, trans. Joshua Cody, *Contemporary Music Review* 24, no. 2/3 (2005), p. 122.

2) discover continuity and variety – noting that this does not correspond to what music history has taught you – then 3) make new music on this basis. As Grisey said: "We are musicians and our model is sound not literature, sound not mathematics, sound not theatre, visual arts, quantum physics, geology, astrology or acupuncture."[26] Or as Rădulescu says, "ENTER THE SOUND, PLAY THERE AND FROM THERE."[27]

At heart then, Rădulescu shares his basic approach with these other spectral composers, and so shares some of the consequences of that approach. A logical extension of taking sound as the model when composing music made of sound is that you can end up in infinite regress: sound as the model for sound as the model for sound as the model for . . . While such extremes are bypassed, the idea of small and large scales being to some extent self-similar was clearly very attractive to all these composers. Rădulescu liked to talk about the close relationship between micro and macro; Grisey expressed a desire for a 'more "organic" approach to form by self-generation of sounds;'[28] Murail referred to 'a new musical logic [...] an ideal compositional method in which structures of sounds would correspond to musical forms.'[29] Dufourt notes that this impulse is also a feature of serial music: the overall form and individual moment are unified through the series – though in general this relationship cannot be heard. Spectral music, he argues, shares this 'genetic conception' with serial music, but in contrast its structural relationships are designed to be audible. It is worth noting that what Dufourt labels a 'genetic conception' and Rădulescu characterises as 'micro and macro evo-involution,' is in effect the old

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[26] Joshua Fineberg, *Classical Music, Why Bother?: Hearing the World of Contemporary Culture Through a Composer's Ears*, 1 edition (New York: Routledge, 2006), p. 105.
[27] Rădulescu, *Sound Plasma*, [intimate hope invasion], verso.
[28] Grisey, 'Did You Say Spectral?', p. 3.
[29] Murail, 'The Revolution of Complex Sounds', p. 132.

Pythagorean favourite, 'as above, so below'. The move from science to mysticism is nothing more than a change of vocabulary.

If all these composers are describing the same problem and the same solution, why does Rădulescu's music seem to exist at such a remove from the others? While their art-music heritage is equivalent – Messiaen as guiding figure, Scelsi and Ligeti as important predecessors, serial orthodoxy as a norm to be rejected – Radulescu is set apart from other spectral composers by his love of Romanian folk music, heightened perhaps as an expatriate, which is an important component of his style. Perhaps more fundamental, however, are the different means by which these composers approached their project. If 'sound itself' is to be the model for a new approach to composition, the way in which that sound is itself modelled and interrogated will have significant consequences. The use of sonograms and other such visualisations as a way of understanding both pitch and temporal aspects of complex sounds is a well documented feature of the work of Murail and Grisey; Dufourt also makes reference to such techniques in his 'Musique Spectrale' article. Rădulescu, on the other hand, does not discuss the tools by which he explores the sounds that are to be the model for his special state music and, in the absence of evidence to the contrary, I suggest that Rădulescu's observations derive from his experience as a violinist and were achieved through a process of intense aural analysis.

Anyone who has drawn a bow across a string will be aware of the fragile balance between order and chaos this represents, of the constant fluctuations in timbre and pitch, of the ease with which tone can become noise, of the possibility for a single sound to fragment into its upper partials through variations in bow speed, pressure and position, of the chance of unexpected squeaks and distortions, and of the need to supress all this in order to make a 'good' sound. The violin can become a variable filter/resonator to perform a type of spectral analysis: a single note – as in a single length of vibrating string – can through the action of the bow be made to split into a vast array of component sounds. Even on a well-executed stroke designed to produce a consistent pure tone, close listening will reveal a dizzying inner life of micro-variations. I would suggest that this type of listening – in many respects part of a violinist's everyday practice routine – will have contributed to Rădulescu forming the idea of 'sound plasma'.[30]

Plasma, often referred to as the fourth state of matter, is a gas that has been so highly energised that electrons are stripped away from their atoms or molecules and the medium becomes ionised. It is perhaps not obvious how one can construct a sonic analogy from this – though one can easily match the high energy aspect to the frantic activity heard within our violinist's note. If, however, one considers that our sun is a vast ball of plasma and imagines how the swirling, churning activity of its surface, bounded yet constantly mutating,[31] might apply in the aural domain, the attraction to Rădulescu becomes clear. Here is a metaphor that captures the 'wild ocean' of that hypothetical violin tone, that can help make it audible, and can serve as a model for mimicking this super-energetic state in other aspects of the composition. Sound plasma can thus apply on the small scale ('microplasma') or large scale ('macroplasma') and become for Rădulescu the basic attribute of musical texture:

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[30] It is also worth highlighting in the context of violin-as-inspiration that combination tones are very clearly audible for the performer on a great many violin double stops. One could imagine that Rădulescu's fascination with harmonies built from combination tones (what he called 'self-generating functions') had its source at least in part in this very tangible aspect of violin performance.

[31] See for example NASA's wonderful collection of videos from their Solar Dynamics Observatory, e.g. https://youtu.be/aCWGppn4ndI.

'There are no longer steps, intervals, jumps, chords etc., but discreetly gliding and trembling narrow frequency bands, vibrating (living) sound plasma.'[32]

Traditional spectral analysis can reveal the complexity within sound, but usually the visualisation process simplifies and fixes it – a sonogram is in one sense merely a chord – with the advantage that it becomes an object that can be manipulated at will.[33] Rădulescu in contrast took as his model something more intangible and experiential: an awareness of the possibilities within a single sound, possibilities that remain in a state of constant flux. The two models are acquired by different tools: the sonogram is machine-generated, but sound plasma can be discovered by merely changing the perspective of one's listening. This should not be characterised as a technology gap, however. Rădulescu certainly encountered the high-tech solutions: indeed, he worked at IRCAM for a time and was computer-literate. But the concretisation of a transcribed sonogram would not have appealed to Rădulescu, representing a return to the rejected 'stone-like' sounds of the past. 'We have to break and penetrate this "stone",' he urges, 'magnify its inner ocean and make it reach a living plasma, a natural state.'[34]

Despite the divergence in choice of underlying sonic metaphor – crudely, sound plasma versus sonogram – there are still several points of contact beyond the opening gambit of a new music based on the analysis of sound. The desire to incorporate noise and complex sounds as part of a continuum with 'pure tone,' and to create formal structures through movement along this continuum is shared by Grisey and Murail and is also very important to Rădulescu. In *Sound Plasma* Rădulescu proposed a 'sound compass' as a way of visualising this timbral space: with cardinal points **N**oise, **S**ound, **W**idth, and **E**lement, any sound can be plotted, from a sine wave in the bottom right corner to white noise in the top left (see Ex. 1). The structure of Grisey's *Partiels*, for example, has been shown by Peter Niklas Wilson to follow a respiratory design alternating between peaks of noise and pure harmonic spectra, and could be represented as a fairly direct line alternating between the N and S poles of the sound compass.[35] Alternatively, plotting Noise-Sound against time, the journey becomes a sine wave, that basic sonic category. Rădulescu, in contrast, prefers less direct routes, with an erratic though ultimately directed path that closely models on a 'macro' level the shape of the 'narrow frequency band' (Rădulescu's note-alternative) on the 'micro' level (Ex. 2).

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[32] Rădulescu, *Sound Plasma*, [intimate hope invasion], verso.

[33] Ana Maria Avram notes that French approach is 'combinatorial and actually structuralist,' a view I would temper by saying that the 'French style' does not *reject* such a possibility, in spite of its stated avoidance of the discontinuous music that was regarded as so problematic. (Philip Clark, 'Unstable Molecule: Interview with Dumitrescu and Avram', *The Wire*, October 2009, p. 34, accessed 23 April 2012.) http://spectralmusic.org/Iancudumitrescu/Thewire.html.

[34] Rădulescu, *Sound Plasma*, [crushing the crumbled skies], verso.

Example 1: The 'sound compass'. Radulescu, *Sound Plasma*, [crushing the crumbled skies], recto. Reproduced by permission of G Ricordi & Co., Berlin.
Example 2: An erratic path from 'Width' to 'Element'. Radulescu, *Sound Plasma*, [oddly enough], recto. Reproduced by permission of G Ricordi & Co., Berlin.

There are further parallels: the idea of 'harmony-timbre' is closely related to that lying behind Rădulescu's 'spectrum pulse', in that both play with the fusion and decomposition of spectral components. One could also compare Rădulescu's fondness for combination-tone derived harmonies to the use of ring modulation techniques in Murail's music (in *Désintégrations*, for example), though for Rădulescu it is the acoustic model – the additional sounds readily apparent under the ear of the violinist playing high intensity double stops – that is important, whereas for Murail it is the electronic synthesis technique.[36]

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[35] Peter Niklas Wilson, 'Vers Une "ecologie Des Sons": Partiels de Gérard Grisey et L'esthétique Du Groupe de l'Itinéraire', trans. Martin Kaltenecker, *Entretemps*, no. 8 (1989), pp. 57–58.

One further point of near-connection draws together this theoretical background. Rădulescu's approach could be summarised as an attempt to 'make audible' the hidden life of sounds. This loosely phenomenological imperative results in him remaining very close to his plasmatic sonic model and, with very few exceptions, writing music that is entirely based on one or more harmonic series. Grisey and Murail are likewise deeply concerned with perception, but they approach it from the opposite direction, composing structures that they hope will be 'made audible' to the listener simply through the performance of their music. They are therefore much less tied to the initial sonic model and can compose – if they wish to – in a rather more traditional way.

But again, there is a higher level at which a shared purpose is evident, as for Rădulescu and Grisey in particular the key is that sounds should be *alive*:
'living objects, with a birth, lifetime and death' (Grisey);[37]

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[36] Confusingly, Rădulescu calls these 'self-generating functions'. Understanding that he uses the word 'function' instead of 'partial' clarifies things somewhat and indicates that for him the magic of the harmony is that it creates itself from the interaction of the source pitches.

[37] David Bündler, 'Interview with Gerard Grisey', *20th-Century Music*, March 1996, http://www.angelfire.com/music2/davidbundler/grisey.html, accessed 13 April 2012.

'the sound INTO which you feel YOU HAVE ENTERED – living, breathing' (Rădulescu).[38]

…

Das Andere, Op. 49 for solo viola (1984): 18 minutes of unbroken sound plasma charting a gradual, if erratic, descent from a G three-and-a-half octaves above middle C to the bottom note of the instrument.[39] As well as being a beautifully strange piece of music in its own right, *Das Andere* displays many of the features noted earlier and is also a useful compendium of some of Rădulescu's favourite string techniques. He describes the music as being 'at the border between score and sound phenomenon, trying to create a state of trance,'[40] and while this hints at a lack of development – the piece's two materials are fundamentally unaltered from start to finish – it should not blind us to the fact that this is a *guided* meditation. Though the surface impression may be of improvisatory freedom and dynamic stasis, the music is in fact tightly controlled and highly teleological. On the one hand nothing at all happens, on the other our understanding of the unchanging basic materials is transformed across the piece by subtle manipulations of duration (both structural and local), harmonic context, overall energy and register.

The score is a form of tablature, with a four-line stave representing the four strings of the viola (see Ex. 3). Dotted lines cross the staves every 2 seconds, with a solid line at 10-second intervals; each page lasts 60 seconds. The performer is directed to orient themselves through the use of a 2-colour metronome set to 30MM, with a red light corresponding to the solid lines and a green light marking the dotted lines. Dynamics and rhythm at the smallest scale are left to the discretion of the performer, but all events marked on the score are to occur at their precise time-location; likewise dynamics are occasionally indicated at important points to show the large-scale shaping. Only two materials are used in the piece, labelled *A* (alpha) and Σ (sigma). In addition there are two further techniques that are particularly associated with the *A* material, what Rădulescu calls 'little devils' and 'u du 'u du'.[41] All of these features are present in the score extract in example 3.

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[38] Rădulescu, *Sound Plasma*, [again an ash sun weeping], recto.

[39] Rădulescu permits *Das Andere* to be performed on any string instrument tuned in fifths.

[40] Horatiu Rădulescu, *Das Andere, Op. 49* (Montreux: Lucero Print, 1984).

Example 3: Tabulature notation in *Das Andere*. Copyright Lucero Print Switzerland. Reprinted by permission.

The opening material of the piece is Σ. This is variously described by Rădulescu as 'two part polyphony of quasi "neo-byzantine" spectral melodies,' 'like 2 "shepherds" with small flutes,' and 'very irregular melodies resembling high Alp-horns.' The composer and longstanding aficionado of Romanian folk music Julian Anderson has helpfully pointed out that the alphorns with which Rădulescu would have been familiar are not the Swiss ones of Alpine picture postcards. There are a number of different alphorn instruments used in the various shepherding communities of the Carpathian mountains, each with a distinctive sound and repertoire. One matches the sound of Rădulescu's Σ material strikingly well: the trembita, an instrument of much narrower bore and altogether more raucous tone than the Swiss alphorn, played on the extreme high harmonics. Once made of wood, today many instruments are made of wound metal, and one can get a good sense of their sound through (for example) this video of a shepherd playing next to his flock in Repedea, in the Romanian part of Maramures: https://youtu.be/aG365akIXdo. The viola reimagining of this music is likewise played on extremely high natural harmonics, with the added extension that two sets are to be played simultaneously.[42] Rather than printing the sounding pitches, Rădulescu indicates the range of harmonic partials to be played on each string. As an appendix to the score, Rădulescu provides a standard staff-notation for the desired pitches: there are five 'models of biphonies' reproduced on each pair of strings (Ex. 4). These models suggest that some pitches are to be regarded as more important than others and thus emphasised in the improvised melodies created in performing the Σ material. Furthermore, periodic rhythm or glissandi are prohibited. The marks across the stave in example 3 that look like a headless quaver are 'micro climaxes' on the specified partials, creating combination tones if played at sufficiently high intensity. Thus, although the performance of this material is improvised, it is an improvisation within very tight boundaries.

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[41] An onomatopoeic name invented by cellist Rohan de Saram.

The effect of this writing under the ear of the performer is nothing short of extraordinary. It is not a straightforward task to maintain contact on both strings at this extreme register (as some recordings will testify), but when it is achieved, the combination tones produced are genuinely startling in their intensity. The Σ modules require a great deal of energy to perform, and while they tend towards the raucous exhilaration of the Romanian alphorn, they are at the same time highly fragile and prone to unexpected breakages of sound.

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[42] This video, taken from the area of Maramures that is in Ukraine, features a large number of trembitas playing against a held note, an effect that is near-identical to the opening of *Das Andere*: https://youtu.be/Cu_vleOPvwE.

Example 4: *Σ* material in *Das Andere*. Copyright Lucero Print Switzerland. Reprinted by permission.

The contrasting *A* material is a surprisingly neo-Baroque string-crossing arpeggio figuration that brings to mind some of the Bach solo suites. The freedom permitted in the execution of this material is rather different to that of *Σ*. With *A* the pitches are fixed and unchanging, and the points of string crossings are marked in the score; Rădulescu instructs that these should be strictly adhered to. The bow contact position, however, is required to be constantly in motion, between 'moltissimo sul tasto' – so far over the fingerboard you are bowing next to your left hand – and 'verso pont' – very close to (but not on) the bridge. This creates a kind of spectral filtering effect, the changing bow contact bringing out an ever-changing series of formants.

During the *A* modules, the gaps between the indications to play a string crossing are to be filled with a kind of drone on what Rădulescu calls the 'obsessive voice' (marked with a → on the score). Two techniques are used to energise this drone: firstly, 'little devils', extremely high harmonics very close to the nut of the string (or the stopped finger for a non-open string note). These are highly unstable and therefore very intermittent, often breaking down to the stopped or open string pitch. Rădulescu writes 'the whole technique resembles a cloudy phenomenon with very high register erruptions [sic] like sparklings.' Secondly, 'u du 'u du', or 'phase-shifting arco', where, with a stiffly locked right arm, the bow is made to rebound between two imaginary walls, the bow contact position changing between strokes but never during a stroke. The effect is similar to the spectral filtering described above, and in addition Rădulescu highlights that a 'breathing noise' of the bow hair against the string should be audible.

As with *Σ*, performance of the *A* material involves relearning one's playing habits alongside an awareness that the new technique is extremely idiomatic. The chords of *A* in general lie under the fingers without any grotesque stretches, and the crossing string bowing is a standard technique with a long history. Likewise, when one has adjusted to the hand position required by the extreme register of *Σ*, these high harmonic melodies are a great deal of fun to play and, of course, what could be more 'natural' than natural harmonics? There is a combination of foreignness and familiarity in both the means to make these sounds and the referents of the sounds themselves (alphorns and Baroque style). The viola has never sounded like this before yet the music seems (and feels to play) strongly viola-like. Such dualities are, as the title suggests, part and parcel of *Das Andere*.

The constantly varying timbral qualities of *A* and *Σ* materials – the rough, unpredictable, fluctuating sound quality created through the use of extreme register (*Σ*) and constantly varying contact point (*A*) – make them clear examples of sound plasma. The plasmatic approach is not restricted to timbre, however, and is apparent across multiple parameters and structural levels. A convenient visual representation of such activity in the realm of dynamics is what Rădulescu refers to as an 'electro cardiogram,'[43] or occasionally 'encephalograms of sound'[44] (note the life metaphor again). He describes this motion as characteristic of 'evo-involution'[45] – in essence a highly erratic movement created by the sum of many different directional impulses – which he states is 'the life of the sound plasma'.[46] In many pieces he notates this explicitly but in *Das Andere* he uses a shorthand where the *Σ* accents represent a peak in the irregularly fluctuating cardiogram (see example 5).

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[43] Rădulescu, *Sound Plasma*, [again an ash sun weeping], recto; Horatiu Rădulescu, 'Musique de Mes Univers', *Silences 1*, 1985, pp. 50–56.
[44] Rădulescu, *Sound Plasma*, [pre-existing soul of THEN], verso.
[45] Horatiu Rădulescu, *Thirteen Dreams Ago* (Paris: Editions Jobert, 1978).

Example 5: Rădulescu's diagram of shifting intensities in a *Σ* module. Copyright Lucero Print Switzerland. Reprinted by permission.

This 'electro cardiagram' plot is useful for highlighting the plasmatic approach in other domains. If Rădulescu's 'graphic simulation' of a *Σ* melody as given in the performing notes is turned into a continuous line, one can immediately see that this is another version of the characteristic electro cardiogram shape (see example 6). Thus the intention for the local pitch trajectories within *Σ* is evidently that they should be plasmatic.

Example 6: Rădulescu's graphic simulation of a *Σ* melody, a) as printed in performing notes and b) with additional line to highlight electro cardiogram shape. Copyright Lucero Print Switzerland. Reprinted by permission.

A similar analysis relating activity to time can be made in the *A* modules. By taking each 2-second unit as a window and counting the number of strings crossed, a crude measure of overall energy across the duration of the material is obtained. Example 7 demonstrates that the erratically fluctuating electro cardiogram is again in evidence, as it is if one plots a graph of the duration of each module against module number across the entire piece (see example 8). In this way the microplasma of 'the sound itself,' the unstable but highly characteristic timbres of the *Σ* and *A* materials, is reflected in the melodic content, dynamics, energy level, and macroform of the entire piece. 'As above, so below.'

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[46] Rădulescu, *Sound Plasma*, [pre-existing soul of THEN], recto.

Example 7: Energy across an *A* module. a) Score extract. Copyright Lucero Print Switzerland. Reprinted by permission. b) Corresponding graph of energy against time.

Example 8: Duration of modules in *Das Andere* across entire piece.

In one respect, this is unremarkable: any random distribution would produce such graphs. Perhaps this use of the electro cardiogram indicates nothing more than Rădulescu's commitment to avoiding standard, stable, 'stone-like' structures across all parameters. However, the trend line superimposed on example 8 reveals a clear trajectory behind the surface fluctuations. This 'acceleration' contributes to the generation of a teleological structure that, it will be shown, is in certain respects surprisingly traditional.

Example 8 indicates that, overall, the durations of modules decrease towards the final segment and thus momentum increases. Example 9, which displays structural, material and harmonic outlines across the whole piece, demonstrates that this increase in momentum is reinforced by the increasingly frequent changes in material-type. The sequence of seven 'regions' in this diagram are those highlighted in Rădulescu's 'macroform' summary of *Das Andere*, which he includes in 'Brain and

Sound Resonance.'[47] Again their durations contract leading to the final, extended region.[48]

Example 9: Structural diagram of *Das Andere*.

Alongside this duration scheme, there is a large scale harmonic plan based on a carefully chosen sequence of 'virtual' fundamentals. Every module in *Das Andere* has a virtual fundamental: the hypothetical bass note that would include all the pitches of the module as part of its harmonic series. This is straightforward to calculate for the *Σ* modules as they are all already natural harmonics. One therefore need only find the fundamental that includes as partials the two open strings on which these harmonics are played. This is, of course, simply the same pitch-class as the lower of the two strings. Things are somewhat more complex for the *A* modules, whose harmonies are created through Rădulescu's favourite technique of 'self generating functions:' a single pair of notes project their sum and difference tones to make a four-part chord.[49] If one knows the partial numbers for the source pair, the resultant notes are a simple arithmetic sum and subtraction, and the fundamental is likewise easily calculated. Conveniently, Rădulescu indicates both fundamental and theoretical partial numbers in the score. Although I have described them as 'virtual,'

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[47] The vast majority of the information contained in this document is already easily accessible from the score – the only extra analytical layer presented are the indications for the seven regions. However, there are a few somewhat enigmatic additions. Module 14 is labelled 'VERDI' for reasons I have not been able to discern. Similarly, the open D in module 23 is highlighted as being 'BABUSHKA-voice'.

[48] For the most part, Rădulescu's regions advance at clear textural/harmonic shifts. The one that is slightly surprising at first glance is where region 7 begins. Why here? Why not with the multiphonic in the subsequent module, which seems to be marked as a more significant event? The answer, I believe, is that module 38 begins an important middleground chromatic/microtonal descent across the *A* modules, as will be discussed later in the article.

[49] For more detail on this technique, see Bob Gilmore, 'Spectral Techniques in Horatiu Radulescu's Second Piano Sonata', *Tempo* 62 (252) (2010), pp. 66–78.

Rădulescu ensures that they are anything but. The 'obsessive voice' in the *A* modules is invariably the same pitch class as the local fundamental, and thus the 'root' of each chord is not only present in the texture, but is actually emphasised.

The interaction of these fundamentals and the seven regions and two material types suggests an almost 'Classical' scheme (see example 9). An initial static region on D is followed by a less stable one which nevertheless concludes with a clear 'cadence' on A. The third region passes through a series of different fundamentals before arriving at G at the start of the fourth region, which is maintained until it falls to C in the sixth region, an area that is reinforced and extended in the seventh. In other words, the standard move from stability to instability and back again, including an articulation point around a third of the way through and a prominent 'dominant' area before the final arrival.

This tonal journey is not merely a figment of the visual imagination getting carried away with Rădulescu's annotations – quite the contrary. The major arrival points are rhetorically marked: the 'cadence' on A at module 15 is generated through a sudden reduction in activity, the absence of any literal presentation of either *A* or *Σ* material, and focus on a simple 'root position' spectrum – a technique reused over a more extended period for the final module. The moves to G and C (modules 23 and 35) are marked to be played 'fff' – the only points in the piece that dynamics are indicated before the detailed specifications in the final module. Furthermore, the internal activity of module 22, although still corresponding to the 'electro cardiogram' model, creates an overall curve of rising energy, pushing the music forward to the arrival on G that follows (see example 10).

As previously noted, the *A* material emphasises the current virtual fundamental by virtue of its position as the 'obsessive voice'. This has a further consequence in terms of the 'voicing' of the *A* harmonies. Until the final region, the obsessive voice is always in the middle of the texture, and as such the harmonies have a mobile quality akin to a first or second inversion common triad. With the C fundamental, however, the obsessive voice is in the bass, so the final sequence of *A* harmonies have a grounded-ness none of the other *A* modules are permitted. The material remains unchanged for the whole piece, but the new voicing marks out the passage on C as a tangible arrival.

While the *A* material is presented in more or less the same register throughout the piece, the Σ modules create a large-scale descent. There are five different versions of the Σ material used in *Das Andere*, each with a distinctive profile (see example 4). These modules can be played at three pitch levels corresponding to the three different pairs of adjacent open strings (D and A, G and D, C and G); fifteen modules in total, therefore, each of which appears only once in the course of the piece. Rather than mixing up the permutations, Rădulescu chooses to use all the top string modules, then all the middle string ones, then all the bottom string ones; as such the Σ material falls by a fifth twice, the distinctiveness of the different versions highlighting that these are *transpositions* of something we have heard before rather than yet another variant of the Σ model. The three sets of five Σ modules are presented in three different orderings, with Rădulescu arranging the the final set from highest to lowest – ε, γ, β, α, δ, λ (see example 4) – further strengthening the directionality in the final regions of the piece. This teleological intensification is mirrored in final sequence of *A* modules, with region 7 consisting of a micro-chromatic descent across three voices over a C pedal in the bass, compressing the harmonic space onto the final perfect fifth (Ex. 11).

Example 11: Harmonic sequence of region 7 showing descent over C pedal. Bar numbers refer to module numbers.

It is clear, therefore, that despite the chaotic surface of the electro cardiogram model of evo-involution, the final module – essentially a variety of filters on the bottom C – is the target of all that has gone before. In his macroform diagram, Rădulescu labels this moment 'CATHEDRAL SOUND' and this image certainly gives an indication of the capacious resonance he hopes to project, and may also suggest connotations of sanctuary and sacred space. Along with the cadence in module 15, this is the most straightforwardly 'spectral' moment in the whole piece: a held fundamental with various portions of the overtone series above it emphasised through bow speed, contact point, dynamics, pressure, and the use of 'little devils' on the twelth above, eventually all fused into the single bare compound fifth. As well as providing a long passage of stability and harmonic resolution, this arrival also suggests itself as the source for both the *A* and the *Σ* material. Such a proposal might take a leap of faith, but in a sense the whole piece has been constructed to make this leap of faith possible. It has already been shown how the final *A* modules converge on the concluding C-G dyad, but what has not been highlighted is the increasingly prominent role of the 'little devils' within the obsessive voice of the *A* material. These very high harmonics effectively embed the *Σ* material within *A*, and the increasingly rapid alternations of material type, leading to their explicit combination in the penultimate segment – *Σ* appearing within *A* like a 'little devil' – serves to dissolve the opposition between the *Σ* and *A* musics, turning contrast into coexistence. The final module's exploration of a harmonic spectrum could be regarded as a fusion of *A* and *Σ*: *A* by virtue of the voice-leading progression that compresses the four-part harmony into a single 'obsessive voice,' and *Σ* by the harmonics melodies generated by the 'little devils' on the third partial. This plasmatic activity is then further fused into the final stable dyad, where the electro cardiogram is subsumed back into the inner life of the sound. We are watching a star go supernova, in reverse.

Most remarkably of all, Rădulescu achieves this through an essentially non-interventionist approach to composition. *Das Andere* has no development, no transformation, no stretching or squeezing of the basic forms: just two different ways of playing on a spectrum. At the same time, Rădulescu constructs a strongly teleological journey that invites us to hear these materials as two aspects of a single note.[50] One rarely travels so far whilst standing still.

…

There is no need to cover Grisey's *Prologue* in such depth, but there are some interesting parallels to *Das Andere* that are worth highlighting. Trivially, they share a duration (around 18 minutes), a first performer in Gérard Caussé, and a notational approach that allows the performer a degree of quasi-improvisatory freedom within a strictly controlled environment. More significantly, both pieces have a curve that is played out on several levels of structure, and for Grisey this is a simple undulating wave shape, the model for which is the opening pitch contour of *Prologue* (Ex. 12). In his analysis of *Prologue*, Hennessy notes that this wave shape also models the durational scheme within each of the opening sections.[51] He stops here, but could have gone further, as the relative tempi, dynamics, number of notes in gesture, and number of sets of gestures follow the same curve across the first five sections:

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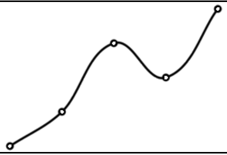
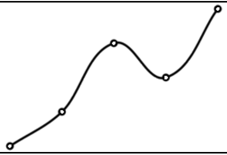
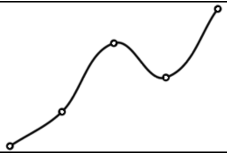
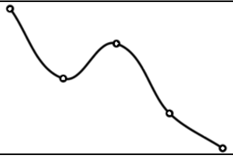
[50] This 'purely musical' journey in combination with the title and programme note, invites speculation as to a psychological parallel. 'Das Andere,' the other, is the shadow, which in Jungian psychology should be confronted and integrated on the path to self-individuation. *A* and *Σ* materials appear in this opposing relationship, and without undergoing any internal changes they are eventually integrated within the 'cathedral' sound' of the final page of the piece.

Grisey, *Prologue*	**Section 1**	**Section 2**	**Section 3**	**Section 4**	**Section 5**	**Overall curve Sections 1 – 5**
Tempo	70 ↗ 90	100 ↗ 140	160 ↗ 260	190 ↘ 130	190 ↗ 300	
Dynamics	ppp – p	pp – mp	mp – f	p – mf	mf – ff	
No. of notes in gesture	5	7	11	9	13	
No. of sets of gestures in section	9+[52]	5	8	3	2	

In this way, the occult principle of 'as above, so below' is just as significantly present in Grisey's *Prologue* as it is in Rădulescu's *Das Andere*.

Example 12: Opening pitch contour of *Prologue*.

Both composers also restrict themselves to two contrasting and seemingly incompatible materials. For Grisey these are the 'respiratory' and 'cardiac' gestures of *Prologue's* opening statement.[53] Just as *Das Andere* results in a fusion of the *A* and *Σ* materials, so *Prologue* reaches a point where the respiratory and cardiac gestures have melded together. However, whereas Rădulescu leaves his materials unaltered from start to finish, Grisey proceeds by actively working his gestures, stretching them, distorting them, making echoes and cross-syntheses, and eventually pulverising them into a band of noise. The journey is the same, but the means are different, and the implication is different too. Rădulescu encourages us to hear anew, so the *A* and *Σ* materials can be understood as both stemming from the final basic sonority. With *Prologue*, it is not so much a case of 'learning to hear differently' as being taken step by step through a process of transformation. In *Das Andere* our perspective, but not the material, has changed; in *Prologue* the material itself is mutated, recombined, resynthesised. Their target points, however, are equivalent: the open string as plasma source (in which one can find anything), versus an evocation of pure white noise (in which one can find anything).

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[51] Jeffrey J Hennessey, 'Beneath the Skin of Time: Alternative Temporalities in Grisey's Prologue for Solo Viola', *Perspectives of New Music* 47, no. 2 (2009), pp. 45–48.

[52] The first gesture is repeated ad lib.

Both composers manipulate our sense of the foreign and the familiar. Grisey begins with music that is, microtones notwithstanding, straightforward and motivic: clear, memorable, bounded. Through intense motivic working, he transforms the opening material into its opposite: a continuously moving band of noise, taking us to a foreign place by successive alterations of the familiar. Rădulescu's approach heads in the opposite direction. His opening is ostentatiously strange, but the place the music finally comes to rest is as straightforwardly familiar as it could possibly be. The backbone of both these pieces is the dramatic projection of these journeys.

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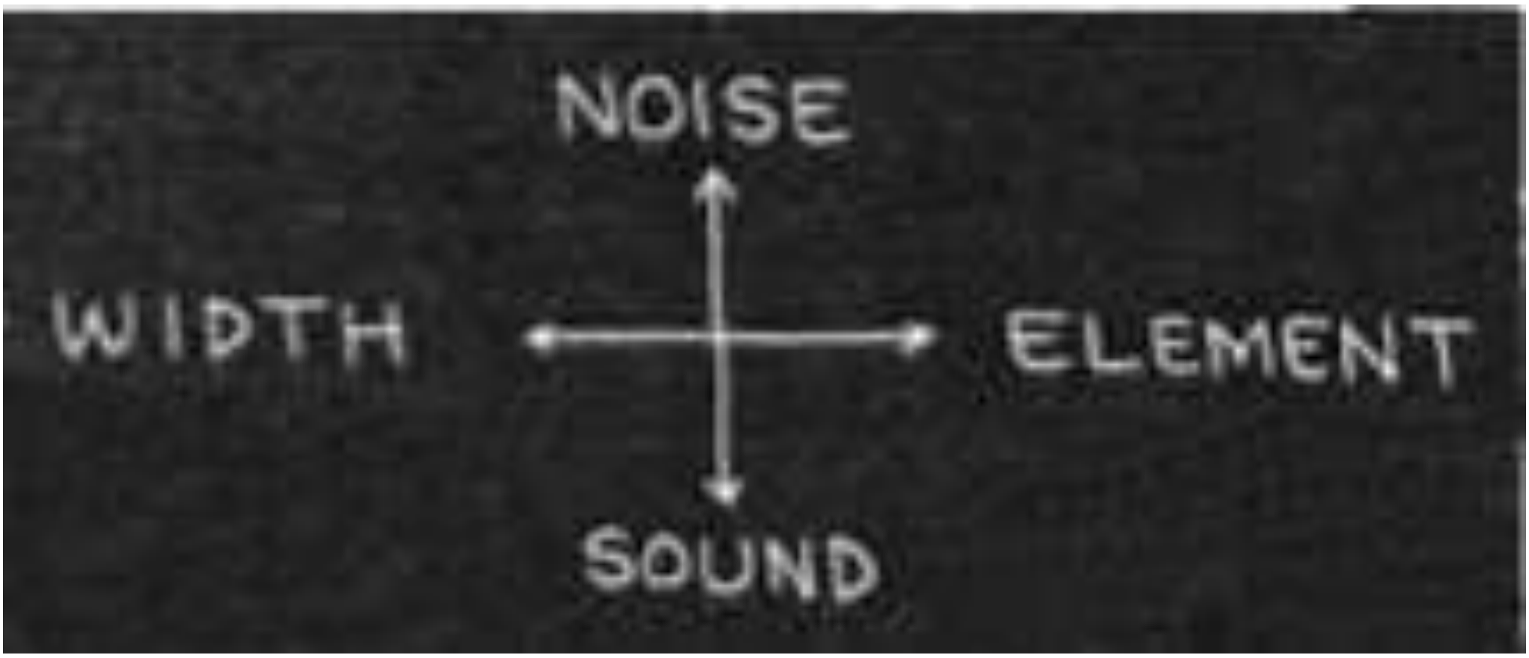
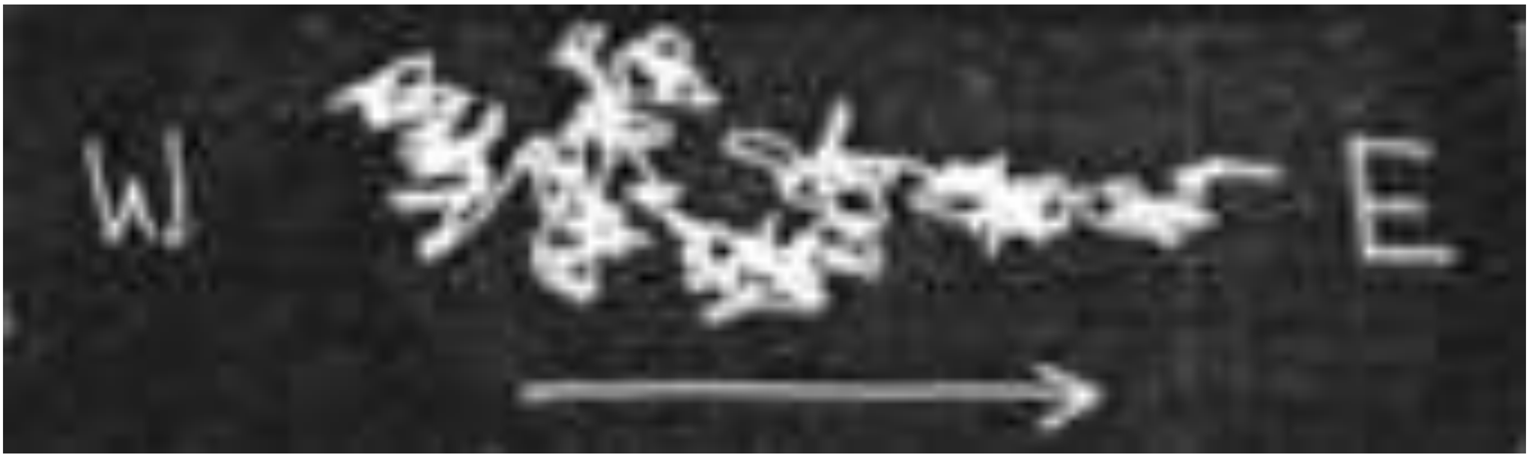
[53] Labelling as in Hennessey, 'Beneath the Skin of Time'.

By placing these two pieces and these two composers side by side, it becomes clear that theirs is not a relationship of simple incompatibility, but rather one in which principles common to both sides are realised and expressed in highly idiosyncratic ways. If Grisey and his colleagues present the familiar face and sound of spectral music, then Rădulescu is the shadow, *das Andere*, and we would be wise to embrace his music and his words as part of the same spectral phenomenon. There is a little bit of Rădulescu lurking in Murail and Grisey, I think, and vice versa; bringing them together allows for a richer understanding of spectral music as a whole.

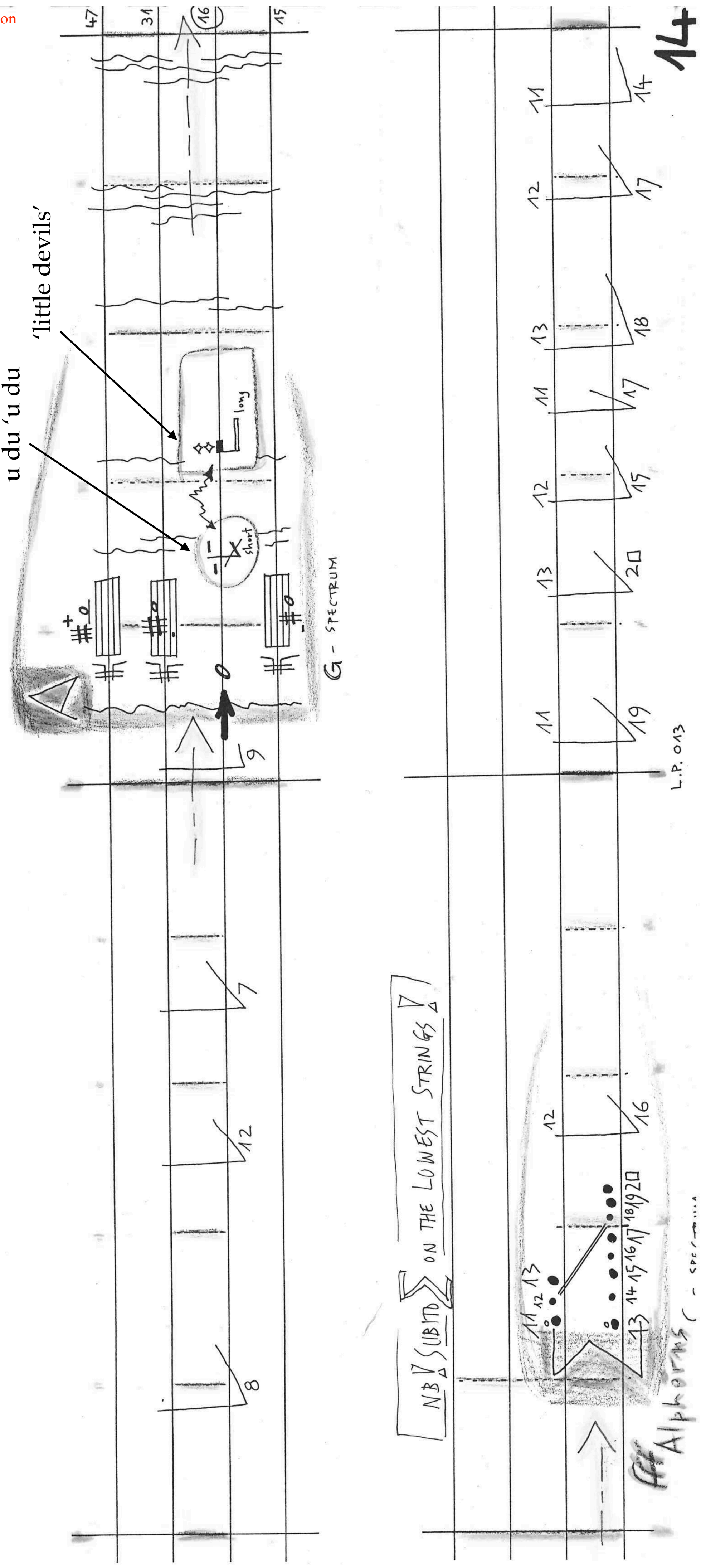
Example 1: The 'sound compass'. Radulescu, Sound Plasma, [crushing the crumbled skies], recto. Reproduced by permission of G Ricordi & Co., Berlin.


NOISE
WIDTH
ELEMENT
SOUND

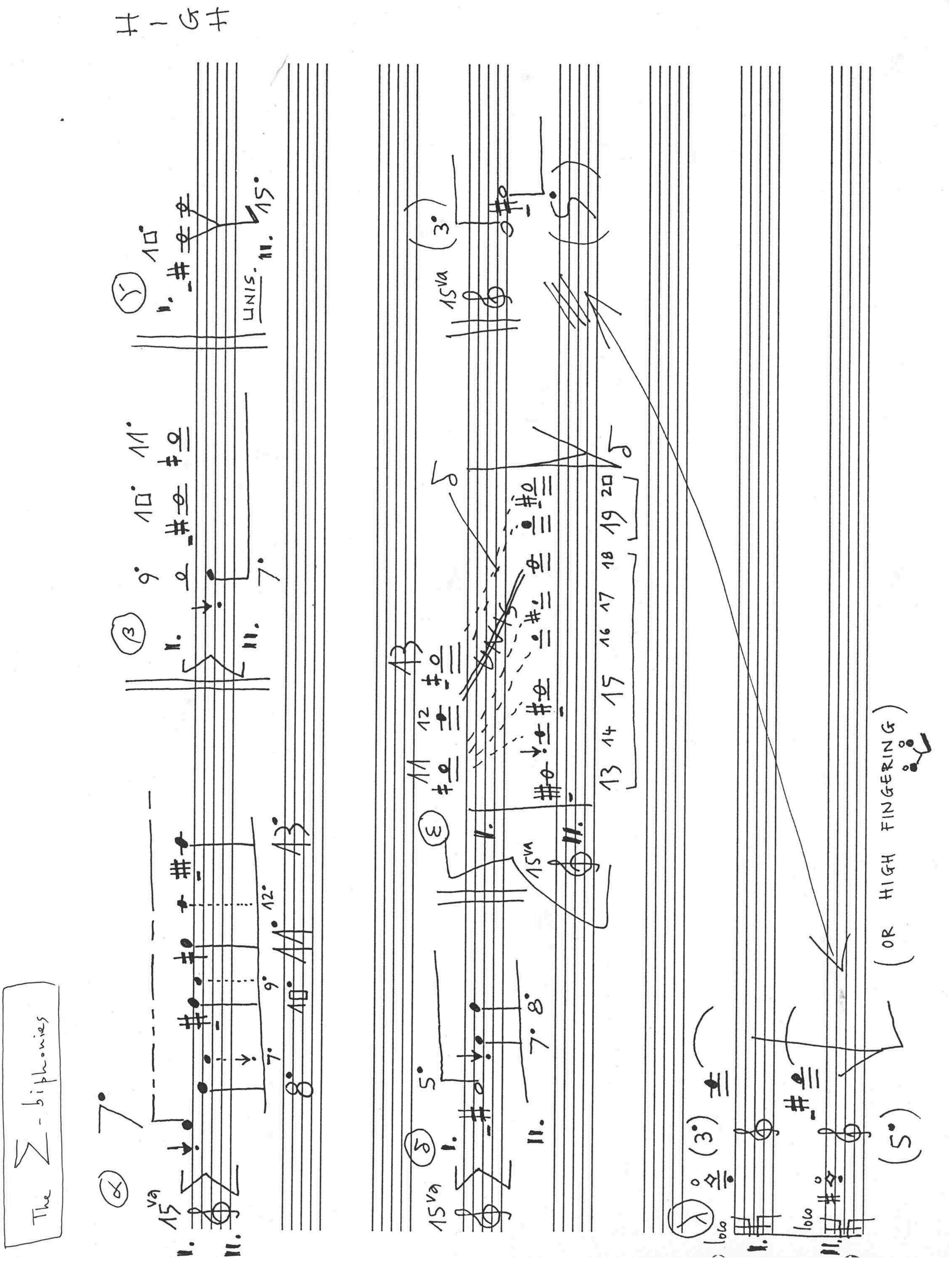
Example 2: An erratic path from 'Width' to 'Element'.
Radulescu, Sound Plasma, [oddly enough], recto.
Reproduced by permission of G Ricordi & Co., Berlin.



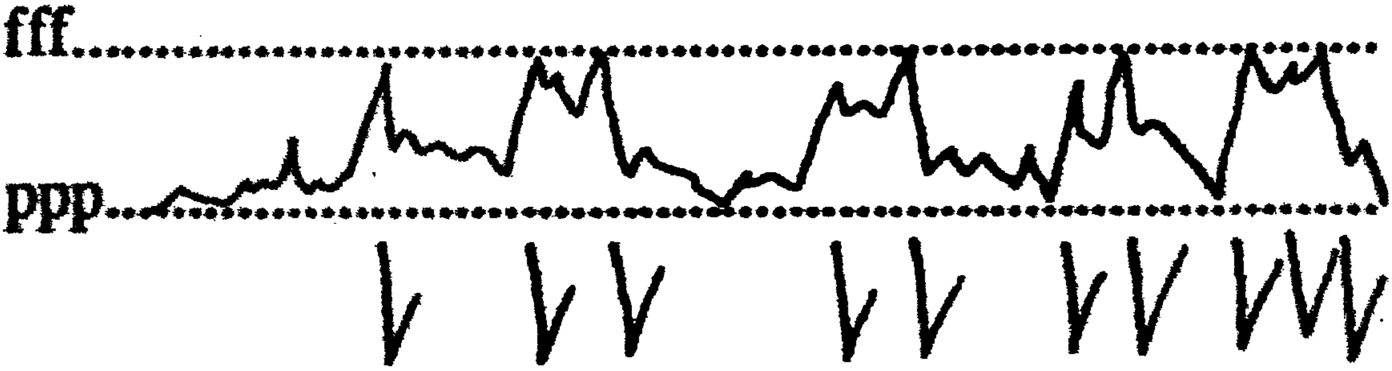
Example 3: Tabulature notation in Das Andere. Copyright Lucero Print Switzerland. Reprinted by permission.


14
47
31
16
15
'little devils'
u du 'u du
long
short
G - SPECTRUM
9
7
12
8
NB SUBITO ON THE LOWEST STRINGS
11
12
13
14
15
16
17
18
19
20
Alphorns
L.P. 013

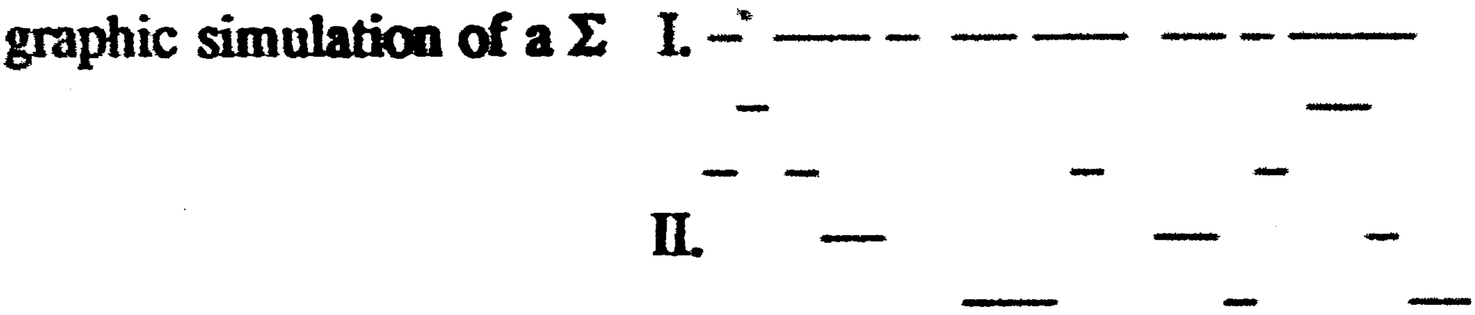
Example 4: Σ material in Das Andere. Copyright Lucero Print Switzerland. Reprinted by permission.


The Σ-biphonies
H – G#
α
15va
7.
δ
β
γ
UNIS.
ε
13 14 15 16 17 18 19 20
λ
loco
(OR HIGH FINGERING)

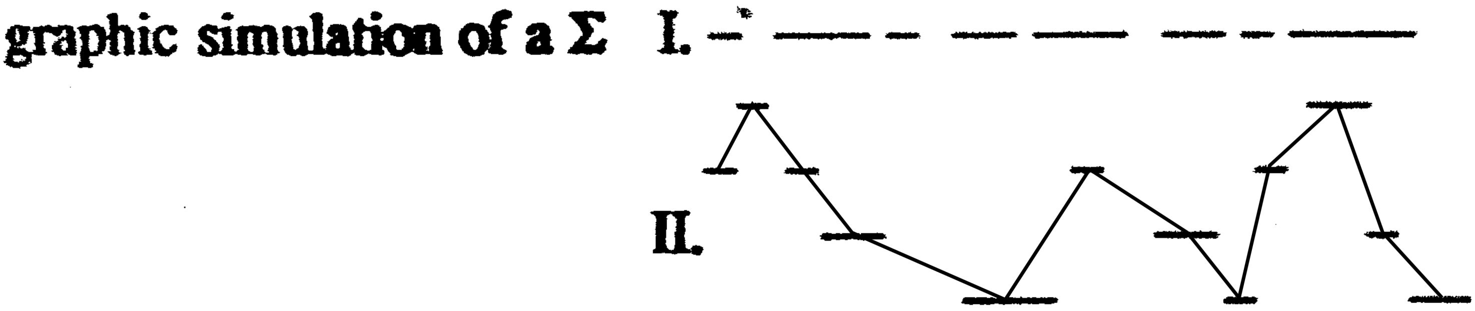
Example 5: Rădulescu's diagram of shifting intensities in a Σ module. Copyright Lucero Print Switzerland. Reprinted by permission.



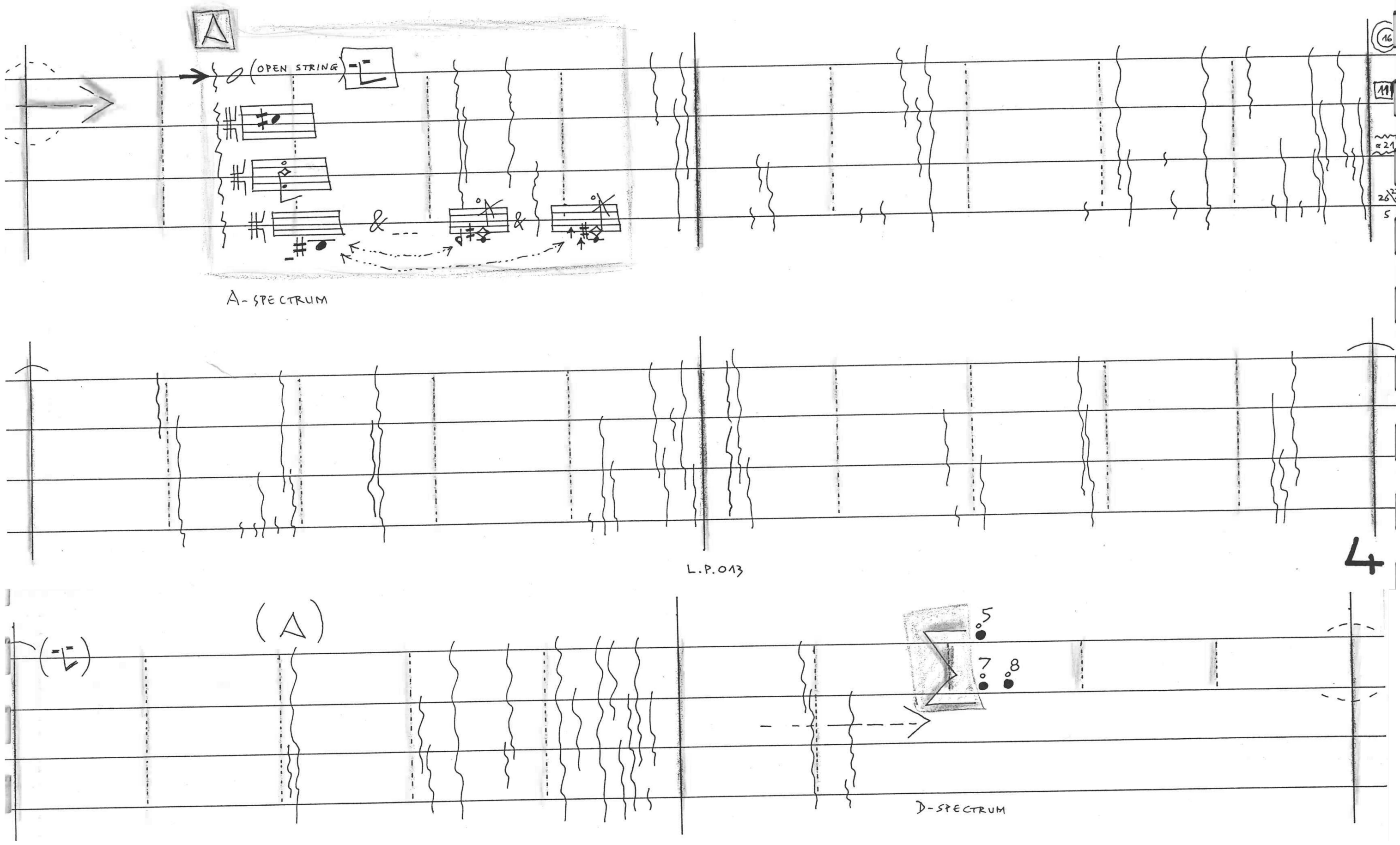
Example 6: Rădulescu's graphic simulation of a Σ melody, a) as printed in performing notes and b) with additional line to highlight electro cardiogram shape. Copyright Lucero Print Switzerland. Reprinted by permission.

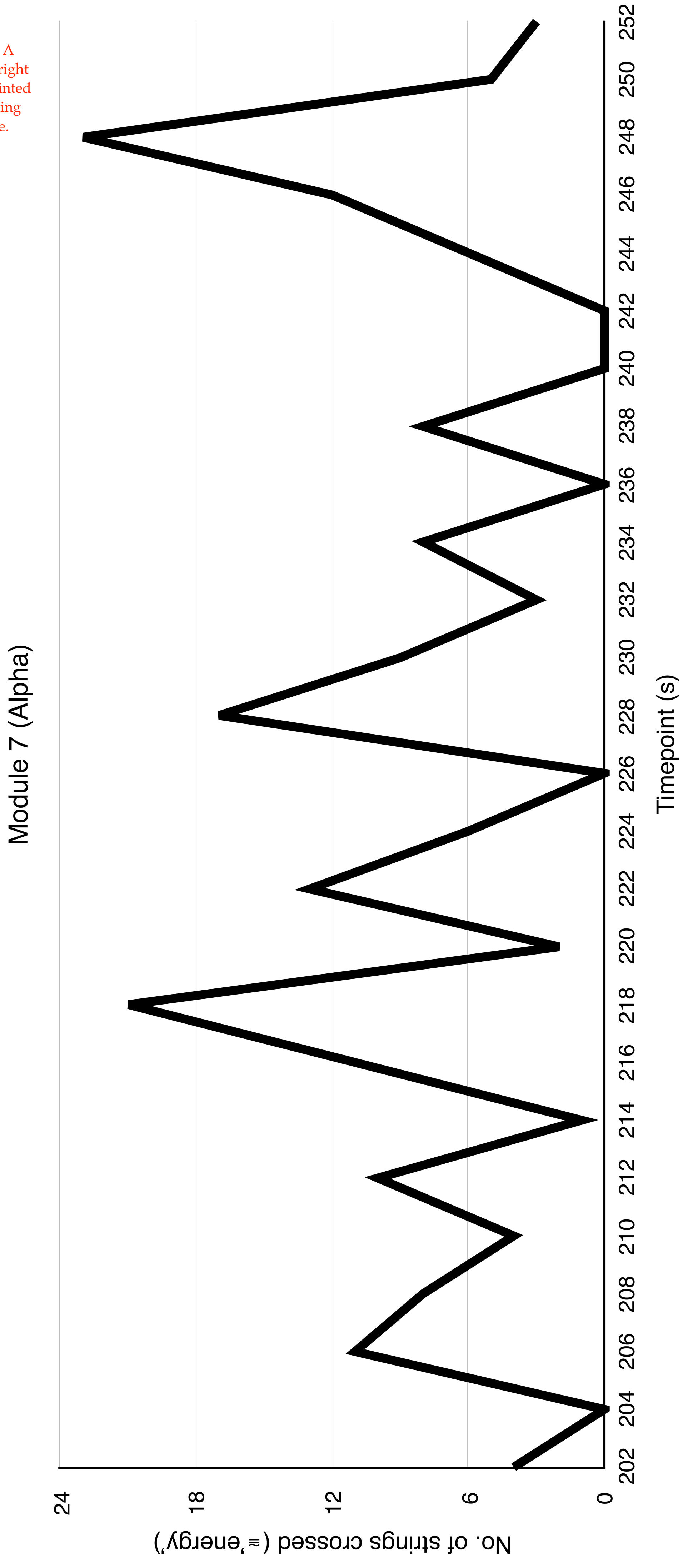

graphic simulation of a Σ
I.
II.

Example 6: Rădulescu's graphic simulation of a Σ melody, a) as printed in performing notes and b) with additional line to highlight electro cardiogram shape. Copyright Lucero Print Switzerland. Reprinted by permission.


graphic simulation of a Σ
I.
II.

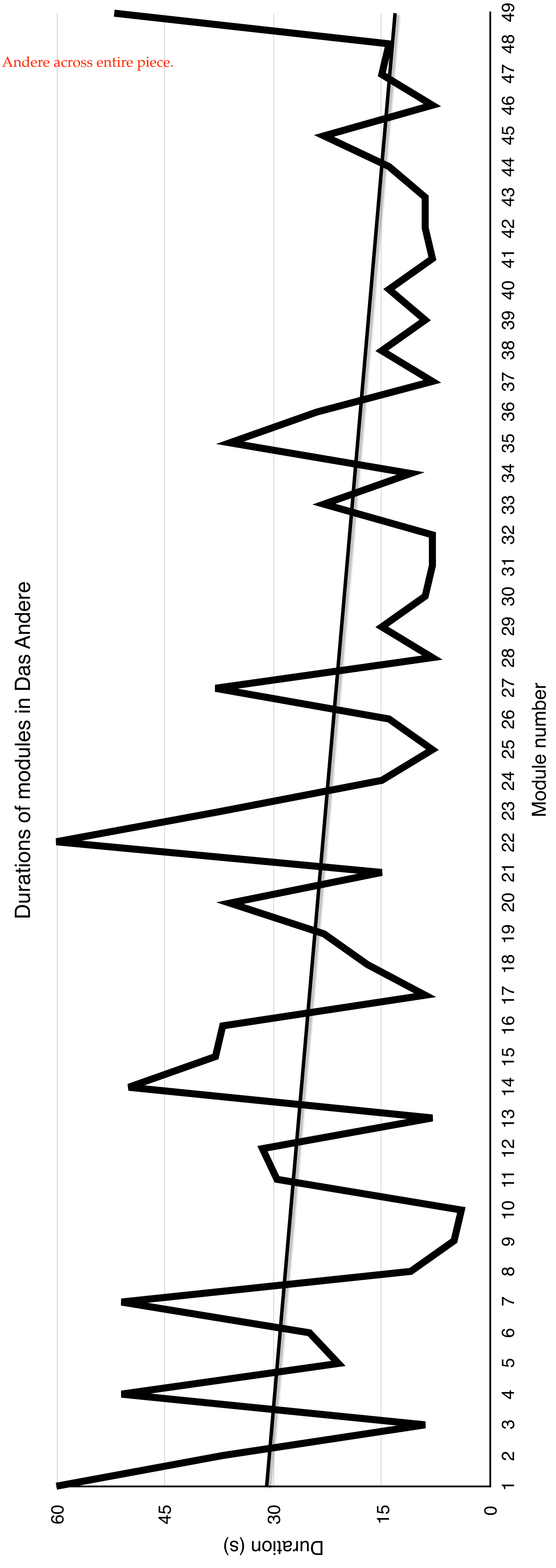
Example 7: Energy across an A module. a) Score extract. Copyright Lucero Print Switzerland. Reprinted by permission. b) Corresponding graph of energy against time.


A
OPEN STRING
A-SPECTRUM
L.P.013
4
(A)
5
7
8
D-SPECTRUM

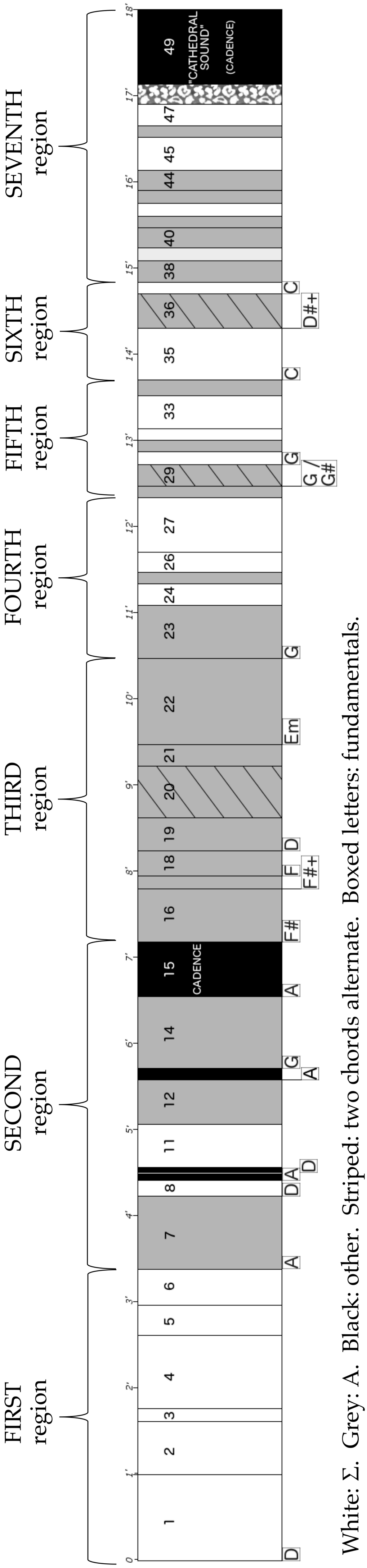


Example 7: Energy across an A module. a) Score extract. Copyright Lucero Print Switzerland. Reprinted by permission. b) Corresponding graph of energy against time.

Example 8: Duration of modules in Das Andere across entire piece.

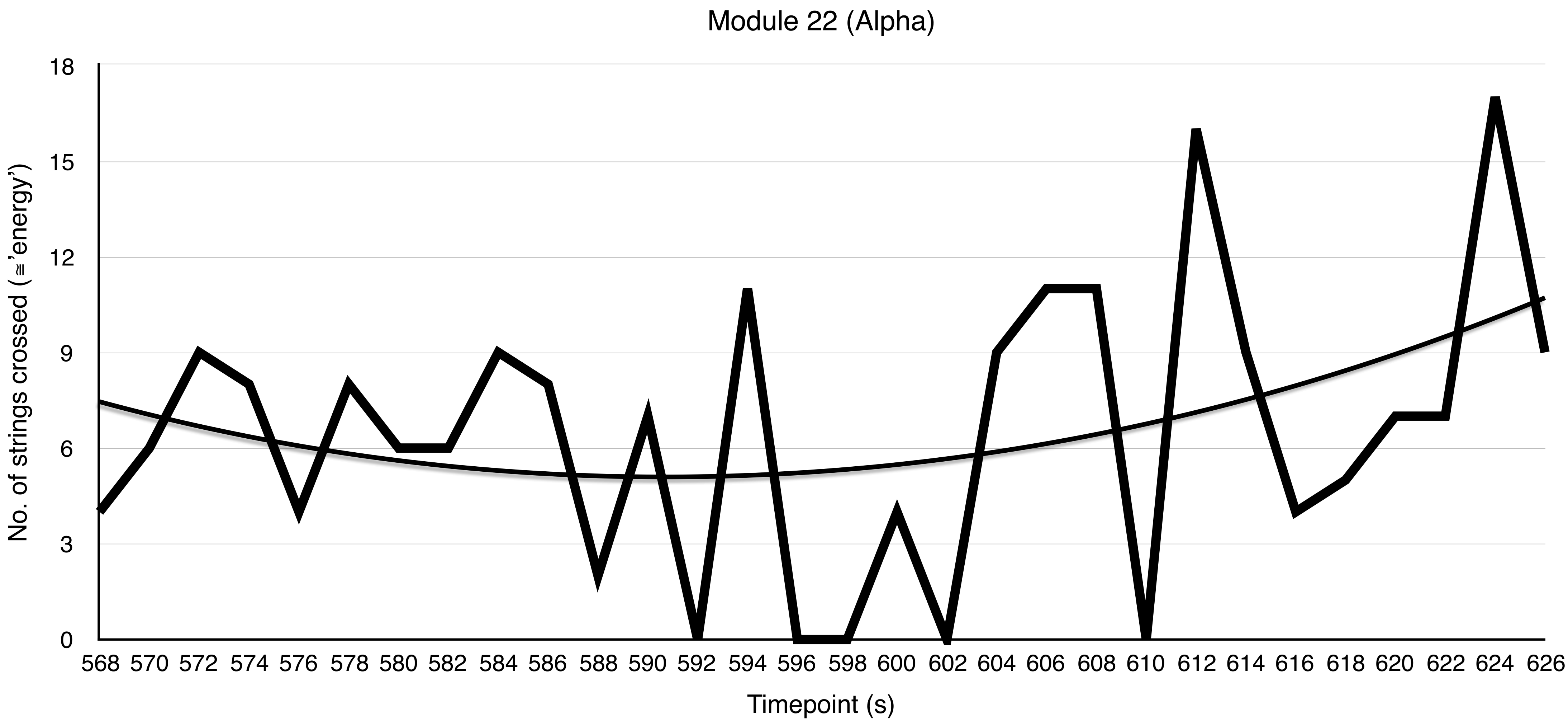


Example 9: Structural diagram of Das Andere.

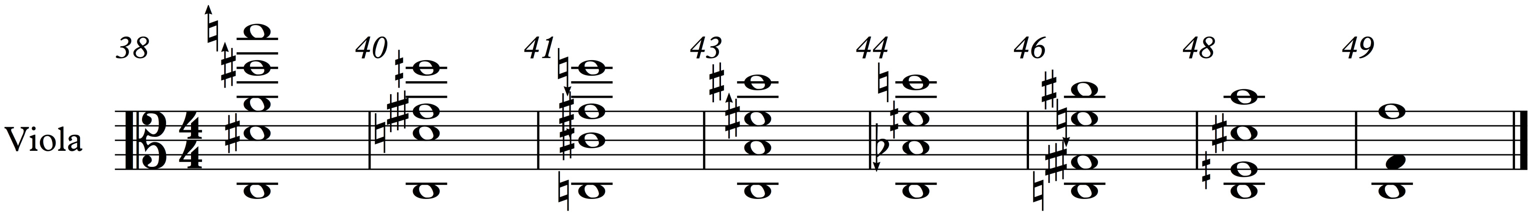

FIRST region
SECOND region
THIRD region
FOURTH region
FIFTH region
SIXTH region
SEVENTH region
0'
1'
2'
3'
4'
5'
6'
7'
8'
9'
10'
11'
12'
13'
14'
15'
16'
17'
18'
1
2
3
4
5
6
7
8
11
12
14
15
CADENCE
16
18
19
20
21
22
23
24
26
27
29
33
35
36
38
40
44
45
47
49
"CATHEDRAL SOUND"
(CADENCE)
D
A
D
A
D
G
A
A
F#
F
F#+
D
Em
G
G
G / G#
C
C
D#+

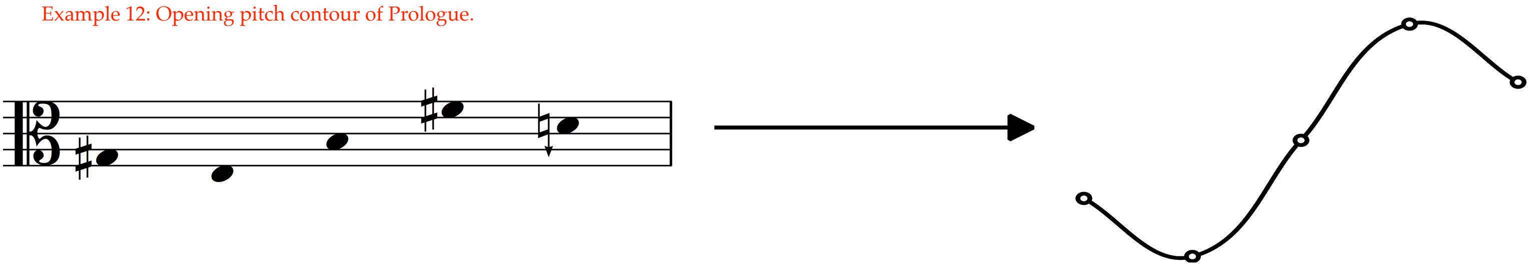
White: Σ. Grey: A. Black: other. Striped: two chords alternate. Boxed letters: fundamentals.

Example 10: Module 22



Example 11: Harmonic sequence of region 7 showing descent over C pedal. Bar numbers refer to module numbers.


38
40
41
43
44
46
48
49
Viola

Example 12: Opening pitch contour of Prologue.