

The Theory of Everything

As related to research about Zaha Hadid expressed musically

a collation and to an extent simplification and in places amplification of previously sporadic information

Summary

Within a field of many theories of everything (as Jim Al-Khalili intimated in his talk on quantum physics and the double slit experiment, 2013), this is particularised to fit with research on making music in connection with Zaha Hadid. It is aestheticised and personal, to do with music, in particular, a perceived problem of translation (Gover, 2024); which, is believed, this theory helps solve. It, also, fits with Zaha Hadid's interest in cosmological matters and difficult spatial geometries in her challenging architectural designs.

The story of the theory's formulation shows the incubatory ideas over a number of years evolving to crystallise in time to help make sense of Zaha Hadid herself, her ideas and her architectural conceptions. This ranges from considering a piece of music, say by Johann Sebastian Bach to Anton Webern, where internal and external connections are seen as infinite and increasing information used in computer technology such as CAD and CGI approaching the hyper real.

In essence, the theory states that everything is interconnected, which is almost a *sine qua non* for everyone, or many people, at least, a *consensus gentium*. It is the detail to which this is envisaged that fits Zaha Hadid's impossible architecture and being essentially a pure thought theory it smoothes out space, from a 'toy theory' point of view, enabling conception of deterministic problems with translation to disappear. This fits with a predominantly abstract approach to dealing with translating Zaha Hadid's abstract ideas, for her, to architecture, for me, to music, evoking her.

In the process some other related longstanding philosophical issues are addressed, to varying degrees, such as determinism, indeterminism, randomness, objects, subjectivism, 'truth' and 'toyed' with as playthings for the musical creative transformation, translation, interpretation, imitation and so forth to emerge with the practical outcome of Zaha Hadid based music.

The musical view is that there are so many connection between notes, both on the written page and as played, that they bring in everything in the universe, like paths of elementary particles and conjunctions and superpositions in quantum physics (superpositions are devices that Zaha Hadid plays with). This invokes multiple dimensions, which fits with Zaha Hadid's architectural space. The inference is that there is more than can be observed or ordinarily detected by normal senses, which can be explored in the music making process. Again, this is widely accepted, in varying degrees. These acceptances occur at different levels and layers of

meaning and physical reality. Some are at the everyday level knowing that the world is small, that we all impinge on each other socially and politically; some extending to knowing that we are composed of atoms, molecules, biomes and such like; others know that there are many real interconnections such as mycelial webs in forests and many other networks, such as in hub and actor networks theories. Others posit greater interconnection such as non materialistic consciousness. These topics are touched on within the research.

The end result is a rich field for exploring how information about a person and her ideas and concrete realisations can be made manifest in music.

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1. The back story:

1.1 'The perfect essay or short story'

This started during an access course in music at Canterbury Christ Church University (CCCU) in circa 1987.

Whilst going through means of harmonisation, vertically and horizontally, in traditionally notated music, as taught by John Hursey (teacher performer) under the aegis of Granville Hancox (at that time music school head), in the beautiful Georgian Coleridge House, adjacent to the ancient Augustine flint wall running through Canterbury, Kent, it occurred to me, silently, non vocalised, there was a relationship between notes extending further than a localised area of interest of a bar or two—and even as later discovered, in a subsequent masters course in the nearby CCCU building dedicated to Sir Peter Maxwell Davies (designed by local architects, Clagues, whom I later consulted during the postgraduate research on Zaha Hadid over the connection between architecture and music).

Other amplifications over extended bars emanated, such as in Schenkerian analysis, Forte pitch class sets (see Appendix A), Riemannian analysis (see Reddit discussion, vornska et al, 2013), contextual, topical (McKay, 2007; Mirka, 2014) and other sometimes quite complex analyses of whole pieces integrating understanding of the interplay between note arrangement, methods of playing, interpretation, emphases, passage analyses, implied and implicit symbology, even involving inter and extra information, relating to the composer, the composer's life, other pieces of music, political, cultural, sociological, anthropological, ethnographic, other theory and so on, the realm of musicology as evolved.

This other extra information, as well as all the, as it were, normal, information, of standard music theory and harmonisation, as, for instance, outlined by Stewart MacPherson (1919), as well as other interpretive approaches to harmony, structure, form, timbre and other musical aspects, such as taught in aesthetics and critical studies of the MMus course at CCCU, covering authors such as Theodor Adorno, Roland Barthes, Michel Foucault, John Sheppard, Mikel Dufrenne, as a sample, many others, broadly within the Critical or Frankfurt School associated with Adorno and Max Horkheimer and the new emerging critical approach to musicology; and, especially, the spirit of new music after world war two excellently captured by Martin Iddon, in *New Music at Darmstadt, Nono, Stockhausen, Cage and Boulez*, 2013, of the Darmstadt School. This along with Igor Stravinsky's atonalism and the pioneering Americans such as Charles Ives, Henry Cowell, Ernst Krenek, Conlon Nancarrow and as extensively outlined by I. Pace (2017), became essentially 'modern' music, overthrowing the mores of the nineteenth century and before, although, early music quite quickly became a source of inspiration for the likes of Bruno Maderna (Iddon, 2013) and later Peter Maxwell Davies (Bach Cantatas Website, 2021), and later, both in architecture and music, postmodernism claimed material from any age as potential source of inspiration—this

accords with a freedom principle of the theory of everything—there are no restrictions, no limits; then, seemingly ironically, to be complete, *encompassing* restrictions and limits, thereby permitting, as legitimate, contradictions, as H. G. Wells predicted (see footnote 3).

Apart from the introduction to such giants of modernism as Karlheinz Stockhausen, Luigi Nono, Luciano Berio and controversially, initially, even for the Darmstadt school, John Cage and David Tudor, many others, as always, such as, sampling, Karel Goeyvaerts, with his magic squares and human intervention (interesting in the mode of the current societal discussion about AI and robotic composition versus human agency), similarly later with Peter Maxwell Davies adjusting a magic square to fit his parameters, three aspects emerge as important from Martin Iddon's *New Music*: Anton Webern, Henri Pousseur and his 'fields' and Martin Iddon's own recognition of the Bach motif in the Webern piece as part of this evolving story, to be mentioned shortly.

All these strands later become embroiled in a semiotic approach to concepts as related to the music in question and life as a whole which then becomes embroiled in the music via the theory of everything, but that explicitly is yet to come; yet unfolding within.

Going back to the early days of conception: for instance, taking a piece of music by Johann Sebastian Bach (any music; it was not a specific piece in mind), whilst the rules of harmonisation could be fulfilled, together with the shape of whatever form was adopted, there appeared an almost secret relationship between notes that was greater than the overt relationships of harmony and form. This included the interrelationships of structures within the whole piece of music, which could be quite abstrusely analytical, also, normal or standard, as in sonata form, binary, tertiary, symphonic structure, movement form such as rondo, scherzo and all the other classical forms; this included all the other forms as developed over time from before the renaissance to the current day.

There is a parallel with architectural styles in all the various art movements, such as cubism, surrealism and abstract expressionism, to name just three, and general movements, such as modernism, post modernism, structuralism, with its links with semiotics, later related explicitly to the theory and in turn related to expressing Zaha Hadid musically, and linguistic finesse, post structuralism and deconstruction, with the preparedness to overthrow the strictures of modernistic and linguistic rules, as modern and contemporary composers attempt, including myself as a depiction of Zaha Hadid, an iconoclast¹ in this respect, hark

¹ To be perfectly clear about Zaha Hadid, from my understanding, she was a completely law abiding citizen, was, in fact, a pacifist, as myself, freedom loving, for instance explicitly not wanting to design prisons; she was an egalitarian, cosmopolitan, thoughtful, life loving person. Her iconoclasm was in wishing to pull down outmoded thinking and explore new impossible areas of thought related to topology of space as affecting architecture. She was a pathfinder in this respect with her own brand of ideas expressed and embodied in architecture. There were many other architects who were thoughtful and used their own brands of theory in their architecture, such as Greg Lynn with his 'blob' forms, Peter Eisenman with his convoluted intellectualism, Louis Khan with his passionate expressionism, Santiago Calatrava, Oscar Niemeyer and Buckminster Fuller with their beautiful mathematical forms, Frank Gehry with his almost mischievous outré use of form and materials—there are so many others, each with their individual trademark gestures. However, her experimentation through various phases of fragmentation, anti-gravity, flowing lines, use of nature in pure thought form, use of the ground as weird topographical inspiration, espousal of new technologies and materials, the adoption of computerised parametricism, developed with her business partner, Patrik Schumacher, some of

back to previously so-called outdated (by the avant-garde) movements, if wanted, express personal agency, embracing a potential chaos, a sort of anarchy, experimentation, and even sheer fun, with a preparedness to go beyond, as, in fact, Zaha Hadid did.

Returning to the secret structure idea of music, at the time, a corollary in mind was the perfect essay (a concept personally learnt at school in the 1950s; some exponents generally held to be Charles Lamb, David Addison, Thomas de Quincy (aided by laudanum), Thomas Carlyle—many others, including poets such as John Keats, John Milton and Percy Bysshe Shelley), or short story, where not a word is out of place, each impinging on the other, all the others, with a just-right relationship, just-right relationships, many of them, manifold many, making the whole piece ‘work’. If the wrong word, or syntax was used, it would throw the whole piece out of kilter, the meaning, the inherent beauty would be lost. A personal early favourite set of short stories exemplifying this notion is *The Dubliners* by James Joyce (1914 reprinted 1996). Here the wording is vital, even the spacing between thoughts, the placing of concepts, flow in a real way. This impacts upon the difficulty of translation of text from one language to another. That is covered in another commentary on the problem of translation (Gover, 2024).

Also mattering is: typography, layout, spacing of text (therefore including the white blank area of a page, the same as the blank part of an architectural drawing, so important as a negative of black lines and print, or positive as clear space between object shapes), as Elaine Gould, the expert editor of Faber Music publishers, held by many as the prototype notation exponent, espouses in musical publication, in *Behind Bars, The Definitive Guide to Music Notation* (2011); even the quality of the paper matters, or the form of the medium, that is perhaps Kindle as a substitute for paper², or a medium in its own right. This latter argument can be carried over to the use of iPlayers for orchestral scores, which may be convenient, but

these ideas since adopted by others, were, in their time, completely out on a limb of her own. She was essentially a pure ‘ideas’ person, in the same way that pure mathematics relates to applied mathematics; sometimes the applied bit had to be learnt and coped with, but she did and excellently with over 900 buildings to prove this point; also, as with many ‘great’ people, slightly contradictory, perhaps, wanting to predominantly design and build for ‘people’, in a highly life applied way, and started her designs manually via drawing or painting (artistically, which she insisted are pure architectural design) as admittedly other architects, such as Daniel Libeskind, but hers are full of her own self assertive quirkiness, such as (her term) ‘confetti’, non use of right angles (again a similarity with Daniel Libeskind), magnificent colours (that are held, despite her protestation, to be works of art), impossible angles and multiple perspectives (here she diverges from Daniel Libeskind, who, though he uses lines, angles and mathematical shapes, and magnificently, such as in the Berlin Jewish Museum, he operates in normal Euclidian space; Zaha Hadid starts from Hilbert space, or her own conceptual ideal as initially inspired by the anarchistic ideas prevalent at the AA where she studied and the bold constructive expression of the Russian Suprematist School, yet developed as her own, pushing beyond post modernism into her own territory.

² Whilst at Kingston University, London, as a lecturer, 2008-2014, I took part in a survey on the use of a Kindle unit. Being of a handy size I was able to read on the train the whole of Shakespeare’s sonnets, personally concluding they were one continuous whole, with ambiguous protagonists’ gender identity, hence of different meanings when taken as a whole rather than as individual sonnets; also, information about Captain Cook’s voyage to Australia that I may well not have otherwise read. The crucial part that I fed back to the researcher was that the screen through the glass was crystalline, sort of like paper, easy to read, yet not like the real thing. The crucial point here being that the medium affects the portrayal of meaning. It is interwoven with the plethora of interrelationships such as in *Figure 1*, in miniscule detail even affecting a music score and through further interrelationships, the final performance—this is as fine, or even finer, detail-wise, as trying to find rare particle trace elements at the celebrated CERN laboratory straddling France and Switzerland.

the theory says that there will undoubtedly be some sort of difference to the use of printed paper scores, some differences perhaps subtle and or infinitesimal and others perhaps more obvious—but, technology does not have a habit of undoing itself, so on the grounds of so-called ‘progress’, this will probably become accepted as the norm, where perhaps use of paper based scores could become part of the esoteric HIP (Historically Informed Performance) movement for those interested in historicity affecting musical playing. In the universe of a theory of everything, everything matters, is significant. For many this is too mind blowing to conceive, but if it is true, then it is worthy of at least consideration.

An illustration of the interrelationship between notes as envisaged is indicated in *Figure 1*. This is like expanding algebraic brackets (as indicated by the sample open ended arcs linking all terms with one another) and the finesse, or even finicketyness, of typographical layout is also indicated. In the full theory this becomes expanded to a greater degree of interrelationships, as indicated by the ‘Plus’ in the figure. Not only is the fastidiousness of the printing layout important, even vital, as Elaine Gould portrays in the ‘wonderful monster volume’, as described by Sir Simon Rattle in his introduction to *Behind Bars* (2011), but other areas come into play such as the location of floating titles like the composer’s name, margin sizes, spaces between musical systems, font type, and many other considerations.

There may be some who disagree with Gould’s classifications (it may be difficult though) and there would be the other, as it were, hidden elements that come into play of the whole theory, where phenomenological aspects of space-time would impinge. This sort of area is explored in the music making in conjunction with Zaha Hadid and her architecture, inspired by her own brand of topological interpretation of space in her architectural designs (Gover, 2023).

It is contended that we should not only consider the obvious which correlates with much of the 5% known universe, whilst yet in the real normal world there are undoubtedly also bits missed out in conceptions, which can be revealed in artistic endeavours, as in the portfolio of musical pieces in connection with Zaha Hadid. But, a major contention of the theory is to do with objects. Objects can be physical things, people, thought entities, philosophical concepts and so on, that is, conglomerations of stuff in the universe that goes to make up its contents.

These objects are never as simple as just what at first seems there. They are always, as H. G. Wells states, in a process of ‘becoming’ (see footnote 3). They are in line with semiotics taken to logical extents of say Barthes and Saussure (as contended in the main thesis to do with Zaha Hadid, Gover, 2023), that is, the associative connections go on for ever, making the boundaries or limits non static, not fixed. This is partly in the obvious visible detectable realm, also, in other realms as hinted at earlier, such as with plants (see Anthony Trewavas, 2017), spectra outside human senses and in other more conjectural realms. This sort of topic area is explored in the Zaha Hadid portfolio in the research about her, her architecture and music making in association, with degrees of translation explored, too, testing the efficacy of translation as workable.

However, in real terms the degree to which one, as it were, *should* accept ordinary objects as such is yet to be worked out in my mind. For instance people need, it seems, taking as they

are, with all due deference, as whole human beings. A surgeon needs to understand humans from a dissected biological point of view. An artist may conceive a person in idealised ways. When looking at the sun, the moon, the stars, clouds, one wants to look in a left brained way to see what is actually there, in a physical sense, empirically, as Marian David's 'correspondence theory' (2015), that is, in simple terms WYSIWYG (what you see is what you get), but, also, one wants to be able to appreciate the beauty of clouds, sky, trees, rivers, birds in the air and so on and to know as a landscape painter what means are needed to express this on canvass or some other medium. So, we need to be flexibly minded constantly shifting between left and right brained thinking and where possible combine the two, even run the two in parallel, even have more than one mind state coexisting in the brain—this may be one way to conceive of an empirical objective truth, which runs in parallel with the theory, agreeing with H. G. Wells of multiple states coexisting at the same time. In a practical way this could help resolve conflicts where frequently either-or or mutually exclusive arguments are used politically or socially. To consider the merits and demerits of both sides of arguments coexisting might help. Because the theory is concerned with minutiae as well as big pictures, in order to get at the truth one needs to work hard to understand the minutiae of both side of arguments, find concordance where it occurs and find understanding of so-called opposite views. Prejudices, preconceptions, bigotry, fixed opinions need to be pierced by fully understanding both sides, one's own and the other's, not being lazy to adopt the superficial short-term opinion as promulgated on, for instance, social media. Become informed, research, reach out, empathise, put aside own partisan interests—this is what the universe is saying.

It seems that the answer is basically as per H. G. Wells's model of jelly with conflicting, yet not conflicting, things in it at various angles and planes, all at the same time (see footnote 3).

The full working out of interrelationship lines is shown as samples in *Figure 2*.

Furthermore, musical notes and other information can be viewed as objects within the system, although the *caveat* is that there may be more than meets the eye, and that 'more' may be crucial to understanding and appreciating the beauty of the object in question.

That is they can have dimensional properties when viewed within a space-time continuum. These are distinguished from the Constructor Theory view of objects as of David Deutsch and Chiara Marletto (2016). Their view is to arrange, in theory, all current objects in a line of the known universe in current time, then contiguously arrange all prior objects going all the way back to the big bang (accepting that as the origin of our universe, which I do and argued well by Rodney Holder in *Big Bang, Big God* (2013), thereby describing the universe. This is as envisaged in *Figure 3*. This is my interpretation of their theory and it needs saying that one outcome of a theory of everything is that all or most theories overlap; they can occupy a multidimensional space, appearing to conflict and yet not, they can coexist³; they are often

³ H. G. Wells (1908) said something similar in *First & Last Things* on page 28, Chapter 1, Book The First Metaphysics: 'It will perhaps give a clearer idea of what I am seeking to convey if I suggest a concrete image for the whole world of a man's thought and knowledge. Imagine a large clear jelly, in which at all angles and in all states of simplicity or contortion his ideas are imbedded. They are all valid and possible ideas as they lie, none incompatible with any'. To place this in context, the use of the word 'clearer' is used to explain further his notions about the imperfection of classification per se, that the world is in constant flux, in which fixed ideas are

saying similar things, not conflicting things, so here the difference with Constructor Theory is merely one of degree and fineness of detail: the connections are not straightforward as may be posited happily theoretically, but denser and in every direction to the neighbouring objects, further away objects and in fact all objects at the same time: at least this is the conjecture of this theory of everything. This agrees with the Vedic notion of A Net of Pearls (Tibetan Buddhist Encyclopedia contributors, 2016). This is the end result of expanding brackets, as it were, from notes in a piece of music. This is shown in *Figure 3*, where notes become objects in 3D and have a relationship arcing through space, connected to everything else.

The big bang as depicted in *Figure 5*, is conceived as the forming of relationships between everything, literally everything, from an adjustment in space-time of an element of matter to the thought processes, the forming of pigments, the shading, the brush strokes, everything about the life of Jan Vermeer in the making of the *Girl with a Pearl Earring* (1665), including the ‘hidden’ parts as contended in the theory, largely coinciding with the approximate 95% of the not known universe, frequently conjectured as consisting of dark matter and dark energy, also more esoteric concepts about what happens with plants in ‘plant intelligence’, normal physicality not perceived by human senses, for instance parts of the spectrum outside sight and audibility, also perhaps other senses to do with various non normally visible fields—all these adjustments are staggeringly immense to conceive, but as with Pauli’s exclusion theory⁴, it is conjectured, they happen, thus rewriting the positional history and phenomenal-existentiality of everything, very quickly, indeed. So quickly that it is virtually not noticeable, but it happens; this is the conjecture. The lines of relationship are just that, but it is wondered if there is an infinitesimal mass to such lines and or whether they generate an effect similar to forces, of gravity, movement, electromagnetism, photons and the like, that is, small particles like neutrinos. In which case, the theoretical big bang associated which each increment of adjustment of change, is going off constantly, possibly causing a net outward force as in the inflation of the universe, possibly of some net mass effect. In due

always in process of becoming something else in ‘[...] a world of fact [...] unbounded or continuous.’ (page 25). It is, also, in context of either going ‘down’ through this jelly-like thought world ‘by analysis’ to an atomistic world, or going ‘up’ ‘by synthesis’ where classification, such as it is, gets bigger and bigger and tends to conjoin as ‘man and states and countries’ and so forth. Wells talks about planes in this jelly-like analogy. He considers that most people want to force logical thinking to occur upon ‘one plane’, where ‘a multitude of things [...] would be overlapping and incompatible and [be] mutually destructive when projected together upon one plane’. These ‘multitude of things’ when appearing in the jelly-like thought model can happily coexist on several planes and by implication be compatible and non ‘mutually destructive’. He extends his argument to describing ‘reasoning between terms not in the same plane’ where ‘an enormous amount of confusion, perplexity, and mental deadlocking occurs.’ He gives a simple example of such a deadlock or incompatibility as between ‘free will’ and ‘predestination’ which he sees as occurring on different planes. These days ‘predestination’ might come under the topic of ‘determinism’, for which see Antony Eagle’s excellent article in the *Stanford Encyclopedia of Philosophy*, ‘Chance versus Randomness’, 2021. Where Wells is talking about thought he yet uses the expression ‘multitude of things’. It seems that he is leaving the way open for thought as being objects and all manner of conceptions, even perhaps, within the context of talking about matter as atomised and then greater things in a fluid classification scheme that he may be leaving the way open to consider things as concepts, thoughts, actualities, matter, entities yet to be discovered in physics and possibly even other disciplines, even in a world of linguistics actual words of phoneme objects, and more. This last is conjecture but does seem to accord with his use of ‘multitude of things’, rather than just ‘different ideas and concepts’. Where Wells uses the expression of ideas being ‘imbedded’ in the jelly-like imagined state ‘at all angles’, this seems to prefigure and accord with the theory of everything’s notion of multidimensionality (see *Figures 5, 9 and 10*).

⁴ As presented by Brian Cox (2011) and qualified by Sean Carroll (2024).

time, accepting a steady state, yet mutative dynamic state of the universe, rather like H. G. Wells's envisionment of a universe in constant flux (see footnote 3), which accords with known physical models (most if not all scientists would agree that nothing is static—in which case the conservative wish for things to be the same is sort of going against what is natural and can cause ruction, although in defence of conservatism inbuilt slowing down mechanisms so as not to rush into things too quickly might be prudent and helpful for healthy growth, like frosts in winter) and Darwinian evolution, these big bangs will be exhausted. They will slow down, everything will be effectively adjusted.

To self-question this last proposition, the slowing down of carrying out of lines of relationship, implies a new propagation going on all the time, which indicates, assuming the big bang hypothesis, which is assumed here, an initial propulsion from the big bang laden with incipient information, which plays out over time in the fulness of what happens in the universe (incidentally, this in my opinion does not mean complete determinism—within a super large number of infinities as grappled with by Georg Cantor, simply elucidated by Joseph Dauben (1983), where pseudo randomness is admitted by using a Kolmogorov device of cutting Cantor's transfinite numbers by two for usability's sake (refer Antony Eagle, 2021) and where infinities are allowed to fully play out, I conjecture that any playing out of infinities within this super complete set of infinities is more than sufficient as compared with pseudo random numbers as used in gaming and many real world applications to apply to human thought and actions where randomness and degrees of freedom are such that they are to all intents and purposes sufficient to allow free will, as H. G. Wells avers (1908) and creativity, perhaps to a marginally greater extent than Antony Eagle implies (2021), especially in connection with 'chancy' music of John Cage. This is not to say that there is not any determinism. Through cause and effect (including Edward Lorenz's so-called 'butterfly effect') and evolution, biology, physiognomy, social evolution, social rules, political and psychological influence, domination, even tyranny, interaction with the world, experience, the somatic and autonomic systems, even microbiomes and all the paraphernalia of the physical system) we are buffeted this way and that physically and mentally, but the degree to which we are educated and can think for ourselves, make discerning decisions, have awareness and be creative, we can influence outcomes. Perhaps collectively the biggest challenges that we currently face in which we can exercise agency using our intelligence to make optimised, or as near optimised as possible, decisions, is in the areas where hard deterministic forces are at play, in theatres of war, climate change, poverty and deprivation.

These issues are like tests of whether we really have free will to exercise intelligent problem solving fully weighing up the parameters and arriving at appropriate solutions that are nourishing for humans, animals and other life on this planet and then put these into action. New creative life or new propulsive forces has been ruled out generally since the time of Fred Hoyle in the 1960s when he proposed that new hydrogen could be constantly created, so the first principle of the law of thermodynamics, about the conservation of energy, pertains. Occasionally, there are new positings of the possibility of some sort of new input into the system. If that is so then the calculations about what happens to the universe would have to take that into account and there may then be a different fate than the current model of vast

huge cold spread-out-ness, or the obverse, a huge collapse into the original singularity of the big bang, so called, the big crunch.

Assuming for the time being that the current models are correct and that there is no new life force creation, then the interactions as posited in this theory of everything would seem eventually to dissipate. However, another aspect of the theory is that basically everything is not as it seems at face value. There may be more to life than normal understanding of objects, whether hard physical ones or nebulous thought objects and of matter where dark energy and dark matter are still enigmas, then where the theory draws attention to other, as it were interstitial stuff going on, in plain terms, the lines of alignment or relationship going into places that are not normally occupied by normal physical stuff, and with greater knowledge of the quantum world there may be surprises waiting there. Deterministic type empirical physicists will point to the conservation of energy and say there cannot be anything more than the sum total of everything now. They may be right. There is also the esoteric 'new age' type averring that there may be more to matter than just cold hard physics, chemistry and biology, such as in the area of *new materialism*, which is essentially a sensitive artistic endeavour to have some sort of creative relationship with things of this world, like for instance Buddhists might revere a rock. Even the fairly hard bitten, craggy, rock-like, gritty Lancastrian, of abstruse extreme modern music, Harrison Birtwistle, had a favourite rock, which meant a lot to him (Appleyard, 2019). This does not prove anything. It may all be in the mind of the beholder, created there in the brain of the person thinking there is something more to a rock, a grain of sand, a flower, an insect, a bee and where several people think similarly it may be collective crowd type behaviour. But then again it may not. There may be just a little grain of something. This is explored in the portfolio.

Returning to complete the conjecture about the end of the universe as we know it, where the interrelationships are amongst the stuff we know and experience as ordinary life, where this may dwindle and dissipate, there may be other interactions going on, not breaking the conservation of energy law, but within these other 'hidden' realms discussed and implied. In which case, the world may have something to grip on to, to react against and carry on.

To summarise this part, the interrelationships are staggeringly large in number, where orders of Cantorian infinities would pertain, but since they happen in space-time, or at least the ordinary occurrences do, this would tend to accord with the engineer's 'heat death of the universe', the inevitable result of entropy playing out over everything, as the second law of thermodynamics, the expansion of the universe where globules of matter clumped together would be increasingly spaced apart, where even space could be stretched apart. That is if we have not been affected by The Andromeda galaxy colliding with our Milky Way and or the sun's extinction taking us with it some time before its final death throes. We have a few billion years to work things out. Hopefully we will be on a terraformed Mars or other planet and possibly there will be advances in physics that permit new ways of understanding, existing and thriving, possibly changing our current views of cosmology, something in which undoubtedly Zaha Hadid would have taken an interest. Perhaps we would have evolved into a different state. Perhaps AI and robotics can play a part (refer Lazar, 2024, for an assessment of generative AI ethics and possible outcomes).

Bartók Short Prelude

Inspired by reading about Steven Holl's Stretto House

Grant Gover

Forceful ♩ = 120

Piano

←Pno.

Applied theory

Elaine Gould's *Behind Bars, the Definitive Guide to Music Notation* (2011) could be a starting point. But, Apart from obvious editorial changes there would be a plethora of other connections making the setting out of aesthetic vital importance

Plus every other permutation and combination with all other notes, positions, inflections, symbology, meanings, thoughts and everything else in the universe

Figure 1 presentation slide 7 New Mechanisms WinterSound Canterbury Christ Church University 2022

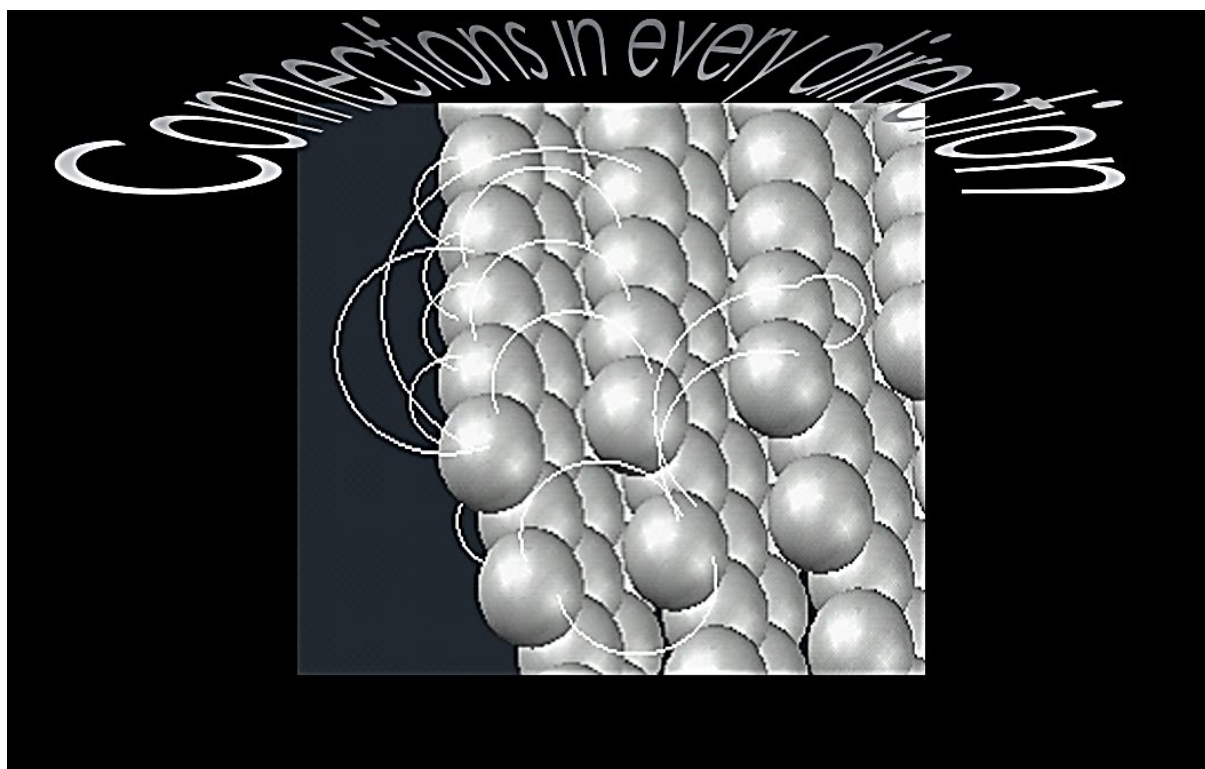


Figure 2 presentation slide 6 New Mechanisms WinterSound Canterbury Christ Church University 2022

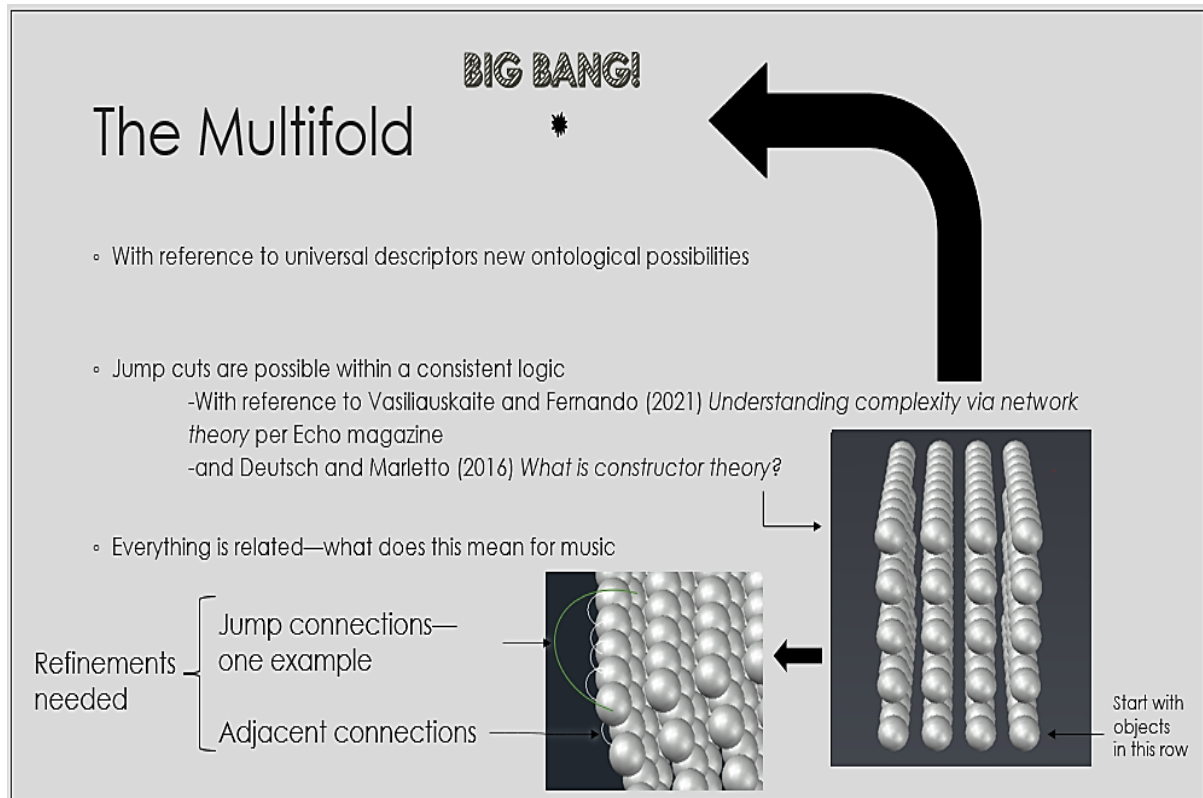


Figure 3 presentation slide 5 New Mechanisms WinterSound Canterbury Christ Church University 2022

2. The next step:

2.1 CAD (Computer Aided Design)

Whilst teaching CAD each year the software would be updated to cover more facilities in the computer program and to make increasingly realistic architectural models realisable. Coupling with computerised animation, starting with basic drawings called wire frames, say of a cat, where limbs and movement are articulated to resemble the physics of what happens, made increasingly realistic with credible movement and glistening fur, and photo realistic rendering, of finished projects with moving fly-throughs for clients to experience their commissioned buildings in a realistic lived in way, adopting different lighting situations, becoming the inception of CGI (Computer Generated Imagery) as used in modern day media such as movies dealing with fantasy, science fiction and realistic drama, it seemed, again largely inwardly, as before with the whole piece of music idea, that there was an increasing widespread wish for greater realism being met by each incremental software update. With each update an increasing amount of information was encompassed in the software

programming. By extrapolation, if this continued, the realism would increase its search for and obtaining of a wider set of information that could be brought to bear upon the aim of making CGI, architectural model renderings and lythe cats more realistic—to the extent that one day when the last piece of information, typically in these situations, hypothetically, the entire works of Shakespeare, was fed in: the cat would jump out of the screen: it would be so realistic as to be the real thing. I did mention this to some students and they did not seem to bat an eyelash at the idea.

Some aside thoughts (not expressly part of the theory yet in two ways are: generalistically, everything is included, and in application, offshoot corollaries are related and thus included)

1. The cat actually is outside the screen. All the clever programming that went into making a virtual cat jump out of the screen is more than marvellous, it is trumped by the extent of the information and programming that goes into making the real thing, is amazing. The same goes for all real things, animals, creatures of all sizes, people, rocks, water and so on. The staggeringness of all real things is something not to be taken for granted, it is pristinely wonderful, amazing, beautiful, miraculous, the software is truly to be admired, making every second of every aspect of life to be enjoyed and experienced to its fullest possible extent.
2. Realism: whilst a large topic, involving discussion as to the nature of reality, the tendency to wish for greater realism in entertainment, leads to ever gorier depictions of crime, horror, computer games, videos and other dreadful imaginings brought to vivid lifelikeness. To an extent this is a self-perpetuating tendency. The wish for bigger, better, more realistic, ever expanding and extrapolating is generally accepted as beneficial for society and like an invisible incontestable force, like evolution. It is widely argued that this tendency does no harm to human psyches, not to mention collateral damage to other surrounding lifeforms, animals and ecosystems. It is suggested that this could be at least one reason for the patent proliferation of violence prevalent across the planet earth.
3. AI: coupled with the last point it may be that the conjoining of AI in the increasing tendency for realism in entertainment may lead to even gorier and grizzly subject matter. This is part of the negative aspects that could prevail with the increasing use of AI, but it must be counterbalanced with the positive aspects of AI. Firstly, it must be apparent, surely, that human agency has some part in all of this. It is not necessary to just accept hidden forces fatalistically. We should be able to use the fantastic computerised programming in our brains to come up with solutions with truly beneficial outcomes. Secondly, AI may develop to be smart enough to assist with our decision making, to optimise or at least choose outcomes that are beneficial for all lifeforms.

3. The next step:

3.1 Webern, Pousseur, fields and Total Field Theory (TFT)

To recapitulate to date, the theory of everything (TOE) started musically realising there was more to music than normal interrelationships of standard harmony and developments in modern music. Fields were sort of hinted at in the background. They had not yet emerged fully fledged. It became the Total Field Theory (TFT), then settled out as the theory of everything (TOE). It was just a multifarious set of interconnections between notes, with a lot more going in between, as it were, as well as concurrently. An element of this was to emerge as 'hidden' information beyond normal conception and perception. There was a complete idea that the first note in a piece, typically by J. S. Bach, related to the last note, to make it have complete sense aesthetically and in a greater sense, meaning-wise, with some sort of relationship to the greater universe at large. Additionally, every intervening note fitted into the scheme of interrelatedness. It was like the ideal 'perfect essay', everything all in its due place, all contributing to the whole, when working properly to yield the poetic beauty with inherent just-right proportions and inflections.

This later developed into: what is a note? This went in parallel with later research into: what is an architectural object? The answer developed that it could be abstract, just in the thought realm, as Zaha Hadid courageously did. Her architecture started in a pure thought world of what-ifs and just try-it-out instinctively, influenced by the famous radical AA architecture school in London, starting in 1972, in an amalgam of pure mathematics, studied in Beirut university, art, developed from her childhood decoration of her bedroom, freedom to design her own clothes, an uncle who brought round to her home an architectural model, her parents, her mother being an artist and her father encouraging her to explore, the milieu of Baghdad at the time, urbane, with architecture by Le Corbusier, a liberal mix of Christian and Muslim upbringing. A note object on the other hand could be represented by a round object. It had so much in it gained from connections with so much more than just a black ink dot on a manuscript, although this is not to be overlooked in significance, where everything becomes, is, significant. An analogy for the roundness of the note could be an elementary particle in physics, not necessarily a neat round object but a mass of seething forces, on the one hand, obeying neat rules of fine tuning, of a nucleus with particles in orbital shells, perhaps bundles of energy, as well as, on the other hand, the weird world of quantum particles or even stranger bundles of energy, where entanglement can take place, relating a particle to another some distance away. This led to representing the note in 3D CAD as a solid round object, then connecting to everything else around it and beyond, more than a straightforward set of connections as in constructor theory but in every direction as hinted at by H. G. Wells (1908).

The CAD element also provided an insight into completism and the nature of reality which is taken as Marian David's (2015) correspondence theory (which would largely accord with a builder's or engineer's view of reality, that is, composed of steel, concrete, timber, glass and other materials needing organising, controlling, economically, safely and sustainably in a

pragmatic, 'constructivist' world of essential provision of shelter and all the accoutrements of civilisation). The completism came from society's wish for greater realism in entertainment, of drama and gaming, also in representing buildings via 3D modelling becoming increasingly sophisticated, where it was conjectured that a cat could jump out of the computer screen. This cat would then be real. Then one realised we already have real cats. This thought process aided realising how marvellous cats are, then by extension everything.

There is a line of thought here that is relevant, which relates to zombies, in the AI and robotic sense, of whether one can make a robot to resemble a human and then actually be one. This is the source of an ongoing topical debate. I personally communicated with Nir Lahav regarding his joint research with Zachariah Neemeh (2022), titled *A Relativistic Theory of Consciousness*. I congratulated them on their theory, which posited the possibility of matching and swapping thought data of a person undergoing MRI or similar examination with the external data on the machine operated by the medical person, so that a finer idea could be gained of what the person in the machine was thinking than was currently available.

This could aid fine decisions about, for instance, when to switch off life support machines, or not: there may be qualitative thought going on which might not otherwise be noticed. This like my theory of everything is a thought experiment or 'toy theory', but it has some substance. I think that Nir Lahav was of the opinion that zombies cannot have any form of agency like humans, as essentially expressed in their paper, which I think is the prevalent view amongst many academics and the public at large. Additionally, they helped me regarding subjectivity and consciousness. One could not but agree with their contention that the delicate subject of subjectivity could suddenly be turned into something quite reductive and almost superficial as to be lumped into a set of data, then switched around when the data matches the external data and suddenly become exposed as some quantum, an entity like any object, like a set of printed circuit boards. They did admit that further research needed to be carried out to refine the theory in principle, importantly to establish metrics to measure qualia, which is generally agreed the important aspect of thought, where it can be pinned down to one thing or several discrete things. It could be what distinguishes human thought, with feelings about redness of apples, poetic thoughts, apperceptions, sensory meaning and so on.

So whilst being thankful for their paper and not reducing its findings, it made me think further about subjectivity and the related topic of consciousness. I do think there is mileage in their contention about communicating with people in MRI and similar machines. The essential point of difference is as regards the theory, this theory, the theory of everything, its main point of departure from other such theories, which is simply the fineness of detail to which this theory demands one go, a seemingly impossible task: as related to Zaha Hadid the impossible way she conceived and designed her buildings.

I believe that most theories about life, philosophy, theories of everything have many similarities and can be overlaid, in an H. G. Wellsian (as footnote 3) way, although his contention is that if they differ they can coexist in a miasma of angles and planes. This seems true in this theory of everything, where there are definite points of difference, but where there are similarities, perhaps expressed in differing modalities of language and thought models,

yet essentially the same or similar, they could be overlaid and commonalities found. The thought model I would use is to reduce the essential components of each theory to a large acetate sheet, then slide each sheet over the one below and that over the one below that and so on, until visual alignment was obtained of common points. There may have to be adjustments for translation of language, reduction of points, expression of points in a language that could be commonly recognised, adjustments for errors and changes of mind, later erudition and so on. This way, rather than constantly placing theories end to end linearly, as Wells would say, in one plane, they could be seen this way but also as superpositional planes, a strong point of Zaha Hadid in her architectural designs, first appearing in her student final project for Hungerford Bridge in 1972 (Wainright, 2022). Agreement can be found, both in a Wellsian way, of, as it were, tolerating differences, and in a this theory way, of finding actual concordance. Where Wells states that if different ideas were seen, as he claimed is usually the case, in one plane, then there would be disagreement and cancellation of ideas, but as soon as extra planes are introduced into the thought model, as Zaha Hadid did (ibid and links), then dissimilarities can coexist. This can make for interesting architectural possibilities, and music to match, philosophically, history can be condensed in the superpositional approach, leading to greater insight into reality. Perhaps this is another way of describing postmodernism, where Zaha Hadid started and then pushed further. Perhaps it could be said that postmodernism itself is a doorway to other possibilities from within itself, like folded plates, superposed plates and planes and so on all as described in these possibilities of conforming structures and planes of thought.

So, drawing these ideas just expressed together:

- the fineness of detail of the theory
- the similarity of theories generally ...
- ... whether in a Wellsian tolerable way, or via this theory ..., or both
- which is similar to Wells' notion, yet with elements of his notion, but, with overlapping concordance in places; I think actually in quite a lot of places,

then, taking the fineness idea as the principal platform of this theory's distinguishing feature, I personally find there are many instances of good ideas and sound theories that miss the boat by not going far enough into the detail and of course I am guilty of this too. Like objects of whatever hue, philosophical, architectural, musical, there is this duality of there always being more to them than is apparent whilst there is a balancing act to perform of accepting them as they are.

This latter point is more a relativistic point to do with the mores of society (refer Triplett, 2023) accepting the cultural ethicality of a situation. This can occur at multi levels and in multiple situations. There is an expression: 'honour among thieves'. Here there is a given set of parameters that define the cultural set which settles out as a societal group that has a code of honour, acceptable ways of behaving. Similarly, different societies in different countries have different mores about use of language, etiquette and ethical systems. A priest may start out with impeccable and the purest of ideals, then within the system of a church order, may find that she or he has to adapt somewhat to the realities of day to day living in a community.

The same could be said for politicians who may find that operating in a political system requires certain codes of conduct not initially envisaged. So, this leads to a relativistic view of ethics, but which can be judged on the balance of priorities with that given set of circumstances. But, applying the level of detail of the theory, the merits and demerits of each situation could invariably be gone into more, like the most impassioned, yet detached, and informed legal judge. This way the truth can be found or at least one can get closer than with a superficial assessment. This leads to greater clarity of what reality is, on this basis of assessment, that is, at an ordinary level of living: except that the ordinary level of living is not ordinary and there are all sorts of trends and levels of information shot through the system of each situation: an impossible task to assess, but one must try.

Before continuing, a fine-tuned quantification of ethics, which could apply by analogy to other information systems, also, is: what happens at the edges? That is, at ethical transition stages, whilst settling out at relativistic levels. These, for instance, musically, could be interesting areas of experimentation where almost chaotic flux could pertain. A direct analogy, useful here in an applied theory to music context, is the cultural flux envisaged by John Shepherd and Peter Wicke in their classic musicological book, *Music and Cultural Theory* (1997), where especially relevant to modern society with numerous music groups and genres, like biological cells emerging, merging, dissolving, forming again as splinter groups, on a frequent basis, daily, constantly—clear demarcation between areas goes through this no man's land of constant change. In fact the constant change carries on once settled out, like bubbling quantum sub space.

Returning to the thread, applying the same level of commitment and depth of survey to theories would yield greater results of truth and reality. That is my contention. Without wanting to select names out of respect for each contributor to the world of ideas and the idea that there is commonality and validity in seemingly diverging ideas as discussed in relation to H. G. Wells and this theory, an example given already is the difference between constructor theory and this theory of everything. This depth is hopefully apparent in the research portfolio (Gover, 2024b).

Now, coming to the third stage of development proper: it was as regards Anton Webern's *Bagatelle Op 9 No 1* (1913), only ten bars, but in analysing this from the point of view of note groupings, that is, in the normal world of what is musically notated, as sets, spread chords and logical flowings, the groupings seemed inordinate. I missed the Bach motif which Martin Iddon stated he found in his book on Darmstadt (2013) and he also disclosed that Henri Pousseur has mentioned fields in connection with music. Both of these I came upon after my own findings which is heartening to find others thinking similarly. Without going too much into it, readers can find out for themselves, listen to the first bagatelle freely available online. The first version I opted for was the Lassalle Quartet 1968 version obtainable at (up to 36 secs):

1. <https://www.youtube.com/watch?v=yXE8gPrkRkQ>. (This seems just right phrasing, balance of textures and through carrying of the meaning from start to last note, natural harmonic D in the cello to C in the viola nearly two octaves higher)

Another recent online addition is:

2. <https://www.google.com/search?client=firefox-b-d&q=Webern+Bagatelles+Op+9+No+1#fpstate=ive&vld=cid:f33b46b4,vid:9Qrh6hK P8Ms,st:0>. (45 secs. Marked up original score, sensitive playing, capturing the rise and fall, expressive and feels like within the limit of the original intention on the border of chaos and order, passion and objectivity, like Kazimir's Malevich's Suprematism that so influenced Zaha Hadid)

Another is:

3. <https://www.google.com/search?client=firefox-b-d&q=Webern+Bagatelles+Op+9+No+1#fpstate=ive&vld=cid:472b65ad,vid:OgIq1P7 OQYw,st:0>. (45 secs. Another like the first, a simple unmarked Austrian score edition, capturing the musical objects, playing straight, first note to last coherent)

And finally, this one by the ProArte quartet, recorded in 1950 and posted by the violinist Léo Marillier (his own comments are interesting reading):

4. <https://www.youtube.com/watch?v=pZgxqf2v0eE>. (42 secs—moves quickly into next bagatelle. A lovely mono recording sound like listening to one's favourite precious godfather's recoding on his wooden cabinet in his private room without breathing, true, close to the composer's date, evocative of the ideas, the philosophy, with hesitations and noises, just right, like a perfect essay, redolent of the theory in action; same score but marked up differently as 2.)

Then as a postscript the first coming up under the google search, avoided initially:

5. <https://www.google.com/search?client=firefox-b-d&q=Webern+Bagatelles+Op+9+No+1#fpstate=ive&vld=cid:7129d4ad,vid:WRHo-Prmc2Y,st:0>. (40 secs. Played with plenty of bass as per the current trend, rhapsodically, like thick Viennese cream, extolling the extremes performance-wise, the layers clearly delineated, quite seamlessly, like Wellsian layers, yet concordantly, therefore more like the theory of everything)

This is part of the assessment initially made (*Figure 4*):

During an early assignment on the masters MMus course (part shown in Appendix A), as a composer, amongst others, performers, instrumentalists, singers, pure researchers and practitioners such as working in care professions where music can form part of therapeutic treatment, transitioning from a world of construction management and engineering, the humanities world as distinct from the pragmatic empirical world of research into sustainable concrete, transport systems, optimised contract conditions for efficient project running, for instance, became a different world of wonder.

Having chosen what I considered a relatively easy subject matter, just ten bars of Webern's Op 9 Bagatelle No 1, it became apparent there was more to this than first meets the eye. I ended writing far more and deleted much that exceeded the required word limit. I could have

gone on and written a PhD's worth of content on what I could see within those ten bars of music. This was to some extent embarrassing and bewildering. I did not wish to realise a theory wanting to conform to learning in line with the other students. The material in Appendix A includes some of the formal requirement of the set exercise and the following *Figure 4* shows just some of the patterns that I saw in the music. This was then to become part of the, as yet still embryonic, theory of everything from my point of view, picking up from previous experiences and thoughts. It has taken some courage over now a few years to admit, like 'coming out', that I firmly believe, as much as one can believe a set of thoughts that one has can have some credence, theoretically, as a thought experiment and possibly have some practical usefulness, especially against advice to drop the whole idea. I could not. It kept resurfacing. *Movere deinceps*.

Sechs Bagatellen für Streichquartett 3

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I Anton Webern, Op. 9

Mäßig (♩ = ca 60)

I. Geige 1 mit Dämpfer y 2 3

II. Geige mit Dämpfer

Bratsche am Steg - y - mit Döpf

Violoncell mit Döpf

4 3 rit. - - 5 tempo accel. heftig (♩ = ca 96) rit. - -

8 wieder mäßig (♩ = ca 60) 9 rit. - - 10 ♩ = ca 44 -

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Renewed Copyright 1952 by Anton Webern's Erben

Figure 4 Visual assessment of printed score of note groupings, Gover 2016

The remainder of the assessment can be found in Appendix A

Figure 4 here taken from Fig. 10 of the analysis in Appendix A indicates some of the groupings of notes found. Two other obvious unmarked groupings (leaping out at the time of this writing) are the F sharp–B natural interval at the end of bar 8 going to the C sharp–C natural at the beginning of bar 9 in the viola and in the same bar 9 the E flat going to the G

flat in the second violin, with the natural harmonic of the G natural in the cello going on underneath, bespeaking a mini world of complexity. There will be others. When added to other groupings (Appendix A) or sets as in the Forte set analysis and the shape as in the Schenker analysis, then other factors, such as the dynamic map, the texture map, as related to the techniques employed, such as natural harmonics, tenuto, pizzicato, tempo changes including time signature changes, metronome markings and ritardandos and all over just ten bars, then one begins to see the information crammed into these bars.

The different interpretations now included as above demonstrate how different minds, with individual and group mentality, as with the Free Range Orchestra with whom I worked on experimental pieces highlighting and illustrating philosophical and technical points about Zaha Hadid, draw out different information from the score as read. These variances in interpretation can be taken, at least partly, as information partly hidden in and around the score. It could be completely in the minds of the players, that is, they may be deluded as to what they read there, or, it could simply be personal subjective bringing of their life story to the interaction of their minds, fingers and instruments. This is another sort of area explored in the making of music in connection with Zaha Hadid. How much is her and how much me? That is a running concern. In the end to give the game away here, it is concluded that at least something of her in some way found its way into the end result of the portfolio, which also, at the same time, validated translation as occurring, at least to some extent where that had been found to be theoretically a difficult subject matter.

It soon became clear when analysing the Webern's first bagatelle (called a movement in the initial analysis as Appendix A) that if one were to take into account all the relationships and interpretations, including the sort of listener responses to the five alternatives above that there were more than could fit into a planar version as the printed score. This would include all the pathways of note relationships such as the pathway of photons in the double slit experiment as illustrated by Brian Cox in front of an audience of celebrities (2011) and the more nebulous relationships of elementary particles in their omnipresence in the universe as again covered by Brian Cox in the same programme and amplified by Sean Carroll (2024).

In the mix, is the range of styles variously picked up by commentators, atonalism, some tonalism, some emotion, some affect, some 'continuity' (still despite Adorno and others calling for overthrowing such outdated modalities, as mentioned by Pace, 2017, perhaps with mixed messages as picked up by Iddon, 2013), that is, unlike John Cage's disjointed preferred, nominally, 'indeterminate' music (Pace, 2017), some twelve tone serialism as of Arnold Schoenberg (Pace, 2017) and no doubt some pointillism, possibly affecting the pointillistic composition played with the Free Range Orchestra, Canterbury, evoking Zaha Hadid's interest in the stars (an example of theoretical interrelatedness applied from one situation in space and time to another). Sparseness and reduction may be something that insidiously gets under the skin of listeners making Webern widely appealing; there is an honesty, trying to get at the actual truthful sound of a musical argument or asseveration.

It appeared that the relationships formed a field around the ten bars starting roughly at the first note, as perhaps a north pole and ending on the last note, as a sort of south pole. With a schoolchild physics experiment in mind of iron filings on a white sheet of paper, the field

would form around the ten bars in the usual radiant shape converging at the poles. Where the information became so extensive it would deviate from the monoplanar shape and extend around the sides, joining up to form a 3D two ended roughly mirror shaped tapered cone. This would coincide with Pousseur's ideas of fields mentioned by Martin Iddon, although I think Pousseur's predominant concern was fields created by pitch class sets, which is considered here (as Appendix A). To clarify, here, the notion of fields encompasses all the information so far discussed and more: the fields of normal everyday life, all the interrelationships as passing through pathways of notes, like photons or other fundamental particles, as discussed in the last paragraph; also, the 'hidden', corresponding perhaps with the unknown extent of the physical universe, as in dark matter and energy, and esoteric topics, encompassed in *new materialism* and plant intelligence, explored in connection with Zaha Hadid (Gover, 2023), new age type 'biofields', as purported by Beverley Rubic (2018) and 'morphic resonance' as propounded by Rupert Sheldrake (2009). Interestingly, Sheldrake is an advocate, as is Luciana Parisi, of A. N. Whitehead's *Process and Reality*, as am I, as a strong contender for a consummate theory of everything. Some authors that I consider to be amongst leading comparators to my theory will be briefly elicited at the end of this document. As previously stated, I am not looking for dismantling other conjectures, especially where I agree with H. G. Wells that differing viewpoints can coexist in a multidimensional medium; furthermore, where I consider that many theories have commonalities, rather than being contradictory. My main point of difference consists in detail, an impossible amount of detail, here resonating with Zaha Hadid in sheer impossibility. This is essential for the main thesis to make sense of translation, within the context of 'translating' Zaha Hadid, as a person, her ideas and her architecture, to music, and is, in my opinion, of itself, a main solution to the 'translation problem' (Gover, 2024).

4. The next phase:

4.1 The theory as evolved: from Bach-like complete 'essay' or 'short story' form, to complete updating CAD information, to Webern and fields, to a theoretical cosmological view such that Zaha Hadid might imagine and make translation possible

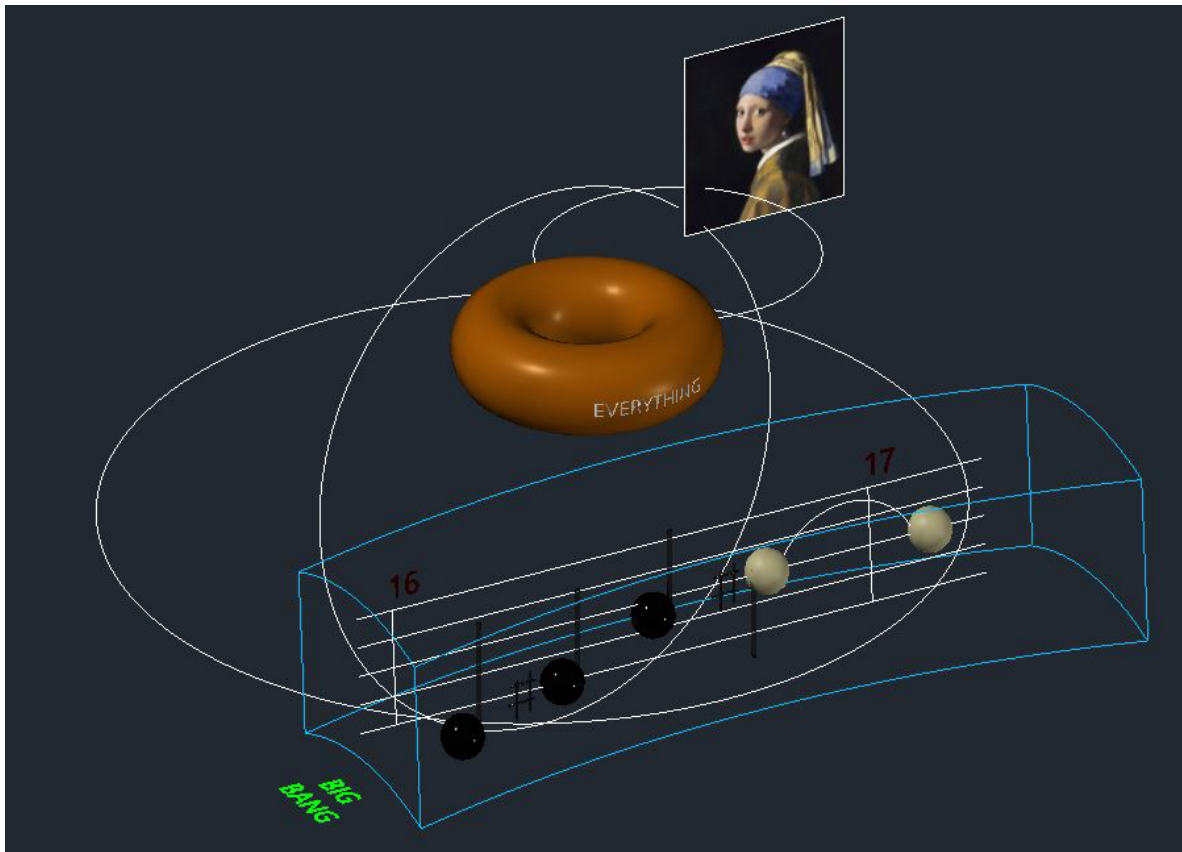


Figure 5 A representation of bars 16 and 17 of the following piece of music

Here, showing the 3D nature of the music in space-time, with notes as musical objects, a supposed toroidal model of the universe, representative lines of relationship uniting everything, including the *Girl With a Pearl Earring* by Jan Vermeer (1665) and a big bang representing an explosion of lines adjusting with every small incremental change in the universe.

Total Field Theory

Grant Gover

$\text{♩} = 100$

Violin *leggiato*
 $mp > p < mp < p < mp > p$

4 Vln. $< mf > mp < f > mp > mp > p > mf > pp > p < mp$

6 Vln. *liberamente*
 $mf >$

8 Vln. *portamento*
 $< ff > f > mp > p < mp > < > < >$

14 Vln. *portamento*

$\text{♩} = 160$

20 Vln. *legato*
 $mp > f > p > mp > mf > mp$

26 Vln.

Now, taking Bars 16 & 17

Figure 6 Music written to demonstrate a sample of the theory of everything taken from slide 8 of Total Field Theory 2018 shown in 3D in the universe of space-time in the last Figure 5

This can be seen as a self contained piece of music where the first note relates to the last and everything else in between—and everything else. The theory here is that things that appear on the surface, such as ordinary objects, be they musical, architectural, of people or whatever, even thought, there is more going on than meets the eye, like what is happening in physics, in reality.

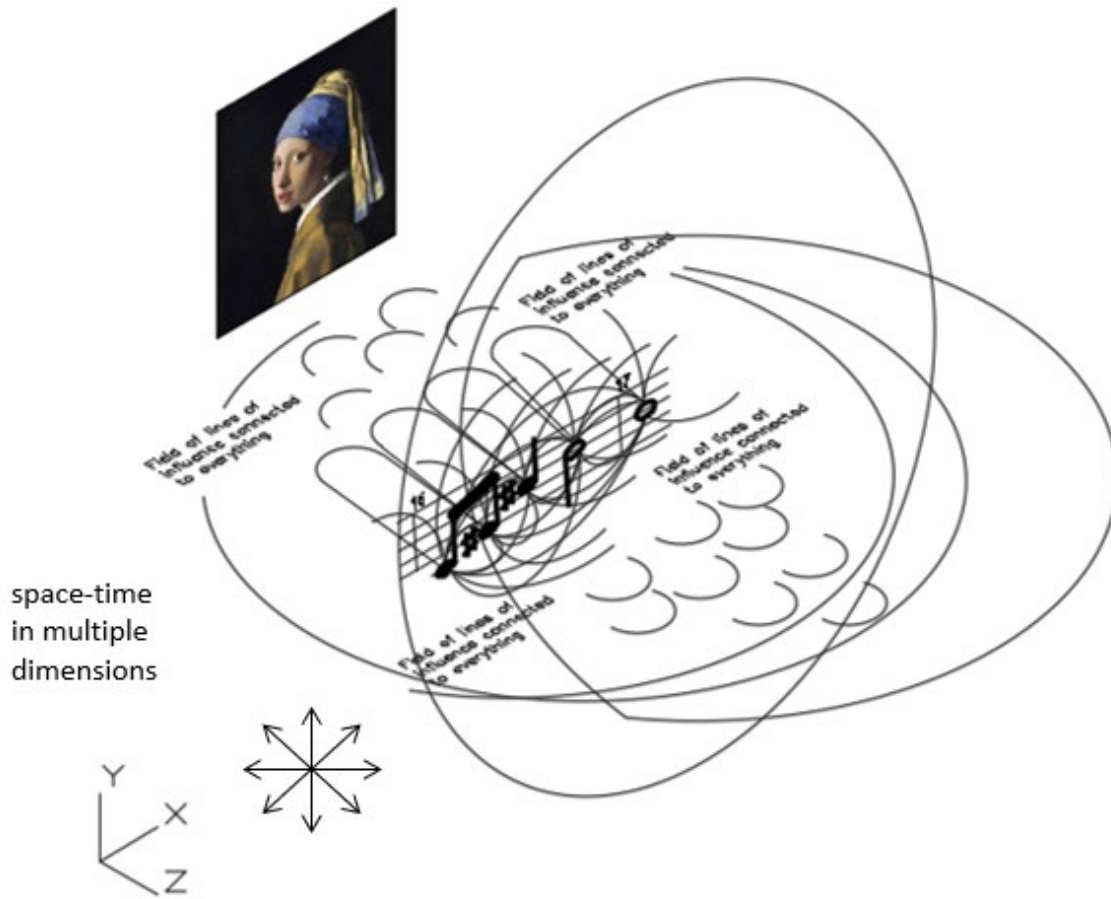


Figure 9 Isometric view of bars 16 and 17 of Total Field Theory

in multidirectional space-time showing representative lines of relationship in local and total fields including the arcs showing parts of connections within the bars and the piece of music as a whole whilst relating to the universe as a whole including the *Girl With a Pearl Earring*

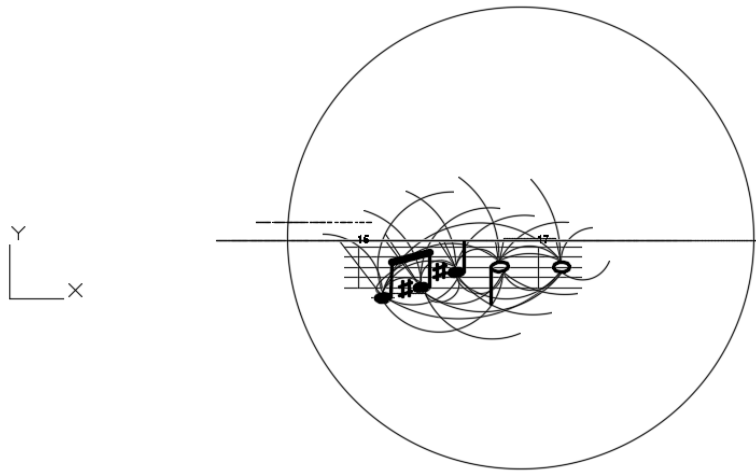


Figure 10 Front 2 dimensional view

relating to the initial score on paper where first envisaged of notes relating within a whole piece of music, the arcs indicating the, as it were, algebraic expansion of brackets, that is every term multiplied by every other term, here every note connecting with every other note and everything else in the universe including the *Girl With a Pearl Earring*

5. Comparison with some selected other theories

5.1 Where Alfred North Whitehead's *Process and Reality* is selected as the lead comparator

5.1.1. A. N. Whitehead's *Process and Reality*

For many a tough read. **Rupert Sheldrake** admitted so, in interview with David Segall of the Cobb Institute (2020), whilst conceding that, apart from Henri Bergson, a clear read, certain modern theologians and a singular leading biologist, Michael Levin, who finds patterns in the African frog, *xenopus*, via electrical fields before any expected display of features, as well as Aristotle and Saint Thomas Aquinas (for Whitehead it was Plato), there was much that

could accord with his own research on morphic resonance, of which the frog research was one example, in his, and it seems, Segall's, opinion.

The vacillations of time, that Sheldrake speaks about in his interview with Segall (2020), in my opinion, resonates of Gilles Deleuze's notion of short term time shifting about a present moment (James, 2011) and Carlo Rovelli's view (2020) that theoretically time can be dispensed with except in the full emotive lived-in present; although, Sheldrake's view of time and memory can operate at longer periods than a few seconds. Here he can accord with Whitehead's 'prehension', Sheldrake's 'precognition', and with Whitehead's 'dipole' idea about a relationship between the future and the past where the future can pull towards itself to the present and vice versa. For Sheldrake this can tie up with topics of extra sensory perception.

In my theory of everything, time is seen as a continuum, which also appears in Whitehead's conception as the 'extensive continuum'. He incorporates a holistic synthesis of: 'objects', 'subjectivity', 'objectivity', 'simplicity', 'complexity', classifications, 'society', 'hierarchy', universal 'data', the self, 'sensa', 'feelings', 'experience', 'occasions', building to an 'organic' cosmological system. These are all topics that apply to Zaha Hadid.

Whitehead whilst aiming at a granular analysis, taking into account the macro down to the micro, does not get specific about actual points in time. For him it is the process that 'smears' out over present time (Lestienne, 2022). For me, it is a point of difference with virtually every other theory that the fineness of examination and precision is essential—it is the almost impossible task, in the vein of Zaha Hadid, like designing for anti-gravity. For me, this is another way of exploding problems with objects and arguments about differences, the truth that Whitehead was after needs both classical approaches and multiperspectival approaches, as Zaha Hadid used in her designs; the smallness needs to go down below the plank level—and in a thought experiment, where theory rules, this is possible—pragmatic scientists might disagree and they may be right, but it is posited that to think impossibly might yield something useful. In the musical portfolio, the practical outcome of the research, this is borne in mind. Whether it is achieved is a different matter. It is difficult to get away from conventional type thinking, but attempts are made, in an individualistic voice.

Also, controversially, Sheldrake considers memory resides more in an outside space which can be accessible by others rather than being completely defined by the brain and neuroscience. Segall and Sheldrake consider this accords with Whitehead's broad sweep view. This is coupled with Sheldrake's explanation of morphogenesis as linked to Levin's frog experiment.

Sheldrake is also interested in epigenetics, differing from a bottom up view of evolution where the 'purpose' of eyes for instance can be posited rather than just being an end product of evolutionary selection. Whitehead is interested in everything, which he expresses in an exhaustive examination of typical philosophical issues of the time, of Kant, Descartes, Locke and Hume. To a certain extent the knowledge base is classical as available at the beginning of the twentieth century. Whilst Sheldrake demonstrates considerable affinity for Whitehead he has unique views which can put him at odds even with modern established science.

I, personally, feel that Sheldrake's 'purpose' becomes more real the greater the evolved organism's state, yet in principle at any stage of evolution Sheldrake's idea seems reasonable; also, I personally feel there can be intentionality, some driving purpose involving self determination, some form of decision making, which Sheldrake calls a 'lure' (also a Whitehead word), or target in the future, like the mathematical term 'attractor' (Sheldrake), pulling forwards. Could there be a 'thrust' from the original creator (my thought)?

Other areas of accord between Whitehead and Sheldrake could be: spirituality and consciousness; one aspect could be in regard to precognition, a difficult Whitehead term for Sheldrake: 'conrescence' (really, a coming together of discrete events in time), an important almost worldly: processual and practical worked out religion, in ritual, meditation, fasting, sharing meals and panpsychism (consciousness in everything), even panentheism (life:god in everything) (refer Brüntrup, Göcke, Benedikt and Jaskolla, 2020 for full reading on these two terms).

Materialism and dualism (mind body separation) were agreed as not of the full picture of what *is*; further, Sheldrake agreed with the doing away of 'bifurcation' (Whitehead's term) where mind-body are of one piece with the world of nature, not separated. This is the terrain of my theory, everything related, down to impossibly fine detail. Sheldrake's averring of there being more to mind, body, matter and so on accords with my theory. This is important, for instance, in trying to decipher and translate architecture to music. It provides information more than the pragmatic empirical evidential.

I agree with Sheldrake in that paranormal and parapsychic phenomena should have the prefix 'para' dropped and just be seen as normal extensions of everyday life i.e. the more-than-meets-the-eye phenomena as regards objects and normal fields of perception, in terms of the theory. To a certain extent Whitehead tries to examine and appraise objects definitively. To an extent he is limited by the prevalent concerns of the day, such as: do chairs exist? He seems to take a realistic view to this that they do. These days such questions rarely arise, but still questions can be asked about objects: what are they, what are their properties? Artistically, this is something that can be acceptably brought to the fore. This is embedded in the research and output of the work in connection with Zaha Hadid.

Luciana Parisi (2014, 2022) draws on A. N. Whitehead's analysis of process and ways of thinking to inform her critique of algorithms in computers where much is already beyond human control or even understanding, involving language, a relevant topic of this research regarding translation, and, abstraction, another relevant topic regarding Zaha Hadid's predominant mode of thinking. I read somewhere of a book maybe that Parisi was planning which I cannot find now and glancing through it seemed to be so thorough, like Whitehead's vision of life. In fact, I remember thinking: this is close to how I would write an all encompassing book, somewhat similar to Whitehead's grand oeuvre. On this basis I would rank Luciana Parisi as one of those in the pantheon of formulators of a theory of everything and akin to A. N. Whitehead's formulation.

Personal points of departure from *Process and Reality*: my theory centres on extreme infinite detail, heterogeneity of objects, multi dimensional perspectives, simultaneous concordance of

multiple philosophical stances, open to conflicting ontologies and is dynamic. Points of agreement and admiration are patent honesty, correspondence theory applied to reality, agreement, as with Rupert Sheldrake, about all-in-one concept of life, preeminence of subjectivity, some notions of time, importance of process and agreement about God⁵.

5.2 Frank Wilczek's Fundamentals: Ten Keys to Reality

5.2.1. How it illuminates certain aspects of the research bundled up with theory

A Nobel prize winner MIT scientist's explanation with child-like enthusiasm for the universe of physics explicating in clear terms several of the contentions of this thesis's theory: there-is-more-to-the-world-than-at-first-meets-the-eye; the inner world of wonder and 'abundance', which loosely could tie up with *new materialism*, plant intelligence and musically trying to explore hidden properties of materials and instruments, then, transcendently explore inner depths of people players; large numbers feature as infinities contemplated in the research; the type of extra dimensions of the Weberian fields tally; the cat jumping out of the computer screen highlighting the pristine wonderfulness of reality; in the end, agreement with A. N. Whitehead and myself about God. In the research about Zaha Hadid I satisfied myself that Zaha Hadid too was a believer (Gover, 2024b) so that I could make a spiritual piece that somehow reflected her through myself and a medium I call a Saussurian Sandwich, a semiotic (meaning signifier-signified process) passing of information from her through space-time fields through the technology Wilczek extols of electronic means of making music, coupled with real music played by a real violinist, yet recorded electronically, and computer generated midi music interpreting a traditionally notated score. A significant point in the evocation of Zaha Hadid musically is the depiction of stars, the cosmology in which Hadid was so immersed, me also, which Wilczek rightly points out as mind blowing.

The points of departure are virtually nil; it is integrated into Wilczek's vivid imagining based upon real facts about the universe. His build-up of physics is essentially classical, encompassed within my conception, yet essentially of 'thought based' (which Wilczek encompasses too) and largely musically incepted experimental radical thinking kept largely in the thought domain, quite abstract as Zaha Hadid could be, but still shot through with real world implications.

⁵ Apparently according to Lestienne (2022) Whitehead had a questioning period before returning to believing in the necessity of God from his theory. For me the same necessity is there with all the wonderful aspects that Whitehead elicits in *Process and Reality*.

5.3 Emanuel Levinas:

5.4 An impossible task – and yet not

The information used in the following discussion is culled from these sources:

Bettina Bergo. (2019). 'Emmanuel Levinas', *The Stanford Encyclopedia of Philosophy*.

Paul Davies. (2019). 'Levinas's Restlessness: "God and Philosophy" without Consolation'.

Ellie Anderson. (2022). 'Levinas, Totality and Infinity'. *Overthink Podcast*.

There is much in common with my theory, as there is with all the theories, where a contention already made is that there are more similarities than differences between a wide range of theories. There are many erudite expositions of Levinas's position; here, the approach is a clear reduction of a builder or engineer, used to plain talking. Already there is a warning light in that reduction is something worthy of extensive discussion regarding Levinas's thoughts. Nevertheless, I will forge on. Also, the intention here is not to provide a rigorous examination of Levinas's thought world, but to place it in simplified terms in context of my theory, for comparison's sake. With commonality already conceded, the aim is to place my theory in context with others, here Levinas, and tease out differences that make mine worthy of at least discussing and using in the main text of the thesis as regards Zaha Hadid.

The 'impossible task' as far as Levinas goes—it is also used as regards translation by Walter Benjamin, examined separately (Gover, 2004)—is that Levinas sets up a shifting sands world, like Theodor Adorno with his dialectical positions which can switch as soon as a conclusive position is reached. For Levinas it is to do with the infinite, based upon an understanding of René Descartes's that the true infinite is unattainable and non understandable as a concept whilst finite versions of infinity can be used and are used (in engineering for instance). The larger version of infinity is equatable with God, which again is unknowable. Another imponderable is transcendence which again when experienced fully is of God. He discusses much about different perspectives to try to encompass different viewpoints, of belief, non belief, different religions, and philosophy, which latter is hailed as a source of wisdom and some valid reasoning, yet, in plain terms, second rate to true faith and transcendent knowledge, not quite ever there in terms of understanding. This sounds quite biblical, as of Saint Paul. Another realm dodging the bullets of logical philosophical analysis is mysticism, which essentially has its own parameters of existent belief, rather like blind faith, which is uncontested, yet must have inherent urgency and commitment to the divine, like intuition, a hot line to the knowable, yet indescribable.

When talked about, in terms of Derridian type language or any ordinary language the full meaning drops away. Even phenomenal experience of *Dasein*, or whatever existential form it takes, is removed from the real thing. The closest experience is imminence, which is really the end point of transcendence, a heightened form of phenomenal experience which can never

really be captured in talking about it..

There is set up an alterity, an otherness, not expressly in the current usage of emancipation of human queer, racial, gender, or unprivileged rights. It is like a veil between two realities, the true divine and the bumbling real world. Every effort should be made to cross the divide, to reach out, accepting the ‘other’, on their own terms, looking them in the ‘face’ as the recognisable what they are, not necessarily just visages, the whole gimp of a person.

Without going on further—with Levinas huge tracts can be, and are, written, with conferences dedicated to peeling away the difficulty of understanding and applications of his writings. It is difficult to describe what it is. There are difficulties, which can be discerned already, in calling his body of thought a philosophy, a system, a religion, although all of those are in the mix. Two salient points arise: ethics; this takes preeminence, to be unequivocally nice to the ‘other’, if necessary putting the other first before the ‘self’ (the self again a difficult topic; where ideal, of the larger infinity, of God, of transcendence, experiencing imminence), then topology or ontology, how the universe is configured, and whilst sometimes adopting a neutral stance, the whole world is permeated with God.

Now the comparison and in fact great similarity and empathy with Levinas, also the useful application for the work of translating Zaha Hadid musically. This will be kept simple as bullet points.

- Infinity

My theory is all about infinity. It chases infinity, multidimensionally, impossibly, like Levinas, and Zaha Hadid in her conceptions discussed in the main research about her (Gover, 2024). It is not just *ad hoc* applications, but an endeavour to apply infinity in every single direction running through everything. Levinas sees infinity running through all; he is just not so rigorous; admittedly so: impossibly rigorous.

This, is apparent in the thought models illustrated in *Figures 1, 2, 3, 5, 9 and 10*. It is also in CAD, in the amount of information needed to make the cat jump out of the screen. In fact when the screen is not set to ‘limits’ the drawing space is known to be infinite in extent. A moot debate could be had here of the order of this infinity—is it the full larger infinity of Levinas, or his lesser notion occupying finite realms?

It is also in the postulated numerous connections as shown, the Pousseurian pitch class set fields, as well as my own fields and pitch class sets (as Appendix A), between notes in the Weberian example, as *Figure 4*.

This speaks of Cantorian sets as explained by Joseph Dauben (1983), and, controversially, it is my contention that in the full application of lines of alignment conjoining everything there are such lines between infinite series of transfinite numbers. This gets at the heart of a related concept of my theory, that not only are numbers more than they seem as objects, as notes are depicted in *Figures 5, 9 and 10*, and though shown flat, also, in *Figures 1, 4 and 6*. *Figure 10* looks flat, because the front view of the orthogonal projection does not show depth. We know there is depth from the other projections; it is just not visible. So, the note objects have solidity. This, then, continues into conceptions of objects such as,

possibly numbers, and, architectural objects for transformation, as translation of Zaha Hadid. It is conjectured to extend further, to thought, and, word objects, in fact, every component of the world.

- Totality

Where Levinas is concerned about words and how they might sully an understanding of the ultimate infinite, my theory is fully integrated to cover every contingency, event, state, part of space, building, part of a building, word, person, animal, creature, thing, all associations, all arguments and all valid.

Where Levinas divides up the world to protect the ‘other’ as well as the other ‘other’, the ‘same’ (Ellie Anderson explains this well, 2022), he is mistrustful of totality. He accepts it is there, but he would rather privilege the inviolate part and then reach out to the ‘other’. For me, this is complete and totality means no part is left out of the encompassment of things as worked out and working out. It is almost semantics to say that the two conceptions are different. In my version of totality all variants are encompassed. Taken to its logical conclusion, that can lead to some surprising and illuminating results, rather like the H. G. Wells world (1908) where conflicting ideas can happily coexist.

- Ethics

For Levinas ethics takes primacy, even over the next point, the second most important point for him, ontology. Ethics places a ‘responsibility’ on the ‘same’ to look after the ‘other’, which actually applies to everyone and when in doubt the other comes first, one should be self effacing and humble.

Again, this is similar in my theory, where there is like an ethical aspect of everything where if broken down to essential components would have an ethical valency value which when added up for each part of each system, using a cybernetics approach, would have a net values taking into account all hierarchies (which in the end are not hierarchical, because there is a grand egalitarianism implied in contemplating everything), cultural and social systems and everything else. This results in a relativistic view of ethics. The values should be the highest attainable within each part of the system, for the same reason of Levinas’s large infinity assumed properties, which in theory should be as near to perfection as possible, approaching an absolute. Using a Levinas metric, in an applied world of infinity in the finite world, this is difficult to attain, but for which it should always be strived.

For me, what was difficult for Georg Cantor and Bertrand Russel, to cross the ‘infinite bridge’ between finite infinity and the large infinity, in fact for many people (apart from the reason for wars and wrong things happening in this world, this is a major reason why some people cannot believe in God), is possible by a super integration across all of space-time, as inherent in my theory, so the end result of what occurred before the currently accepted model of the big bang, is a super extrapolation of what we know in this world to

end up with the classic perfect notion and existence of God.

Again, for me, the ‘responsibility’ comes increasingly with the degree to which one is intelligent, aware and conscious, as a current end product of evolution, where, as Sheldrake (in interview with Segall, 2020) stated, genetic factors could not only be the result of evolutionary forces, but have ‘purpose’.

Where Levinas said that one should invariably give the other person’s interests priority over one’s own, the Christian view, which as a Jew Levinas encompassed all religions and viewpoints, including Christian (according to interpreters), is of what Jesus, a Jew, said, importantly, to love others as oneself. In my theory, this applies to all others, totally; Jesus, as a practical man, said start at home, with one’s own locality. This accords with the all embracingness of my theory where everyone is equal of inestimable worth and where to put down one person below another, even by oneself of oneself, is against the naturally effulgent positive vibe of the universe. However, having had an Anglican Protestant Church of England upbringing I tend to adopt Levinas’s view of putting others first and one has to work hard to realise the more healthy attitude of real applied equality for all, including oneself, Levinas’s the ‘same’.

- Ontology

Ontology for Levinas could be loosely translated as ‘being’, perhaps an over reductive synthesis of all the heart wringing over all the issues that he was balancing to do with the phenomenology of Husserl’s liberating approach to self, and Heidegger’s immanent existentialism, philosophy as a whole, transcendence, immanence, religion, not religion and metaphysics.

The related topic, of topology is important for Zaha Hadid, for her architectural conception within a mix of Western Islamic mathematical art, and for me to understand the universe’s configuration to work out how translation works (ultimately, theoretically, needed to be seen within a totalising integration), tied up with understanding how Zaha Hadid’s imaginings and buildings work, thus enabling some sort of scaffolding to work from, in translating Zaha Hadid, taken as a whole, herself, her ideas, her structures, her forms, her ideas embodied in forms, to some degree, in some measure, to music.

6. Conclusions

In the end, to keep things simple, just three comparators have been chosen, A. N. Whitehead, Frank Wilczek and Emanuel Levinas, with two others conjoined into A. N. Whitehead's exposition, Rupert Sheldrake and Luciana Parisi. There could have been many others (not in any significant order) such as Itzak Bentov, Roger Penrose, Stephen Hawking, Carlos Rovelli, John Pell, Paul Davies, Maurice Blanchot (Levinas's friend), Gilles Deleuze, Michel Foucault, Henri Bergson, Jean-François Lyotard and of course many others.

- A. A. N. Whitehead is chosen because of his consummate earnest approach, a friend and colleague of Bertrand Russell, a personal hero since childhood, and relevant because of the 'infinite bridge' concept, that is, the impossibility of progressing in an 'infinite continuum' to the progenitor of things, the passing from normal infinite series to what Cantor described as transfinite series, crossing into what Levinas calls like an impossible realm that essentially is God; also, is implicated in everything, from the likely fields before the big bang, the big bang itself, evolution, still allowing free will via infinities within, as it were, Levinas's large infinity. This is what I believe also as an outcome of contemplating the theory of everything. I appreciate this is not everyone's conclusion. For me, it is a matter of applying the theory in miniscule detail to literally everything and it helps in my research about Zaha Hadid to understand her world, her architecture, make sense of how to perform translation, then in terms of the research produce some practical outcome in terms of a musical portfolio. I personally do not want to impose my thoughts on anyone and wish to listen to others and consider their arguments, as Levinas applied. Such issues should be resolved by courteous, loving (in the end the upshot of Christian and Muslim and Sikh and Jain and so on precepts) debate.

Luciana Parisi is chosen to fit into the A. N. Whitehead conception because she is a patent Whiteheadian and she brings to the table new dimensions concerned with instrumentality, the rectification of queerness in theorising, the 'otherness' (my term in the spirit of Levinas) of computers and the way they think, which we should respect.

Rupert Sheldrake, again, is chosen in respect of A. N. Whitehead, because of his interest in Whitehead and what he, Sheldrake, brings differently to the table, an alternative view of how things may be composited, which within a theory of everything is necessary to extend current world views to encompass 'other' (with deference to Levinas) viewpoints.

- B. Frank Wilczek is chosen because of his panoramic approach, perhaps typical of several summarisers of history and thought (such as David Christian's *Big History*, 2015; Edward Gibbon's *Decline and Fall*, 2003; Fernand Braudel's *History of Civilisation*, 1993; and Bertrand Russell's *History of the Western Philosophy*, 2004) going from early to modern times, in fact, with similar enthusiasm as Carlo Rovelli

and Paul Davies, essential in recognising the wonderfulness of this world (also Brian Cox) and explaining in layman's accessible terms how concepts of modern physics can fit into this overall conception⁶.

Emanuel Levinas is chosen because of despite seeming differences there is much commonality. These areas are:

i). Infinity. We both believe that infinity permeates through the whole universe. My view is slightly more universalist. The ramifications of this are simply mind blowing and for matters of creativity are an endless source of enlivening fecundity, both for Zaha Hadid and my explication of her..

Most people would agree with this statement, although when getting into how this actually works in practice there are differences in philosophy, mathematics and physics. My speculation is that with the unification of objects in space-time, now widely accepted, Sheldrake's contention about extra sensory perception will become normal and brought into mainstream physics and technology, gravity and other essential properties of physics will be seen in a different collective light from a different perspective, in fact from as close to possible infinite perspectives and would simply ask readers to contemplate the implications of the information and *Figures* already given. Another one-off postulation is that inflation of the universe widely postulated as linked to dark energy may be linked to the theoretical postulation of lines of alignment between objects. Theoretical thinking in as much of an abstract state as possible, as indulged by Zaha Hadid, is to be encouraged, similar to pure research, where outcomes are unknown, yet occasionally yield surprising practical results.

ii). Ethics. Essentially, this is already covered. 'Responsibility', equability to all and non selfishness must be a civilised way of going about things and there is an emergent imperative about this from the universe.

iii). Ontology. We are agreed about the constitution of the universe. It is full of transcendence and the lived-in moment is imminent. Many would agree, Rupert Sheldrake for one. As he says the purely materialist empirical view might lead to disagreement—but, this is not always the case. As Paul Davies says in *The Mind of God*, there are many scientists who believe. With the advent of quantum physics many strange possibilities open up. These are partially explored in the music making to do with Zaha Hadid.

⁶ Frank Wilczek gave a lecture at the Royal Institution, London (2015), essentially relating symmetry in physics to a notion of beauty and declaring that his interest was in gauge type weak forces. The Holy Grail in physics is a theory of everything titled the Unified Field Theory where Einsteinian relativity can be reconciled with quantum physics, the strong and weak forces, described by a unifying set of equations. Wilczek's mechanism was to utilise relativistic principles in relation to the topic of translation (see Gover, 2024a) which he formally covered, aesthetically, stating that total change must remain unaltered in transformations. Other *ad hoc* theories of beauty are variously covered by Herbert Read (1945), John Ruskin (1907) and Ramachandran (2003); and Charles Jenckes who steered around the subject discussing modernism and post modernism (per Szacka, 2022).

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Grant Gover

03.02.2024

Appendix A

Analytical Methods

Assignment 1

Grant Gover

For

Vanessa Hawes

23.11.2016

Analysis Assignment 1:

The piece of music chosen for analysis is the *6 Bagatelles for String Quartet Op. 9*, by Anton Webern (1883-1945), concentrating upon the first bagatelle, a mere 10 bars long.

Justin Morell (2016) states that, the only extant analysis known to him as carried out on this piece is by Allen Forte, Richard Chrisman, Jeffrey Perry, Carolyn Denise Mullin and Benjamin K Davies.

Morrell, in his article, concentrates upon the second movement, due to that movement's apparent rarity of singular analysis.

This will help here, because the intention is to have an impartial as possible initial analysis of the first movement, to simply formulate one's own opinion of what makes this movement "tick", whether the music is atonal, as Morrell suggests and for the author, from a compositional point of view, the peculiar characteristic, or set of characteristics, of this piece as music.

This impartiality must from the outset be relativistic due to already obtained historical background facts about Webern. Towards the end of this analysis research will be carried out to embellish, substantiate, verify, or otherwise, the findings made here.

The intended approach is firstly to listen to recordings available online, to obtain a copy of the score from IMSLP (2106) and then to analyse the music from as unbiased a position as possible, given the already accepted partiality as above, in order to form one's own opinion.

Traditional analysis, will be the first method attempted, which in the author's view, can operate over a broad period in history from early music days to quite modern tonal and maybe even some atonal music (to be precise already started during the listening phase), to discover the usual factors of such a treatment, which are numerous, some being to do with melody, harmony, rhythm, possibly polyrhythm, tempo, form, emotional meaning, colour, texture, diatonic and/ or chromatic structure, counterpoint, instrumentation, homophony, polyphony and so on.

It was envisaged from an early point, that it would be necessary to carry out a Forte (1963) analysis, looking for motives, possibly going deeper into pitch class analysis and definitely before that to carry out a Schenker analysis (Pankhurst, 2008), which would be the next step after the traditional analysis, to try to find out more, perhaps at a deeper level, where Schenker has three levels, foreground, middle ground and background, a more hidden underlying structure and/ or shape. In this last respect a graphical analysis of Rink (2002) might help. Whilst it would be probably helpful there will not be the time or space to carry out an analysis at greater depth looking for α or other motifs, such as by Tenkanon (2010). To an extent, "features" as per Huron (2001) will be looked for.

Implicit in the Schenkerian analysis is a commencement with a Roman Numeral analysis, where an understanding of the vertical and some neighbouring horizontal harmonies are needed to be understood.

So, the first attempt at formally analysing the first bagatelle by Webern is to try to label any chords found within the piece. This has proven to be virtually impossible. The first three notes consisting of Bar 1 are D \natural (which could be the tonic note of this first movement), E \flat and C \sharp . These notes incidentally form an arpeggio, which at first glance seems to be an important feature of this piece, here sweeping up from the cello to the first violin, missing out the second violin, which appears immediately in Bar 2. If D, here, is the root, the C \sharp could be the Major 7th of D and the E \flat could be spelt enharmonically as D \sharp , which could be seen as an appoggiatura, or a flattened 9th, or as part of another chord which might resolve onto another known chord, however remote it may be, but looking at this within the context of the next bar's chordal structure, immediately it is seen as a suspension of the C \sharp as against C \natural .

Analysing the chord of C \natural , G \flat and A \flat in the second violin part, that is, the second violin's first appearance as just mentioned, which is a tied arpeggio and which diatonically speaking could be a diminished chord on C, although it does not sound like one – it sounds more as if it is leading to the top B \flat in the first violin part – so it could actually be a diminished chord and indeed it does sound sad, but then that could be said of the first movement and the whole 6 Bagatelles – but against this is the repetitive alternation between A \natural and B \natural of the viola. This bar ends with an F \sharp in the cello, which sounds against the ending downward sweep of the three note arpeggio based upon the B \flat lastly mentioned of F \natural , with an E \natural in between these two notes, thereby making a chord of an augmented 4th or tritone and where E \natural could be seen as a further tritone with respect to the B \flat . What does this tell us? Maybe a devise of serial or atonal music, or both? In the next bar, 3, the F \sharp in the bass part, the cello, sounds, via a suspension, against G \natural of the top part, the first violin. This G \natural falls to E \flat (so could there be brief sounding of an E \flat chord?), which sounds against the E \natural in the cello part. Then we proceed to C \natural (could there be a suggestion of C Major here?) which rises a major 7th to B \natural , which, not surprisingly by now, is tied to the next bar to create a suspension, clashing against B \flat . There follows then clashes of first violin E \flat harmonic with the final E \natural of an arpeggio across the lower three instruments sounding, D, C \sharp , C \natural and E over G \sharp . The D is seen again here, perhaps emphasising the tonic of D, or at least tonicising the harmony to a degree here. Next important notes seem to be an arpeggio across bars 4 and 5, starting with the cello, of A \natural , F \natural , B \flat (in the viola falling to C \sharp harmonic in the cello in the next bar), a high F \natural against a low G \natural in Bar 5 and alternating D and F \sharp in the second violin; thus, at one point there is F \sharp , F \natural and G \natural all sounding together – somehow this all generally sounds rather like part of a series of notes, that is serial music and yet there is a hint of tonalism. Back to Bar 4, there could be a vertical tonal chord of the notes, A, F, G \sharp and E – there is also at the end of the bar a sort of passing note B \flat , which

seems to prepare the way via a hesitant quaver rest at the beginning of Bar 5 to the harmonic C \sharp as just mentioned. Ignoring the B \flat , do the last four notes suggest an E Major chord, or F minor? The E is followed by the D, as mentioned above sounding rapidly as a tremolo with F \sharp . Despite the high F \sharp as mentioned above, this does seem to underpin a D Major feel to the piece as a whole. The low G then proceeds via the remaining bars to end on C. Somehow C seems to be an important note, perhaps indicating a valedictory note, as a purely subjective suggestion.

At this point, whilst it may be seen from the foregoing fairly detailed examination up to Bar 5 (whilst it is noted that the remainder carries on in similar vein, perhaps with more open spacing, use of rests) that the music cannot be described as being of full diatonic tonality, yet, there are quite strong suggestions of some tonality, whilst the obverse seems also to be true, atonality, yet, the fact that all the notes of a 12 tone row are used and noting the contiguity of notes, mainly semitonal steps (as noted by Pousseur in Morrell, 2016), with a whole tone step occurring across the piece, of D to C, that perhaps Morrell (2016) at least has some merit to his description of the piece as being atonal. To qualify this further, could the piece be described as of free tonality? To provide a concise response to this, the use of rising 7^{ths} as mentioned already and falling 7^{ths} (a falling 7th occurs in the viola part between Bars 8 and 9 where the lower part of a two note chord falls and is tied across the bar line as B \sharp falling to C \flat —incidentally this falling across the bar line is another feature of deliberate variation of rhythmic emphasis noted throughout) and other devices tend to suggest that it is not exactly free. It seems to be tight, compact and ordered to a plan. All of this, the indeterminacy of key structure and other points emerging, led to the notional combined analysis where a visual representation of the clashes and suspensions could be viewed at a glance – and then against this could be other factors that could be examined at the same time, for instance, the harmonic structure such as is possible to determine and other factors in the hope that this might provide some coherent overview. Already, from the close examination so far, it has become apparent that many factors are at play, emerging as the analysis proceeds, such as arpeggiation, note groupings, agogic rhythm, voice parts spread across the whole range of instruments, precise instructions (visible from the score – see Fig. 10), variation in dynamics, use of techniques such as muting, ponticello, pizzicato, tenuto, staccato, marcato, harmonics, playing on one string, the D string, pace changes and more (Fig. 10) – and it suspected that these all interrelate in a concise dynamic way. Could this variety, then, be integrated in a dynamic way and be ordered using some serialistic device?

The first attempt at the combined approach produced this:

| An Analysis of Sechs Bagatellen für Streichquartett, I | | | | | | | | | | |
|--------------------------------------------------------|-----------------------|------------|---------------------|----------------|-------------|-------------|--------------|--------------|-------------|----------------|
| Bar | | | | | | | | | | |
| Instrument | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | suspension | | | | | | | | | |
| 1st Violin | C# | C#,0,BbE,F | G,Eb,0,0 | Eb,C,0,0 | 0,0,0,F# | 0,0,A,G# | G,0,0,B | C,B,0,D#/G | G# | F#/G |
| 2nd Violin | | C,Gb,Ab,0 | Bb,0,0,E/G# | 0,0,D,F# | | | 0,0,Gb,F | 0,G,A,0 | 0,Eb,Gb,F,E | |
| Viola | Eb=D# | 0,A,B | 0,C#,C,Bb | | | 0,B,Bb | 0,E,Db,0 | F#,0,0,F#/B | C#/C,0,Bb | Bb,0,C,0 |
| Cello | D | 0,0,0,F# | F#,E,C,B | B,E,0,F/A | 0,G,G,G | G,F#,0,B/C | 0,G#,G,A/Bb | 0,0,B,d,B | B | B,0,A,0 |
| | suspension | | | | | | | | | |
| | | | C? | | | | | | | |
| Key? | D? | F-F#? | Em-G-Eb? A? | | G | G, G#m? | G, Em | C?, G | G#? | C?,G,Gm,A? |
| Chord? | DM7?+Ap | B7 | Em-G-Eb+ EMaj/Amin? | GM7 | Gm, F#m0? | G0?,Fm+?,Em | B+?, GM7 | G#?,EM7, Bm? | D hinted? | |
| | | | C? | | | G7 | C+?-G+? | | | |
| Roman Num? | I | III? | IV? | V? | V | | V7 | | II7 | I? |
| Comments | Arpeggio | | | Some sort | Most | | Permutations | | | Does it end |
| | D is the sort of feel | | | of | euphonius | | around G | | | on the tonic? |
| | | B in Viola | | preparator bar | | Viola Bb | | | | Or is there an |
| | | | | | Highpoint | | | | | air of being |
| | | | | | Top F v | | | | | unfinished? |
| | | | | | 2nd Vi trem | | | | | |

Fig. 1: Combined Analysis of Clash, Suspension, Harmonic and Interpretive Factors of the First Movement of Six Bagatelles by A. Webern, Gover (2016)

Where in fact some wrong interpretations were made which emerged from the close scrutiny of the transcription to follow (Fig. 2). However, some pertinent overarching points can be seen, such that there are definite bunches of clashes, that is semitonal clashes, or as would be called in Henry Purcell’s time, false relations. This notion goes hand in hand with suspensions. Is there in any way a harking back to a Baroque or earlier time? Possibly. From previous background knowledge, it is known that Webern orchestrated Bach’s Passacaglia (Guilini, 1908), Webern’s Opus No 1 in 1908 and later Bach’s Ricercare (Boulez, 1935). A further point was noted in this respect after the transcription (see below).

As regards analysing the tonality or key structure this is very tenuous and shows an effort at suggesting something. This is not only important as regards classifying Webern’s music, but also as a starting point for carrying out a Schenker analysis.

With this in mind it was decided that it was necessary to transcribe this movement into clearer notation that could then be edited for the various processes of further analysis.

This in itself proved to be a decided method of analysis, because it meant deciphering every element of the music in order to rewrite it and from this emerged a few points that had been interpreted wrongly previously, or simply overlooked. Several significant points emerged – it is almost as if the writing had been made deliberately difficult with different approaches to tempi with one example being the use of triplets with varying emphasis as regards where they occur in the bar. Another interesting diversion was as regards harmonics. This involved looking up Frederick Forsyth’s excellent book on Orchestration (1935) and some online searching where one conductor/ composer, Tim Davies, was very clear and helpful in elucidating that quite often people vary over their usage and interpretation over harmonics (2016). Webern basically used the small circles to signify harmonics even though they were

stated already with diamond-headed notes, although the first D is simply signified as such with a small circle. Previous interpretations as regards these harmonics circles had to be amended and sometimes notes were simply misread before, possibly due at least in part by not noticing the clef changes sufficiently – there are 7 such changes within these 10 bars. The whole piece is full of changes at different levels applying to all of the factors of tempo, stress, dynamics, tone quality, means of playing the instruments and so forth. In a way it is amazing how much variety is able to be incorporated into a mere 10 bars of music. Ideally it would be suit a Rink (2002) like graphical representation of all of these elements on one graph, so that their interrelationship could be examined. Intuitively it is felt that there could be a dynamic pattern of nodal points where features occur simultaneously and/or a relationship could be found between the preparation for a feature or event and its actual occurrence. This may have to be an area reserved for future study. However, it is intended to show more features on the revised Combined analysis to elucidate this feature of variety.

Before this, the transcribed score prepared in readiness for the Schenker analysis first stage is shown below:

Transcribed from
Vienna:
Universal Edition,
1924

6 Bagatelles for String Quartet Op. 9
Schenker Analysis Stage 1

Anton Webern
Analysed by Grant Gover

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Fig. 2: The Score of Webern's 6 Bagatelles, Movement 1, as transcribed
by Gover, 2016

Briefly, to summarise lessons learned from this exercise were to do with variety, as suspected and complexity, yet brevity within 10 bars of music, relating to figures, motives, colour, texture, dynamic range not only relating to the dynamics of sound/ noise, but to a holistic approach to all the factors making up the piece musically.

This was brought home by carrying out a piano reduction, where the split was made at Middle C. Essentially, this reduced some of the dynamic structure, yet made it easier to then carry out the Schenker analysis. Before this with apologies to Webern the author took the liberty of playing around with the ending to see if there was any implied tonality and added an ending after the 10 bars of Webern's. The result of this, whether there is any validity in this or not (probably not) was that there might be an ending tonality of F# Major implied. There is a possibility of such a tonality that shows in the Combined analyses, however this should be treated cautiously, since in theory if the piece is in a serial mode then there should be no key tonality, unless expressly inserted or occurs via stressing of certain notes. From these combined analyses it can be seen that every note of the tone row is there and this does perhaps suggest that the music is in serial mode, furthermore the mode that applies serialism to more than just the notes, to the rhythm, dynamics and so on.

Whilst the piece is plainly redolent of analysis of note groupings as per a Forte analysis, as mentioned above there is a definite feel for phrasing, for offsetting notes to create a time quickening and a similar effect created by small notes at the end of bars. Beethoven used to use this also to great effect, where a sense of anticipation was created leading one onto the next bar in haste. Webern though tends to use such effects to a different purpose, to express the whole as broken down to component parts. There is much more that could be said in this regard, including use of an almost contrapuntal technique akin to that of, say, Bach – suffice it to say that transcription on its own is a form of analysis because one becomes aware of minute details and then perhaps a rare time when electronic means wins over manual, but in having to master the software one became especially aware of the nuances of change as regards triplets and clef changes, in fact virtually the whole way through, that one was “kept on one's toes”, which is the same effect as for the listener, except that a casual listener would not be aware of this since the performance last only a couple of minutes or so.

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Universal Edition,
1924

6 Bagatelles for String Quartet Op. 9

Schenker Analysis Stage 1

Anton Webern

Analysed by Grant Gover

Moderato $\text{♩} = 60$

I III IV V

a tempo *acc. f.* ($\text{♩} = \text{c. } 96$) *pizz.* *f* *f*

Webern piano score up to this point with crotchet rest. *pizz.* $\text{♩} = \text{c. } 44$ Suggested ending by Gover to try to find tonality

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Fig. 3: Piano reduction of the Score of Webern's 6 Bagatelles, Movement 1, with suggested ending by Gover in order to discover tonality, 2016

It can be seen that Roman Numeral Analysis has been started. This will be finished for the Schenker analysis, yet views of interpretation have changed, partly due to errors of initial note recognition, also, due to the difficulty of assigning key tonality to a piece that is probably serial in composition, or at least atonal, or a combination of both, so, these assignments should be treated with a degree of tolerance – this will in all probability have an effect upon the Schenker analysis – it may of course change during the Schenker analysis with a different interpretation of the shape and direction of notes and hence any implied harmony may change as a result. The Schenker analysis should be easier with this piano reduction. It was considered to reduce to one stave, however this was to demonstrate the effect of voice sharing across the parts – this has been done already – it is patent that the effect is reduced by even reducing to two staves. To reduce further may just make the parts unreadable – there is only one way to find out, so this will be carried out after the following.

The revised Combination analysis shows a variety of changes as highlighted in colour:

| | Bar Numbers | | | | | | | | | |
|--------------------|-------------------------------------------------------------|--------------|--------------------|--------------|------------------|-------------|---------------|------------------------------------------------------|-------------------|----------------|
| Instruments | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| in Quartet: | suspension | | | | | | | | | |
| 1st Violin | C# | C#,0,BbE,F | G,Eb,0,0 | Eb,Eb,0,0 | 0,0,0,F | 0,0,A,F# | G,0,0,B | C,B,0,D#/G | G#/A,0,0,0 | F#/G |
| 2nd Violin | | C,Gb,Ab,0 | | Bb,0,0,E/G# | 0,0,D,F# | | 0,0,Gb,F | 0,G#,A,0 | 0,Eb,Gb,F,E | |
| Viola | Eb=D# | 0,A,B | | 0,C#,C,Bb | | 0,B,Bb,0 | 0,F,Eb,0 | C#,C#,0,F#/B | C#/C,0,Bb | Bb,0,C,0 |
| Cello | D | 0,0,0,F# | F#,E,C,B | B,D,0,F/A | 0,C#,C#,G | G,C#,0,B/C | 0,G#,E,A/Bb | 0,G,G,D,G | G,G,0,0, | B,C#,C#,0 |
| | | suspension | | | suspension | | | suspension | | |
| Key? | D? | F-F#? | Em-G-Eb? | A? | G, DM, Dm | G, F#? | G, Em, Eb | C?, G, F#m? | G#? | C?,G,Gm |
| Chord? | DM7?+Ap | B7 | Em-G-Eb+ | EMaj/Amin? | GM7, F°, F-9 | Gm, F#m°? | G°,Fm7?,Em | B+?, GM7 | G#?,EM7, Bm? | D hinted? |
| Roman Num? | I | III? | IV? | V? | III? | | II? | | II7 | I7 |
| Comments | Arpeggio: should suit Forte analysis | | | | Most | | Permutations | Roman Numerals suit Schenker Stage 1 + Quartet Notes | | |
| | D is the sort of feel | | C seems important? | | C | euphonius | C | around G | C | Tonic? |
| | | B in Viola | | | Preparation? bar | | Viola Bb | | | Unfinished? |
| | | | | | Highpoint | | | | | Leading C |
| | | | | | Top F v | | | | | Own ending? |
| | The below should suit Rink Analysis & Rhythm Forte Analysis | | | | 2nd Vi trem | | | | | - Fanciful: |
| Time Sig | 3/4 | 3/4 | 3/4 | 2/4 | 2/4 | 2/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Tempo bp cro | 60 | 60 | 60 | 60, rit | a tempo | accel | 96 | 60 | 60, rit | 44 |
| Rhythm | 3 | 3x2/2x4 | 2,3?,2 | 4,1,2or5o6,2 | 5 | 4 sync | 4 broken up? | 8? broken? | 3,4? | 4? |
| Clash Intensity | 1 | 8 | 3 | 7 | 4 | 3 | 8 | 2 | 2 | 6 |
| Suspensions | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes |
| Pitch Intensity | 7 | 13 | 6 | 16 | 17 | 19 | 11 | 17 | 16 | 7 |
| Instruments | 0,1,0,1,1, | 2,2,2,3 | 2,1,1,1 | 2,1,2,1 | 0,1,2,3 | 1,2,2,2 | 1,1,2,2,2 | 2,2,1,2 | 3,2,1,2 | 2,2,1,0 |
| Arp Trem Susp | Arpeggio | a, trem, sus | sus, 2 slur | arp broken | r, har, trem | susp, sync | sync, variety | har, sync, brok | har, sync, brok | sus, sync, fer |
| Harmonics | 1st note D | | | Eb dble oct | C# dble oct | C# dble oct | | C# do + 1, G cel | G cello tied last | Cel lo C dble |
| Clef Change | | | Bass-Ten | Tenor-Bass | | Viola-Treb | Cel: Treb-Ten | Cel: Ten-Treb | Cel: Treb-Bass | |
| | | | | | | | Viola: viola | | | |

Fig. 4: Revised Combination analysis including revisions in light of previous misreadings, new interpretation and a variety of changes shown in colour, Gover, 2016

Now, the final reduction as mentioned above of the score as reduced to one stave, as ready for the Schenker analysis:

Transcribed from
Vienna:
Universal Edition,
1924

6 Bagatelles for String Quartet Op. 9

Anton Webern

Schenker Analysis Stage 1

Analysed by Grant Gover

Musical score for the first movement of Webern's 6 Bagatelles, Op. 9, reduced to a single staff. The score is in 3/4 time and features a variety of dynamics and articulations. It begins with a 'Moderato' tempo (♩ = 60) and 'Con sord.' marking. The first section (measures 1-4) is marked 'pp' and includes a 'rit.' marking. The second section (measures 5-8) is marked 'pp', 'f', and 'ff', with 'accel.' and 'rit.' markings. The third section (measures 9-10) is marked 'p' and 'ppp', with 'rit.' and 'A Primo Tempo (♩ = c. 60)' markings. The score includes various musical notations such as slurs, accents, and dynamic markings.

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Fig. 5: Reduction to one stave of Webern's 6 Bagatelles, Movement 1, ready for Schenker analysis, using Finale 2014.5 software, Gover, 2016

This graphically shows the extremes of pitch range and as envisaged to a certain extent it does emasculate the overall effect – the consequential result of this is that the spread of instruments and voice parts is needed to achieve the unique flavour that is Webern's.

This is the Roman Numeral Analysis as carried out automatically by Finale 2014.5:

Transcribed from
Vienna:
Universal Edition,
1924

6 Bagatelles for String Quartet Op. 9

Anton Webern

Schenker Analysis Stage 1

Analysed by Grant Gover

Moderato $\text{♩} = 60$
Con sord.

1 2 3 4

pp *p* *pp* *p*

VII^{M7}/VII *rit.* IV^{M7}/VI

II^{M7} II^{M7} II^{M7}/I V^{M7}/VI V^{M7}/VI V^{M7}/VI V^{M7}/VI III^{M7}/5 VII^{M7}/5 VII^{M7}/VII I II^{M7}/5

III^{M7}/VI V^{M7}/IV III^{M7}/5 III^{M7} IV^{M7}/VI

a tempo *accel* *rit.* *A Primo Tempo* $\text{♩} = c. 60$

5 6 7 8 9 10

pp *f* *ff* *f* *p*

II^{M7}/5 VII^{M7} VII^{M7} V^{M7}/5 IV^{M7}/III VII^{M7}/5 III^{M7} III^{M7} III^{M7}/II

III^{M7} V^{M7} VII^{M7}/5 V^{M7}/5 IV^{M7}/5 I^{M7}/5 V^{M7}/5 VII^{M7}/5 III^{M7}/5 V^{M7}/5 V^{M7}/5(II)

V^{M7}/5 I III^{M7} V VII^{M7} V^{M7} III^{M7} III^{M7} I

III

ppp

$\text{♩} = c. 44$

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Fig. 6: Roman Numeral Analysis using Finale 2104.5 Chord Analysis, Gover, 2016

Here it is evident that automatically Finale reads the tonic as C, which in a way is correct, since if this piece is serial music then in a way one can look at all serial music as being in C. There is no key and so by default the prime base note is C. It can be transposed up by whatever degree but this is in a way artificial, in a way not – it is whatever it is set at by the composer or analyst, so this author is not going to take the above too seriously – it merely shows that the software algorithms work out the diatonic chord as based upon the actual note given together with the surrounding notes, which is a fair basis, but where there is as we have seen not a great deal of tonality this can effectively be taken with a great deal of the proverbial “pinch of salt”, hence one will not waste too much time worrying about whether the programme is right or not – it has been decided to adhere to a basic tonality based upon D, the dominant and some other simple interpolations – otherwise it is feared that one would be reading too much into what is not there!

So, now to the Schenker analysis:

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1924

6 Bagatelles for String Quartet Op. 9

Anton Webern

Analysed by Grant Gover

Schenker Analysis Stage 1 - Roman Numeral Analysis

Moderato $\text{♩} = 60$
Con sord. $\text{♩} = 60$

1 2 3 4

pp *p* *pp* *p*

D: I V^7 VI^6 IV^7 VI^7 III^9

5 6 7 8 9 10 11

pp *f* *ff* *f* *p*

a tempo *accel* *rit.* *A Primo Tempo*

$\text{♩} = c. 96$ $\text{♩} = c. 50$

rit.

fff

VII I IV^7 VII VI^9 IV^9 II V^7 IV^9 $\text{IV}^{9\#}$

12 13 14 15 16 17 18

rit. $\text{♩} = c. 44$

fff

III/V IV^7 VI^7 IV^7 VII

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Fig. 7: Roman Numeral Analysis carried out manually, Gover, 2016

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6 Bagatelles for String Quartet Op. 9

Anton Webern

Analysed by Grant Gover

D: I $\overset{\curvearrowright}{\text{V}^7}$ VI⁶ IV⁷ VI⁷ III⁶ bVI

VII-I III IV⁷ VII VI⁶ IV⁶ ,II ,V⁷ ,IV⁶ IV⁷ b5

Fig. 8: Stage 2 Schenker Analysis of 6 Bagatelles, Movement 1, by Webern, Gover, 2016

This is a sample of the Schenkerian analysis (Pankhurst, 2008) that can be done as progressed so far. It is considered that it will carry on in the same vein for the rest of the piece, of this first movement and where subjective decisions have to be made then they may be compounded with further continuation here. It is considered that this is sufficient to show the sorts of features at work here.

Firstly, even if the choice of harmony as signified by the Roman Numerals could be ascribed differently, there does seem to be some sort of harmonic progression, which may well militate for Morrell's atonalism. However, the piece has a decidedly serialistic feel and in using all 12 tones it may well be serialistic as well, so, the conclusion is so far that it is an atonal/ serial piece of music. There are definite groupings of notes which will suit a Forte analysis. Where the second main group of barred notes is shown, it is felt that an alternative could have continues to the Bb. Similarly, the Ab, at the end of the first line above, within the turn as shown (with the Eb underneath as part of the lower turn) could be heard as part of this

continuation of series of notes and indeed could continue to the E \flat , as leading to the B \flat - and which could be seen further to extend to the F \sharp (which is not actually an F \sharp - it is merely the 4th above the C \sharp to indicate that the C \sharp is an harmonic occurring 2 octaves higher) at the beginning of the second line above – so, this low C \sharp then leads to the D, which is for the purpose of this exercise being called the tonic note. As is noticed in Morrell’s article, Pousseur (Morrell, 2016) has singled out the semitonal step arrangement and it would seem that this is a major feature of this piece. Other points worth noting are to do with the groupings, the numbers of notes, 2s, 3s, 4s, 5s and possibly 6s which will undoubtedly form Forte pitch class sets (Nelson a, 2004), the range of notes, the voice leading (not yet shown), the cutting up of the music into chunks, the beautiful series of notes making a wave form, the 2 chords at the end of the second line and the beginning of the third and last line (not shown immediately above but is visible in Fig. 7) sort of progressing in a “wayout” chord progression leading to the denouement of this first piece, which accepting the harmonic interpretation as given, leads to the leading note of the scale, which then leaves one hanging and ready for the next movement. There is more space between notes on the third line. The tails need including for the bass line, which will be shown in the next step:

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1924

6 Bagatelles for String Quartet Op. 9

Anton Webern

Schenker analysis Stages 2,3 & 4 combined

Analysed by Grant Gover

D: I $\overset{\wedge}{V^7}$ $\overset{\wedge}{VI^6}$ $\overset{\wedge}{IV^7}$ $\overset{\wedge}{VI^7}$ $\overset{\wedge}{III^6}$ $\overset{\wedge}{VI}$

VII-I III $\overset{\wedge}{IV^7}$ VII $\overset{\wedge}{VI^6}$ $\overset{\wedge}{IV^6}$ $\overset{\wedge}{II}$ $\overset{\wedge}{V^7}$ $\overset{\wedge}{IV^6}$ $\overset{\wedge}{IV^6-5}$

Fig. 9: Stages 2, 3 & 4 Schenker analysis, 6 Bagatelles by A. Webern, Gover, 2016

As before, just taking the first part of this piece, in order to demonstrate the sorts of hidden structure that a Schenkerian analysis can produce, here a clear *Urfinie* can be seen – this was not apparent from the initial profusion of notes. It descends from the *Koifton* of E through the important note, as now established, of D, to the, also important note of C, as has been commented upon earlier. Furthermore, a *Bassbrechung* can be clearly seen, which adds an underlying structure to what initially appeared as an amorphous mass of free ranging notes. Does this order tend to militate towards a more ordered serial piece, than a free atonal piece? An indication of possible *Ursatz* of various levels of the middle ground has been provided – it is felt that this could go several ways suggesting the variegated and complex nature of this piece.

Finally, before proceeding to summarise the findings in this work, then comparing with others' and then providing final summative conclusions, it is intended to carry out a Forte analysis as has been the driving intention throughout this work. Due to the limitations of the

scale of this work it will only be possible to carry out a sample Forte analysis in a similar way as per the Schenker analysis and it is hoped that similarly this will prove to be sufficient in order to draw some meaningful conclusions. As regards the possibility as mentioned earlier of carrying out a Rink (2002) analysis or more than one, the limitations just mentioned will preclude this, however to a certain extent some data has been provided in Figure 4 which goes some way to satisfying this – it can certainly be seen that in a tightly knit way there is a lot going on within these 10 bars of music!

So, to the Forte analysis – and before that strictly, it is interesting to observe how many note series there are from a purely visual inspection as per the following table and the following Figure 10 from which the observational data is drawn:

| Note Series | Number Count | Total | Rank |
|---------------|-----------------|-------|------|
| 2 | 1+1+1 | 3 | 3 |
| 3 | 1+1+1+1+1+1+1+1 | 8 | 1 |
| 4 | 1 | 1 | 4 |
| 5 | 1+1+1+1 | 4 | 2 |
| 6 | 1 | 1 | 4 |
| 7 | None | | |
| 8 | 1 | 1 | 4 |
| Total Counted | 18 | 18 | |

Table 1: Numbers of note series from visual inspection, Gover, 2016

Whilst the visual inspection method will undoubtedly not be infallible it does provide an interesting insight into (a) the sheer number of note series that Webern has included in the 10 bars of this music, the variety of them and then from the ranking the fact that series of 3 are most popular, with then 5, then 2. The fact that there is a 4 and an 8 is interesting, both being even numbers. Possibly odd numbers are more expressive. However, too much store should not be put into this brief tally of the composition of note series since the method used was arbitrary and visual. There may well be other note combination and permutations.

Sechs Bagatellen für Streichquartett 3

I

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Anton Webern, Op. 9

Mäßig (♩ = ca 60)

I. Geige
II. Geige
Bratsche
Violoncell

1 mit Dämpfer *pp*
mit Dämpfer
am Steg *pp*
mit Dämpfer *pp*

4 *pizz.* *pp*
3 *arco* *pp*
5 *am Steg.* *pp*
6 *f*
7 *ff*
8 *pizz.* *fff*
9 *pizz.* *ppp*
10 *arco* *ppp*

rit. - - *tempo* *accel.* *heftig* (♩ = ca 96) *rit.* - -

wieder mäßig (♩ = ca 60) *rit.* - - 10 ♩ = ca 44 -

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Fig. 10: Visual assessment of note groupings from printed score, Gover, 2016

Now for the actual Forte analysis:

The first step was to reduce all remaining notes from previous processes to the lowest form pitch order, not yet the prime form, but all as starting from Middle C in a 12 tone row form and the result is as follows. Taking the result and listening to it, via the software that has been used to create the illustrations, there seemed certain natural series of notes grouped together which are shown by the brackets – and a most interesting fact is that the sound is definitely centred around C. Is this the serial factor mentioned earlier, or is it a tonality that was hidden amongst the notes before, where D seemed to be the salient key? Or in the process of stripping out, the reductive process has one made decisions to omit notes that were more essential than one thought? Anyway, the result is this:



Fig 11: First Steps in creating a Forte analysis of Webern's 6 Bagatelles, Gover, 2016

There is some correlation between the visual assessment of groupings of notes, that is sets of notes to use the Forte nomenclature, especially as regards groups of three.

The first line of notes will now be ordered according to the helpful website of Paul Nelson (2004). Again, it is considered that to analyse the full set of pitch class sets would be beyond the scope of this work and it is likely that a sufficient idea will be obtained from analysing approximately one third of this piece in order to draw conclusions relating to the aims of this study, to find out what the music is all about and to determine the category of the music, as tonal, atonal, serial, or a combination possibly of two or three of these styles.

Here are the unordered sets obtained from the first line:

2, 3, 1 8, 11, 10, 4, 6, 5, 11 5, 7, 3, 4, 0 10, 11, 8, 2, 1, 0 4, 5, 8, 9, 10

Fig 12: unordered set obtained from the first line of Webern's 6 Bagatelles,
Gover, 2016

There is no intention here of transposing, inverting, searching for complementary sets, merely to see if there is any suggestion of any such sets being employed in this composition.

The numbers are:

(a) 2,3,1

- (b) 8,11,10,4,6,5,11
- (c) 5,7,3,4,0,
- (d) 10,11,8,2,1,0
- (e) 4,5,8,9,10 (already ordered)

The aim is to find the Prime Form of the pitch class sets and then to look them up in Forte's 208 total number of pitch class sets to see what class they fall within – and then to compare with those mentioned in Morrell's article to see if there is any concurrence.

Firstly, order the sets:

- (a) 1,2,3
- (b) 4,5,6,8,10,11
- (c) 0,3,4,5,7
- (d) 0,1,2,8,10,11
- (e) 4,5,8,9,10

Next, list all the rotations, (a):

2,3,13

3,13,14

13,14,15

Find best rotation:

$13-2=11$

$14-3=11$

$15-13=2$ This is the preferred set – in Normal Form

Transpose to make first number zero:

$13-13=0$, $14-13=1$, $15-13=2$

so, set (a) Prime Form = 0,1,2

Rotations (b):

5,6,8,10,11,16

6,8,10,11,16,17

8,10,11,16,17,18

10,11,16,17,18,20

11,16,17,18,20,22

16,17,18,20,22,23

Find best rotation:

$$16-5=11$$

$$17-6=11$$

$$18-8=10$$

$$20-10=10$$

$$22-11=11$$

23-16=7 This is the preferred set – in Normal Form

Transpose to make first number zero:

$$16-16=0, 17-16=1, 18-16=2, 20-16=4, 22-16=6, 23-16=7$$

so, set (b) Prime Form = 0,1,2,4,6,7

Rotations (c):

$$3,4,5,7,12$$

$$4,5,7,12,15$$

$$5,7,12,15,16$$

$$7,12,15,16,17$$

$$12,15,16,17,19$$

Find best rotation:

$$12-3=9$$

$$15-4=11$$

$$16-5=11$$

$$17-7=10$$

19-12=7 This is the preferred set – in Normal Form

Transpose to make first number zero:

$$12-12=0, 15-12=3, 16-12=4, 17-12=5, 19-12=7$$

So, set (c) Prime Form = 0,3,4,5,7

Rotations (d):

$$1,2,8,10,11,12$$

$$2,8,10,11,12,13$$

$$8,10,11,12,13,15$$

10,11,12,13,15,20

11,12,13,15,20,22

12,13,15,20,22,23

Find best rotation:

12-1=11

13-2=11

15-8=7 This is the preferred set – in Normal Form

20-10=10

22-11=11

23-12=11

Transpose to make first number zero:

8-8=0, 10-8=2, 11-8=3, 12-8=4, 13-8=5, 15-8=7

So, set (d) Prime Form = 0,2,3,4,5,7

Rotations (e):

5,8,9,10,16

8,9,10,16,17

9,10,16,17,20

10,16,17,20,21

16,17,20,21,22

Find best rotation:

16-5=11

17-8=9

20-9=11

21-10=11

22-16=6 This is the preferred set – Normal Form

Transpose to make first number zero:

16-16=0, 17-16=1, 20-16=4, 21-16=5, 22-16=6

So, set (e) Prime Form = 0,1,4,5,6

The next task is to find the Pitch Class Sets: (transformations, inversions and complementaries not shown), (Nelson b, 2004)

| Prime Form Numbers | Forte Pitch Class Set Designation | Count |
|--------------------|-----------------------------------|-------|
| 0,1,2 | 3-1 | 12 |
| 0,1,2,4,6,7, | 6-Z12 | 48 |
| 0,3,4,5,7 | 5-11 | 24 |
| 0,2,3,4,5,7 | 6-8 | 12 |
| 0,1,4,5,6 | 5-6 | 24 |

For comparison purposes, similar sorts of results are show from Morrell (2016, p7):

| | | |
|---------|------------------|------|
| 0,1,4,5 | 4-7 | [12] |
| 01,5,8 | 4-20[Maj7] | [12] |
| 0,2,5,7 | 4-23[quar-4] | [12] |
| 0,3,5,8 | 4-26[min7, Maj6] | [12] |
| 0,1,2,3 | 4-1 | [12] |

Conclusions regarding Forte pitch class sets:

Since the Morrell results are in respect of the second movement and the results in this work are in respect of the first half of the first movement no real meaningful conclusions can be drawn, except perhaps that there are prime form pitches in the first movement. Whether the regularity of Count for these results as compared with Morrell's, the fact that there is a Z or isomeric set in this work and the chord types and beat as noted in the Morrell results makes for anything on the face of it cannot be attributed to be significant, especially since the assignment of series of notes making up the sets in this work could be described as somewhat arbitrary. According to Oswald (1982) such pitch classes can apply to both tonal and atonal music and Travis (1966) goes further to say that this can apply to serial music as well, so in a way that does not get any closer to finding out the category of musical style that pertains to this work. Possibly a greater in-depth analysis might help in this regard. It does however, show the methodology of Webern of cutting up the music into chunks and then weaving them together. Headlam maintained that Forte averred that Webern widely used octatonic sets – this might benefit from further interval class array analysis as Chrisman and Mullin have done (Morell, 2016), however, this would be beyond the scope of the current analysis.

General Conclusions:

From the foregoing it can be seen that as regards one of the original intentions in classifying the compositional style of the work it seems that those who broadly classify this piece as atonal are probably in the majority. This author reserves the right to call it predominantly serial, with some tonal and atonal aspects.

A very interesting account of Hans Moldenhauer (1968) who actually accompanied Webern's daughter-in-law to the barn in Perchtoldsdorf to find the original score along with others in an attic, said that the six pieces were originally seven in a different order and that the seventh piece was written for voice to text by Webern.

John Keller (2016) stated that the piece was originally in imitation of Schoenberg's Six Little Piano Pieces, Op. 19, written in 1911, yet adding contrast, which ended up by omission of the middle movement, a *Sprechstimme*, similar to a Schoenberg title, as two movements bookending the six bagatelles, so, Schoenberg influenced the format and appearance of this first movement and was so pleased with it all as to write in the original introduction where he previously he was avoiding comment (Keller, 2016).

Pearsall (2012) writes as regards movement 2 and the same can be said for movement 1 that *pointillism* is used in connection with *pcs* and *pc* groups and that through a process of delaying a correspondent *ic* goal setting is thereby achieved.

The last word of others ought to go to Keller (2016) who wrote that the 6 bagatelles, of which this piece under examination is the first movement, "remains among the strangest and most compelling aphorisms in the string quartet repertoire" and that it could have been Haydn-esque, with sections, basically, if Schoenberg had not influenced him to cut it down, where it then became "through-composed".

From a subjective point of view the analysis has shown that the work thrives upon its splitting up into extremes of register, with voice leading across all of the parts, with plenty of breathing rest spaces, generally agogic timing, plenty of timbre from musical effects and from a personal similarity to a piece being currently composed by the author called Higgs to do with musical representation of protons colliding at near the speed of light to create evanescent mandalas and other shapes, all within a Nano second – the piece is intended to last for 10 minutes or so, thereby exploding and expanding time – the same thing has happened here: a breath has been drawn and expired and then examined musically over some 2 minutes revealing when under full application of all four instruments interesting hidden glories which like the Higgs music should reveal aesthetically information about the nature of the universe, space and time – and here all with Webern's signature succinctness.

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