

TONE CLUSTERS Harmony Killers?

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A tone cluster is a group of notes of various extensions that can be considered an 'extreme sound', which will eliminate tension in the interval configured to form the chords. The cluster is created by the simultaneity of an albeit complex spectrum of sonorities of potential identification. A piano player will achieve a cluster by touching a few adjacent keys, first with their fingers and then reaching quite vast ranges, building up gradually to using the palm of one hand perpendicular to the keyboard, then parallel to the keyboard, then using the forearm, the forearm again and the palm of the other hand, until both forearms are covering the widest possible extension.

If we look back in time, we will find tone clusters applied as sound signals that mimic noises like cannon fire. We find them in the unique pieces called "battles", the type of composition produced at the time of Napoleon's military feats, as part of the nationalistic mood that drove his campaigns. Several composers wrote piano works captioned to narrate the various stages of fighting, like the assaults, the moans of the wounded, and ending with the final song of victory. In *The Battle of Marengo* (1801), Bernard Viguier wrote a cluster with an extension of three octaves, a *coup de cannon*, specifying that it had to be performed with both forearms, on the low keys, and leaving it to echo until it faded.

The Romantic period generated anomalies, excesses, the discovery of new territories, new sounds, diverse and sometimes challenging experiments, subsequently intensified as perceived symptoms of Modernism, of the 'here and now' that typified the early 1900s Avant-garde movement. In such a revolutionary climate, it was possible to change the reference that constituted the foundation of musical matter, through acts of anti academic rebellion and attempts to retrieve the expressive fluidity of the initial 'sturm und drang' that had crossed the long years of the nineteenth century, but had slowed and lurched into a need for monumentalism.

One of the 48 *Esquisses* (1847), in Charles-Valentin Alkan's *Les Diablotins*, is an early example of arpeggiated clusters as actual musical expression, not used as the signal for noise imitation. The five notes that make up this sonority support a simple melody and create a new timbre effect.

At the turn of the century, many composers were working against a backdrop of accumulated harmonic configurations, achieving tonal and atonal overlapping, thus going beyond or sidestepping the concept of consonance and dissonance, with chords so complex as to linger on the threshold of sheer noise. The evolving quest for new sonorities also took the direction of stratified harmonies and timbres, in a new borderline musical sensitivity parallel to the concept of the cluster as simultaneity, a co-presence of various vibrations. Atonalism and dodecaphony drove the exploration, but contributions also came from Debussy, whose compositions were inspired by the pleasure of sound as matter in its transparencies. The use of whole-tone scales implied a chromatic entirety derived from only two possible orders: with the whole tones beginning from a note or from that of the subsequent semitone, closing the circle of the melodic and harmonic rapport of the two hexatonic series. Moreover, the dodecaphony was also buried in the harmonization by using overlapping fourths, which Alexander Scriabin applied in his journey to atonality.

The Avant-garde movement accomplished harmonic spectrum entropy in various ways, bringing it resolutely into the field of irregular vibrations, the field of noise. This trend can be seen both in the more refined timbre exploration preferred by the *Symbolists*, *Impressionists* and *Expressionists*, and also in the actions now ascribable to the *Futurists* and the *Dadaists*. One striking episode in the history of strong, violent sound acts is the unusual *Marcia Futurista* for voice and piano-forte, written by Francesco Balilla Pratella and Filippo Tommaso Marinetti early in the

1910s. It is really a lied that derived from a *tavola parolibera*: the manuscript says "Musica di Filippo Tommaso Marinetti e illustratura di Francesco Balilla Pratella" [Music by Filippo Tommaso Marinetti, polished by Francesco Balilla Pratella]. The incipit of this composition presents an extensive tone cluster indicated as an "elbow pounding the keyboard", and to resound for its entire vibration.

Sound-noise was the challenge addressed by the Avant-gardes, beginning with Luigi Russolo, the first theoretician of the concept in the Futurist music utopia. In his volume *L'Arte dei Rumori* ("the art of noises", Ed. Futuriste di Poesia, Milan, 1916) Russolo outlined this vision with great precision, and partially excluded the use of traditional instruments, dedicating himself to devices he had invented for noise production, which he called *Intonarumori* [noise intoners]. Russolo's research, described three years earlier in his *Manifesto dell'Arte dei Rumori* [the art of noises manifesto] did not involve the use of a piano, but rather *Intonarumori* concerts, held at the London Coliseum Theatre in 1914. This aroused the interest of Leo Ornstein, a twenty-year-old pianist of some renown, who was so fascinated that he wrote compositions inspired by Futurism, and then insisted that the posters for his recitals state: "Concert of Futurist Music". He composed piano pieces that verged on acoustic violence, including *Suicide in an Airplane* (1913) and *Anger from Three Moods* (1914), but above all *Danse Sauvage* (1915), which juggles with the perceptive limits that separate the order and chaos of timbre and rhythm using chords of the utmost complexity and clusters overlapping in a polyrhythm that accentuates percussive density.

Then Charles Ives, like George Antheil some years later, introduced these noise sonorities to his piano compositions. Ives had few equals in his emancipation of dissonance, using processes that deformed the tonal arrangement with extreme harmonic complexities arriving at tone clusters. But

from 1922 to 1923, Antheil, the 'bad boy of music', wrote even bolder piano music which was decidedly Futuristic in its sound-noise conception, with an uninterrupted dialectic of complex chords and clusters. The most significant compositions of this repertoire are *Sonata Sauvage* and *Mechanisms*, but as early as 1919 Antheil was working on clusters in *Fireworks*, where the piano figures moderate arpeggiated clusters with normal arpeggios in every register on the keyboard, interspersed with sudden sharp clusters that lead the complex chord sonorities towards maximum vibration and tension.

Right from Henry Cowell's first piece – *The Tides of Manaunā* (1912), written at the age of fifteen –, his composed works feature a systematic use of the tone cluster organized by a criterion of precise dimensioning. On one hand this is the naive, spontaneous fruit of adolescent creativity, but on the other this criterion forewarns that these sonorities will be systematic and will evolve through ingenious approaches to composition, defying restriction of chaotic matter. This was always the case, also for the other two *Irish Legends*, for *Dynamic Motion* and, above all, for *Antinomy*, one of the *Five Encores to Dynamic Motion*, of the same year and the noisiest, perhaps even today still the piece that has given this criterion the most astonishing results. Cowell's next synthesis was *Tiger* (1928), where the formulation of repeated chords develops by augmentation or by diminution, approaching and drawing away from the cluster, which lingers as if in implied suspension.

The cluster harmonically defines a sclerosis of the motion-stasis relationship, which even in very complex harmonies could somehow survive in the perceptive impact. Instead of a sophisticated harmonic spectrum, a chaotic chunk of sound develops, of just three types, which Cowell was the first to define: white key clusters, black key clusters, or integral chromatic. The three types are all played differently and are quite distinct.

Nevertheless, what really counts, from the three listed types, is the range's uppermost or lowest note. In this case, the insertion of melodic parentheses comes into play, similar to Arnold Schoenberg's *Klangfarbenmelodie*: a melody of timbres that emphasizes the actual notes of the real melody. In this perspective, it is really meaningful to look at the issue of musical compositions for the piano, which is an instrument whose percussive traits can be highlighted, but it is also an instrument defined precisely by its 88 pitches, regulated precisely – if not exactly – when tuned with the equal temperament method. In this aspect, Cowell's key contribution must be acknowledged as far as the entire group of his contemporary composers are concerned.

In *Tone-Clusters, Attacks, transitions* (Die Reihe n. 5, 1959), Mauricio Kagel described in great detail how the cluster should be performed, making reference to Henry Cowell's *New Musical Resources*, written in 1919 (published by Alfred A. Knopf, Inc., New York, 1930). When studying Cowell's theories, Kagel rightly noted that the systems of associations amongst the various pitches were shifted in time, rhythm and dynamic parameters. As early as 1927, Ezra Pound had talked about harmony as a temporal connection between two sounds (*Treatise on Harmony*). The emancipation of dissonance developed by Arnold Schoenberg, Josef Matthias Hauer and Domenico Alaleona produced a shift in focus from the vertical configuration of chord systems to linear duration segments.

After the *Vienna School* and above all Anton Weber's aphasia and integral structuralism, the use of tone clusters decreased and there were several reasons for this. Firstly, there was no longer a reference to complex harmonic structures; then there was an enormous sector of musical exploration that stumbled on what is actually a simplistic metatonal language, wiping out a half century of history, and the result of forced evolution that lacked the utopian aspect,

whereas the sophisticated timbre research finds/anchors identifiable, kaleidoscopic effects in the partial cluster of notes. Indeed, it is sufficient to remove a few notes from the cluster to achieve a partial cluster that is far richer in the total white noise of all sounds.

This consideration confirms the detachment amongst the possible semantic levels of musical matter, with a meaning that offers its entity in its very manifestation of sound, as occurred with a great deal of painting during that same period in history. Essentially, it is the action that incites matter to reveal the creative energy. The ensuing opus is a possible trace of the pathway which on encountering the idea of integral structuralism, seems to slice through all the filaments of connective tissue that the discipline of composition imposed with rules of varying degrees of severity. It is clear that a spatial criterion of the acoustic event, translated into the idea of developing visual notations, was the antithesis of integral structuralism, the idea of approaching macro structures and developing a syntactic course for the composition, alleviating the aspect of grammatical individuation of the sound matter being used. In *Transición II*, Kagel developed other cluster action possibilities: He had a pianist and a percussionist simultaneously play one piano, with interventions on the keyboard coordinated with others on the tailpiece. In a 1959 article he illustrated seven different ways of achieving clusters and, after Cowell, this important essay was the most analytical discussion of their use. Kagel also mentioned the time passage aspect, referring to the use of the metronome, and pointing out how this parameter was related to the intensity and areas of the keyboard where it is obtained.

György Ligeti's *Apparitions* (1958–1959) is an orchestra composition that was written in the same year as Giacinto Scelsi's *Quattro pezzi su una sola nota* [four pieces on just one note], also for orchestra and somehow developing a parallel idea. Not long before, Ligeti had written *Volumina*, an organ piece that

considered the cluster in its depth and the syntactic development the composition was underpinned by the idea of a visual notation, a modulated band in the notation's diagrammatic space which could fragment and then reassemble, sharpen, in other words realize all possible modes. Ligeti's *Volumina* is not so very different from compositions by John Cage or Earle Brown, like *December 1952* or *4 Systems*, written two years later. They are connected precisely by the negation of a differentiated harmonic spectrum and the systematic translation of graphic depth into clusters of modulated breath. In this respect, the cluster was point zero of interval tension and its maximum development was, moreover, in the perspective of deepening the timbre of single notes, which are at the extremities of the range, just as Cowell had realized more than 80 years ago. It should also be noted that an ambiguous perception initiated from the moment that composers began to shift and move sound sources spatially, applying an increasing range of methods. For the listener, listening points shift or they perceive moving sounds, so they are offered several simultaneous possibilities that somehow reproduce the effect of sound clusters: it is like viewing music – which loses many of its grammatical traits to become a happening – first with a structuralist microscope and then with binoculars. Charles Ives had already thought of this and he had various bands play together, with echo effects, basically overturning the compulsory author-notation-performance-listening in a closed environment, which was typical of listening to a traditional concert. He began to write a great opera, *Universe Symphony*, which was never completed and which envisaged an enormous cluster of orchestras and choirs to be arranged in huge open spaces, like hills, valleys and mountains: a sort of Futurist reconstruction of the sound universe. This *Universe Symphony* can be connected back to the *Symphony of Factory Sirens* that was performed on 7 November 1922, in Baku, to commem-

orate the fifth anniversary of the Bolshevik Revolution. Ives wrote what was basically a celebration of popular music that nonetheless led to a new dimension of experimentation; the Baku symphony (whose composer is unknown) also found new aspects. Both enjoyed the new spirit of full immersion, of an ear that fluttered – or perhaps we should say floated – amongst sound waves. A structuralist reply to this method came in 1957, from Karl-Heinz Stockhausen with his *Gruppen* for four orchestras, interweaving a dense acoustic counterpoint, showing that the contest between number and chance was still open to expansion of perceptive possibilities. A further element was the use of the *moving structure* – an opus open to choices of various degrees of extemporaneity – which was simply the performer navigating the notation map, presumed to be a mega cluster. The performance of these works offered normal listening, but the design held together several different course options, whose co-presence – in the words of Pierre Boulez – has the same value as a city map.

In the last fifty years many different things have occurred, in music and in the visual arts, so discussion of clusters should also consider the concept of simultaneity, not only as a cluster of notes on a piano keyboard. Perhaps a new synaesthetic criterion has emerged, a new ability to breathe in the overall environment that is replacing old concentrated listening methods or focus on an image, in any case certainly more intense in their specificity. At any rate, it is not difficult to see that in the light of decades of film and TV, that the new virtual dimension fuses the arts in a way which was a mere pipedream at the beginning of the twentieth century.

The cluster is an extreme gesture that represents a sublimating rite, a release of energy, a noise that is meaningful for its impulse. In relation to form, be it established, deformed or negated, it represents a ritual of destruction that then arranges itself in a

precise context, a backdrop of representation that is nonetheless to be detached from the violence of the act, a mechanism of sublimation of violence that lies precisely in the circumscribed action of its actual representation. The loss of grammatical style codes and historicized accepted practices of musical language nonetheless arrive at a syntactic value as a macro form in an auditory field that refers to spatial rules as visually metaphors.

There is no doubt that this began with Futurism, with Russolo paving the way, the first figure who enabled noise to be perceived as an acoustic material that should be given an aesthetic value. The horizontal polyphonic concept, the use of the *Intonarumori*, introduced a time-space in which harmonic connotation of vertical sounds was a consequence.