

Technology-Aesthetics-Composition An Analysis of Karel Goeyvaerts's *Piece for Piano* (1964)¹

This paper examines Goeyvaerts's *Piece* as a case study for the historical situation in which composers had lost the illusion of absolute control through electronically generated tape-music and could not foresee as yet the advent of live-electronics. Technology, aesthetics and compositional strategy are considered as interactive, and this interaction serves as starting point for defining goal and method for the analysis. The synergy is studied first on the basis of a theoretical exposé by Goeyvaerts, dating from the same year as his *Piece* (1964). The subsequent analysis focusses on the production of the tape (electronically manipulated piano sounds) and its relationship with the piano part.

A few historical facts to begin with:

- December 1952: after writing two partially and thus hybrid serial compositions (the *Second Violin Concerto* and *No. 1. Sonata for 2 Piano's*) and two full-fledged serial works (*No. 2 for 13 Instruments* and *No. 3 with Bowed and Struck Tones*), Karel Goeyvaerts produces his *Composition No. 4* ('with dead tones'), arguably the first score of electronic music in the history of music.
- March 1953: Goeyvaerts finishes his *Composition No. 5* ('with pure tones'), which was realized at the electronic music studio of the NWDR at Cologne in the autumn of the same year with the assistance of Karlheinz Stockhausen, and which was one of the pieces presented during the famous concert entitled *Die sieben Stücke* on 16 October 1954.
- 1955: Goeyvaerts tries to realize his *Composition No. 7* ('with converging and diverging layers') in the same studio, this time with the assistance of Gottfried Michael Koenig. The work was never finished, because of some miscalculations by Goeyvaerts and his lack of experience with electronic sound production.²

In view of these achievements, it comes as no surprise that Goeyvaerts was invited to participate in the international colloquium 'The Electronic Media and Music', staged by Spectra in September 1964 in Ghent. Goeyvaerts's contribution was twofold: he presented a paper on the combination of live performance with tape, and during the conference

1 This paper was read at the Fourth European Music Analysis Conference, Rotterdam, October 22, 1999.

2 On Goeyvaerts's serial works, see Herman Sabbe, *Het muzikale serialisme als techniek en als denkmethode*, Ghent 1977, and Karlheinz Stockhausen...*wie die Zeit verging...* (*Musik-Konzepte* 19), Munich 1981; also Mark Delaere, "Auf der Suche nach serieller Stimmigkeit: Goeyvaerts' Weg zur Komposition Nr. 2", in: Orm Finnendahl (ed.), *Die Anfänge der seriellen Musik (Kontexte. Beiträge zur zeitgenössischen Musik 1)*, Hofheim 1999, pp. 13-36.

On Goeyvaerts's electronic music, see Pascal Decroupet and Elena Ungeheuer, "Karel Goeyvaerts und die serielle Tonbandmusik", in: Mark Delaere (ed.), *The Artistic Legacy of Karel Goeyvaerts. A Collection of Essays*, thematic issue of: *Belgisch Tijdschrift voor Muziekwetenschap* 48 (1994), pp. 95-118.

his *Piece for Piano* was premiered. His paper remained unpublished, but the recording of his presentation allowed me to make a transcript and to summarize his contribution in a nutshell.

In the introduction, Goeyvaerts points out that hesitations about combining, in his words, the 'living' and 'mechanical' sound worlds were largely due to the alleged superiority of tape music proclaimed by composers of serial music in the early 1950s. Ten years later, Goeyvaerts applauds the fact that the tape has lost the status of a privileged and thus spoiled child, and that it is increasingly considered as but one among many other musical instruments. The composer then devotes the bulk of his paper to three problems raised by the combination of the two media: timing, timbre and intensity.

1. Within mixed media, two concepts of time are confronted with each other: absolute time values are fixed on the tape, and relative time values are realized by the live performer. To close this gap, Goeyvaerts considers the possibility of manipulating the tape during its reproduction before an audience: 'A musician – in most cases the composer – could add aleatoric elements to the tape during its rendering. We are perhaps only at the beginning of a performance practice which will reach perfection in tape music of the future'. Forty years later, in the heydays of David Shea, DJ-Low and other scratching and sampling performers, this prophecy seems to be fulfilled. The opposite strategy, urging the performer to chronometrical precision, is rejected by Goeyvaerts, since it reduces the performer to a defective machine. Of course, scores can be produced in which tape and live performance and/or improvisation alternate. But when it comes to simultaneous combination, Goeyvaerts finds the superposition of two heterogeneous time structures inevitable. The tension resulting from this combination offers the composer numerous possibilities.
2. According to Goeyvaerts, the same dichotomy is to be observed in the sound substance of works in mixed media. Synthetic versus natural sounds, electronically generated versus instrumental or vocal sounds, the precision of the laboratory versus the unpredictability and even mystery of acoustical instruments: the difference goes far beyond distinctions in timbre between various acoustic musical instruments. Trying to combine both worlds into one composition is a fascinating objective for Goeyvaerts. According to him, composers tend to look for devices allowing them to bridge the disparity in sonority of the two media.
3. Absolute intensity levels are even more difficult to realize for the performer than absolute durations; in electronically generated music, once more a vast array of amplitudes can be realized accurately. And yet, for Goeyvaerts, in comparison with the other parameters, the distinction between the two media is not as sharp in this domain. More than any other aspect of sound, dynamics are context sensitive to a very high degree. This holds true for the performer, who realizes the same *mezzoforte* differently after a *forte* passage or a *pianissimo* one. But this kind of relativity applies equally well to the perception of intensity degrees. On top of this psychological phenomenon, physiological and acoustical uncertainties lead to deviations from absolute intensity values. On the other hand, advanced training on the part of performers has led to an approximation of the dynamic flexibility of electronic generation, necessitated by the discontinuity of contemporary musical language. Here too, Goeyvaerts applauds the increasing interaction between these media:

'Nothing definitive has been achieved in tape music. Once electronic music, musique concrète and traditional instrumental music seemed to be mutually exclusive. Reciprocal influences have led to a blending of their principles, making these concepts superfluous. It is easy to foresee that combining acoustic instruments with tape is but a temporary solution and a reaction to the automatic aspect of a previously assembled tape, deprived of all vitality'.

Before analysing if and how these theoretical considerations are implemented in Goeyvaerts's *Piece for Piano*, allow me to reproduce the typewritten description of the piece, found in his estate, together with the autograph score and sketches (Illustration 1).³

Pièce pour piano (1964)

Karel Goeyvaerts

Il s'agit plus précisément d'une pièce pour sons de piano. La partie de piano est accompagnée d'une partie de bande magnétique, entièrement composée de sons enregistrés de piano, auxquels l'auteur a appliqué deux procédés manuels de transformation : la mise à l'envers et la coupure de l'attaque du son. Elle constitue la réalisation électroacoustique d'une partition ~~pré-établie~~ pré-établie, dont les structures de hauteurs et les structures rythmiques et dynamiques ont été conçues comme formant une unité avec la partie de piano. Cette unité se manifeste particulièrement à deux niveaux :
 - au niveau du contenu sonore timbral, notamment par les transitions entre extinction de sons de piano et établissement de sons du magnétophone (de piano à l'envers);
 - au niveau du contenu mélodico-harmonique, les deux parties se réfléchissant mutuellement, la partie de la bande magnétique reprenant ou annonçant, souvent sous une forme harmonique plus concentrée, la partie de piano. Par endroits cette correspondance se fait ~~symétrique~~ symétrique ou même littérale.

Illustration 1

Description of *Piece for Piano*.

'*Piece for piano* (1964) – This is in fact rather a piece for piano sounds. The piano part is accompanied by a tape part, consisting in full of recorded piano sounds, which were transformed by the composer by two manipulations: playing backwards and cutting off the attack of the sound. It is the electro-acoustic realization of a score previously made, where the pitch structures and the rhythmic and dynamic structures were conceived in order to establish a unity with the piano part.

This unity presents itself especially at two levels:

- at the level of the sound-quality content, notably by the transitions between the extinction of the piano sounds and the establishment of the tape sounds (piano sounds played backwards);
- at the level of the melodic-harmonic content, both parts reflect each other, the tape part resuming or announcing the piano part, often in a harmonically more concentrated form. Sometimes their correspondence becomes symmetrical or even literal.'

3 Manuscripts, composition sketches, correspondence and other documents concerning Goeyvaerts are available for research at the 'New Music Research Centre K. Goeyvaerts' at K.U.Leuven (POB 33, B-3000 Leuven, Belgium). Goeyvaerts's edited scores are available from CeBeDeM, Aarlenstraat 75-77, B-1040 Brussels, Belgium. I wish to thank Herman Sabbe, who provided me with the information that the text quoted in *Illustration 1* was actually written by him.

Stuk voor piano

V. Goeyvaerts (1964)

$\text{♩} = 60$

The image shows a handwritten musical score for 'Stuk voor piano' by V. Goeyvaerts (1964). The score is for Piano and Magneto (Magna). It features complex rhythmic patterns, including triplets and sixteenth notes, and dynamic markings like 'pp'. The score is divided into two systems, with the second system starting with a double bar line. The Magneto part shows a glissando effect in the second system.

Example 1

Goeyvaerts's autograph score of *Piece for Piano*, p. 1.

Both the manipulation of piano sounds on the tape and the reflection between the two parts can be seen from Example 1.

By cutting off the attacks and by reverting the natural *diminuendo* of the piano chord into *crescendo*, Goeyvaerts is able to realize a smooth transition between piano and tape. Furthermore, this 'unity' is enhanced by the reflection of pitch materials between the parts. The alternation of fast but rhythmically regular curves and rhythmically irregular chords is representative also for the rest of the composition. One type of manipulation is not mentioned in Illustration 1: after the *cadenza* of the pianist, a *glissando* is heard in the tape-part, resulting in a whole-tone transposition of the chord in question.

Example 2

Piece for Piano, sketch.

How did Goeyvaerts master the theoretical problems raised in his lecture concerning the combination of a live performer and a fixed tape in this composition? In answering this question, I will limit myself to problems of timing and timbre. Evidence from the sketches and from the manuscript with autograph indications shows that the 'superposition of heterogeneous time structures' has caused Goeyvaerts many a head-ache:

- No meter is determined, no barlines are drawn.
- An attempt at co-ordinating the two layers exactly was aborted at an early stage.

This is evidenced by a sketch of the first page in which a chronometrical co-ordination of the two parts is aimed at (Example 2). With tempo 60 for a quarter note, each box on the time-line notated above the score represents half a second. This attempt failed, not

only because Goeyvaerts writes irregular absolute durations that can only be framed with difficulty in a rigid time-structure. It failed above all, because the performer is unable to realize the durations as accurately as the durations on the tape, and more in general, because this results in problems of co-ordination.

– Goeyvaerts's manuscript shows many an instance where he tried to calculate the exact chronological relation between the parts; it shows also his serious doubts about the success of this operation, as can be seen in Example 3.

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The image displays a handwritten musical score for piano, consisting of three systems of staves. Each system includes a grand staff (treble and bass clefs) and a lower staff, likely for a second instrument or a specific piano technique. The notation is highly complex, featuring numerous accidentals (sharps, flats, naturals), dynamic markings (pp, mf, p), and intricate rhythmic patterns. The score is marked with 'P' and 'M' on the left side, possibly indicating piano and mezzo-forte sections. The handwriting is dense and detailed, reflecting the composer's focus on precise timing and coordination.

Example 3
Piece for Piano, fragment.

Example 4
 Piece for Piano, fragment.

In Example 3 (last system) the tape is playing (dotted) thirty-second notes against which the pianist has to play (dotted) sixteenth notes. However painstakingly Goeyvaerts tries to relate those rhythmic structures, their co-ordination in time remains highly problematic.

The sheer hypothetical co-ordination of the parts is eloquently represented on the last staff of Example 4, where the pianist has to target six notes against the dotted eighth note of the tape, two against the sixteenth note, and even five against the irregularly divided four and a half, respectively five and a half thirty-second notes.

tijd wel juist verdeeld!

Example 5
 Piece for Piano, fragment.

Goeyvaerts' doubts materialize very clearly in the addition 'tijd niet juist verdeeld' ('no exact time-divisions'), later rubbed out and replaced by 'tijd wel juist verdeeld' (exact time-divisions) (Example 5, bottom; since the original addition in pencil was rubbed out by Goeyvaerts, it is hardly legible in the manuscript source and illegible in this reproduction).

From all this, it is clear that Goeyvaerts was aware of the various degrees in which a fixed tape and a live performance can be co-ordinated vertically. The 'combinatoriality' of time layers is indeed the technical and aesthetical programme of the piece, as is shown by the following scheme, derived from its analysis:

A. No combination of sound-sources

A1: tape only

- A1a: rhythmical (and melodical) values are discrete and perceptible as such
- A1b: due to their speed, rhythmical (and melodical) values are indistinct and perceived as a melo-rhythmical wave-form and a harmonic field only

A2: piano only

- A2a: rhythmical (and melodical) values are discrete and perceptible as such
- A2b: due to their speed, rhythmical (and melodical) values are indistinct and perceived as a melo-rhythmical wave-form and a harmonic field only

B. Tape is turned on and off frequently

- B1: exact cue, indicated by an arrow or another symbol
- B2: approximate cue, e.g. somewhere during a sustained chord
- B3: tape is operated during a piano passage with wave/field-structure

C. Tape and piano run continuously

- C1: pianist has to play synchronously with the tape, necessitated either by a vertically co-ordinated contrapuntal texture or by an indication by a vertical arrow
- C2: piano runs parallel with tape, rhythmical values are exact and can be combined vertically, but exact synchronization is not compelling
- C3: one of both sound sources has a wave/field-structure, excluding synchronization.

Although by 1964 Goeyvaerts had renounced his serial works from the early 1950s, the very same aesthetic programme glimmers through this piece for piano: define two extreme values (in this case: strict synchronism versus non-synchronized events), fill in the extremes with various intermediary values, and obtain an equidistribution of all possibilities over the composition. Serial *order*, in this case of degrees of chronometrical synchronization, has been Goeyvaerts's concern only to a limited extent, even in his works from the early 1950s.

As is obvious from Goeyvaerts's contribution to the 1964 conference, he took the extreme contrast of timbre as a starting-point for works in mixed media. Here too, Goeyvaerts systematically bridges the gap between the sonorities. In combination with the ordering of pitch materials, this process is even responsible for the formal layout of the composition. There is no room to work this out in detail here. Suffice it to say that homogeneities in sound structure and in melodic-harmonic material are inversionally proportional: the more pitch material both parts have in common, the greater the sonorous contrast (provoked by the electronic manipulation of the piano sounds on the tape). This is what happens in the first part of the composition. After the *cadenza*, which acts as a turning point, the relation is inverted: homogeneity in sound (up to the point where it is hard to discriminate sounds from the tape or from the piano) goes hand in hand with heterogeneity in pitch material.

In the final paragraph of his lecture, Goeyvaerts speculates about a more direct relation between electronics and live performance. This paragraph can be read as an intuitive anticipation of live electronics and even laser technology, with its computer-directed transformation of acoustic and visual signals in real time:

'In the future, we will perhaps realize a more profound physical contact with the electronic media, allowing us to trust our innermost nature to them by way of our movements. From that moment onwards, electronic media will yield unique and unrepeatable performances. (...) In the meantime, no one writes good or bad music because he is hampered by temporary technological conditions; he does so because he is more or less guided by his intuition, in spite of the poor conditions. If need be, one can produce interesting music even with a piece of wood or a dry fruit'.

Karel Goeyvaerts's paper and composition document the historical situation in which composers had lost the illusion of absolute control through electronically generated tape-music, without having at their disposal the technique of live-electronics already at that time. In this situation, composers were confronted with restrictions regarding technology, aesthetics and composition technique. With this analysis, I hope I demonstrated that Goeyvaerts has nevertheless been able to write an interesting piece, even if he had at his disposal 'a piece of wood or a dry fruit' only.