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György Ligeti – traditional reformer or revolutionary discoverer? Ligeti’s organ music and its influence on organ-playing technique

The organ attracted my interest on the one hand because of its astonishing richness of hitherto unexplored tone colours and possibilities; on the other hand, in particular, because of its weakness – its clumsiness, its stiffness and jerkiness.

This instrument is like a massive artificial leg. It fascinated me to discover how one could learn to walk again with this mechanical limb.

(György Ligeti, quoted by Röhring 1997, 6–7)

INTRODUCTION

György Ligeti (1923–2006) was a reformer of organ music, even though he was not an organist himself – and maybe exactly for that reason.¹ My experience of composers is that the most innovative ones are those who do not know all the difficulties or who have no experience of the organ as an organist. Because Ligeti didn’t have much experience with traditional organ-playing techniques, as far as articulation in all its dimensions goes with different approaches through historical performance practice, he could begin his work from a clean slate. However, he did use all manner of touch, developed new playing skills and invented new methods of registration, which gave his music wonderful new colours and timbres. And, as we can see in his organ études, by writing minimalistic music before minimalism even came into being, Ligeti was also a remarkable reformer.

¹ Actually, Ligeti did have some experience on organ. Ligeti studied composition with Ferenc Farkas in Klozsvár Conservatory. To gain more practical experience, he studied piano but also took up organ and cello (Marshall 2012, 264).

I here discuss the relationship between tradition and reformation in terms of playing techniques in Ligeti's music. By studying his organ music, I will show Ligeti's radicalism in terms of being a developer of registration practice and playing technique. I shall speculate as to whether Ligeti was a reformer of tradition or a revolutionary discoverer.

Ligeti composed three different pieces for organ: an early *Ricercare*, the massive *Volumina* and *Zwei Etüden*, two spectacular études. I will focus here on the last two: *Volumina* and the études. They are both revolutionary in a way because they do not respect tradition. They are also exceptional compositions because both of them are analogous with either orchestra or instrumental pieces which Ligeti was writing at the same time. After *Atmosphères* (1961) Ligeti started to work on *Volumina*, and after *Lontano* (1967) he worked on *Harmonies*. In both cases, the later work simplifies the earlier piece's composition techniques. Furthermore, they both need professional organ registrants. The registrant actually has a more important role in the performance than the organist him or herself. *Volumina* and *Zwei Etüden* are studies in composing technique for the composer, but they are also all études in playing technique. Both pieces are paradoxical because the notation is extremely detailed, which demands precise playing as well. On the other hand, the sound achieved is so flexible that mistakes are almost unnoticeable, even though they may be fatal.

The main question of this article is: How have Ligeti's monumental *Volumina* and challenging *Zwei Etüden* changed the performance practice and playing technique of new organ music? We can find interesting compositions from many different countries which have obviously been written with a Ligetian atmosphere. Isang Yun's *Tuyaux sonores* (1968), Roman Haubenstock-Ramati's *Shapes I* (1976) and Bengt Hambraeus's *Extempore* (1969–75) were notated in graphic notation, and they seem to be a direct continuation of Ligeti's *Volumina*. Ligeti's influence was also noticed in Finland, where Jouko Linjama (b. 1934) and Erkki Salmenhaara (1941–2002) were the pioneers of avant-garde. Linjama had had contact with Ligeti through the *Ung Nordic Musik* Festival in Stockholm in 1962 (Linjama 2012, 83). Erkki Salmenhaara studied under the guidance of Ligeti in Vienna in the 1960s (Aho 2001, 79), and his *Toccata* (1966) has some improvisatorial cluster techniques.

The earlier research which I draw from mainly consists of Richard Toop's biography of Ligeti (Toop 1999), the booklet text of the recording of Hans-Ola Ericsson written by Klaus Röhring (1997), and an article by Bernhard Haas (2014). Toop's biography gives valuable information about the background history of how the compositions were born. Hans-Ola Ericsson has masterfully recorded all of Ligeti's organ music, and the booklet text in his recording gives a coherent picture of the problems in performing Ligeti's music. Bernhard Haas' article discusses the general atmosphere of the musical life of Germany in the 1960s. Daniela Philippi's book (Philippi 2002) on new organ music is also an important research document which has focused specifically on the style of music during Ligeti's lifetime. There are also several other

articles which can roughly be divided into historical sources and articles made by organists who have performed Ligeti's music. Historical sources include Ligeti's own writings in 1968 and 1996. The views of performers can be investigated in the articles by Zsigmond Szathmáry (1987) and Kimberly Marshall (2012). Martin Herchenröder, himself an organist, has published a detailed analysis of all of Ligeti's organ music (1999). Janet Owen Thomas (1983) provides some of the earliest research of Ligeti's organ music. Most of these articles include the same background history of Ligeti's organ music, but some of them offer interesting new details. Furthermore, Michael Hicks has written an interesting article on the differences between études *Continuum and Coulée* from the perspective of composition technique (1993).

After explaining the background history of Ligeti's organ compositions in order to lay the groundwork for a discussion of the relationship between tradition and reformation in terms of playing techniques in Ligeti's music, I ask how the performance of Ligeti's monumental *Volumina* changed performance practice of new organ music. This question has thus far attracted little scholarly attention. The attempt is to reveal the means through which Ligeti devised the production of a new kind of sound on an old, traditional instrument. I investigate both sound production and playing techniques typical of Ligeti's music, and hence combine sound ideals and playing techniques.

ORGAN COMPOSITIONS

Ligeti composed his first organ piece, the *Hommage a Frescobaldi – Ricercata per organo*, in 1953, but the piece was not published until 1990. He used a modified version of Girolamo Frescobaldi's (1583–1643) *Ricercare cromatico post il Credo* from *Messa della Madonna*. In Frescobaldi's original version, the theme has six notes which are shared in two groups: three descending and three ascending notes. Ligeti uses the same tendency, but he has expanded it in both directions, ultimately to 13 notes in his own theme (Szathmáry 1987, 219–220).

The Frescobaldi piece was composed for a meantone-temperament organ, but apparently Ligeti wanted his own piece to be played on one of equal temperaments. However, Ligeti's music is completely different in comparison to the Frescobaldi work: it is like a static, chromatic study of the organ foundation stops and their timbre.² The notation is normal and the music is more or less the normal modernism of the 1950s with a twelve-tone technique. Interestingly, the *Ricercare* combines traditional polyphonic technique with the new 12-tone method, which makes a new kind of style possible (Philippi 2002, 188).

The ambitus of the piece is challenging since the composer demands c^7 on the manuals and $f\#^4$ on the pedal. These are not traditional on modern European organs,

² The foundation stops are Flutes and Principals 16', 8', 4' and 2'.

which go to g^6 on the manuals and f^4 on the pedals, but in the United States and in large European concert halls, one can find them on several instruments. These notes could possibly be played by changing the octaves in particular places, even though this would be very complex and require good preplanning.

Ligeti's use of Frescobaldi's piece in this new context is revolutionary. The goal is not to have a *mimesis* as in a traditional *ricercare*, but to have a study of layers of tones. The result is like a new harmonic network. Also, the use of high pitches is somewhat different to that employed previously. Now, in Ligeti's *Ricercare*, the individual 2' and 1' stops³ have their own independent and equal role among the other foundation stops, whereas before they were mostly used in combination with the other foundation stops.

Example 1. Girolamo Frescobaldi: *Ricercare cromatico post il Credo*, bars 1–5.

Example 2. György Ligeti: *Ricercare*, bars 1–6.

Some years later Ligeti wrote his most revolutionary composition, *Volumina*, which amongst all organ compositions is not only a masterpiece of the organ repertoire in particular, but also an outstanding representative of organised chaos and richness of colours in the new music genre in general. *Volumina* was composed in 1961/62, and Ligeti revised it in 1966. As we shall see later, the piece is different from almost

³ A 2' stop sounds two octaves higher than played and 1' stop three octaves higher. They are rarely used alone; instead, they are used with other lower foundation stops.

any earlier work for the organ. It has had a two-pronged effect: it marks the end of traditional organ history but is also at the same time a new beginning in the entire history of organ music. In other words, *Volumina* is like a *cæsura*. Ligeti himself said that it is a “radical” work (Röhring 1997, 6). In other words, it is a piece which no longer respects the manner of playing we have been used to but starts to revolutionise the whole institution of organ music by getting to the heart of the matter in terms of organ sound, sonority, dynamics, form, notation, playing techniques and even performance practise (Röhring 1997, 6–7).

Volumina was part of a project organised by Radio Bremen, which commissioned three pieces. The concert was scheduled to be broadcast on May 4th 1962. The other two pieces were Bengt Hambraeus’s *Interferenzen* and Mauricio Kagel’s *Improvisation ajoutée*. These three pieces were the very first to illustrate so-called “Klangfarbenmaschine” – “timbre-machine” – and all of them were radical because they were not ordinary church music (Haas 2014, 289). In the 1960s, Germany’s organ music was still full of preludes and fugues, choral partitas, fantasias and choral preludes. The climate of church music was more or less conservative (Haas 2014, 318). Composers such as Helmut Bornefeld, Hugo Distler, Ernst Pepping, Siegfried Reda and Johann Nepomuk David took their models from baroque music (Szathmáry 1987, 213). On the other hand, compared to the situation in France, the development was more gradual and continuous after the World Wars, and Olivier Messiaen, the greatest figure of 20th-century organ music, wrote new music much earlier than many other composers in any other country in the world. The reason for this was that the others continued to try to hold onto the serialistic technique (Haas 2014, 318).

Ligeti had already composed his *Apparitions* in 1958/59 and *Atmosphères* for large orchestra in 1961, and devised similar timbre inventions for both, which he again used in *Volumina*. There is a clear parallelism between *Atmosphères* and *Volumina*. According to Toop (1999, 90), *Volumina* is like a “photographic negative” of *Atmosphères*, which is quite understandable; even though they are both continuous cluster pieces – one is for large orchestra, the other for a soloist – and they sound similar, the ways and means to produce the result are different. *Atmosphères* starts with a broad cluster, but softly, while the work for organ begins thunderously. *Atmosphères* is meticulously notated, but *Volumina* only very loosely. Both have the same kind of strategies, such as the extrapolation of pentatonic and diatonic clusters from chromatic clusters. In *Volumina*, Ligeti needed to imitate the cluster style he used in *Atmosphères* on a single instrument and for a single player (Toop 1999, 89–93).

Ligeti explained his use of clusters when he spoke of “neutralised and eliminated harmonies” (Röhring 1997, 6). There was a precise meaning to the use of clusters because through them he destroyed intervallic relationships. Through this, chromaticism and minor seconds have ceased to be an element of harmony (Röhring 1997, 6–7). Toop has explained that “*Volumina* casts doubt on his later denial of shock tactics.” He writes that “extremes tend to shock, and in terms of the early 1960s, there

could be nothing more extreme than the opening of *Volumina*, where the organist plays a massive, extremely loud cluster involving every note on the instrument” literally by laying by his body on the keys (Toop 1999, 89–93).

Volumina had a special space in the mind of Ligeti because it was his first “real” commission (Toop 1999, 90). During the time he composed the piece, Ligeti stayed in Stockholm. The most important figure in opening the doors to a new direction was the Swedish composer Bengt Hambraeus, who was an organist and who had worked at the electronic studios in Cologne a couple of years before Ligeti. Hambraeus was a revolutionary himself and prominent pioneer. He was the man who established the organ as a potentially up-to-date avant-garde instrument since the radical, serial *Livre d’Orgue* (1952) by Olivier Messiaen. Hambraeus had established new ground for Ligeti, and his works *Doppelrohr II* and *Konstellationer* are living examples of something very new. *Doppelrohr II* was inspired by the innovative organ stops designed by Rössler, and at the very end of the 1950s, Hambraeus wrote a series of pieces called *Konstellationer* for organ and organ sound transformed on tape (Toop 1999, 89–90).

Besides Hambraeus, the Swedish organist Karl-Erik Welin was another important personality behind Ligeti’s innovations. Welin was young and brave, and he was something of a laboratory for Ligeti and his musical innovations. Welin’s positive and encouraging atmosphere might well have contributed to Ligeti’s wanting to try something new (Toop 1999, 89–93).

Volumina is an interesting example of chaos and organised sound; it is a radical piece without melodies. The title *Volumina* describes the piece itself: volumes, which imply density and sound; on the other hand, it also means a series of clusters, which gradually change from one to another (Thomas 1983, 319). There aren’t even any individual notes but rather a cumulative mass effect. The piece is free in the traditional meaning and it is static, with no different movements, parts or even rests. *Volumina* is like one single arc from the beginning to the very end. Behind the arc is a passacaglia, one of Ligeti’s favourite forms (Haas 2014, 289). The main factor of *Volumina*’s musical language is the notation, which is totally graphic, without any conventional notation (Haas 2014, 289). It was Hambraeus’s *Konstellationer* which inspired Ligeti to use the new playing technique with its possibilities for structuring and articulation of clusters in his compositions (Ligeti 1996, 311).

Kagel had also used this technique already in his compositions, but *Volumina* was the very first piece which was thoroughly notated in this special way (Haas 2014, 289). Ligeti came to be fascinated by this means of notation through the influence of John Cage (Toop 1999, 89–93). The notation looks free but is actually extremely precise: Ligeti wrote a long and a detailed preface and explained all of the gestures in the music and how they should be performed. The graphic notation goes systematically from left to right, and the pitches of the tones are given (Haas 2014, 289). Furthermore, the performance is not possible without two registration assistants,

whose presence is obvious. Because the organist's hands are busy with all gestures and manners of playing the clusters, he or she needs extra hands to make all the changes of sound. A closer look may demonstrate that the other hands are as essential to the performance as the organist's. Even the actual notes do not have the same importance as they do in the traditional notation (Toop 1999, 89–93).

Hans Gitt and Karl-Erik Welin gewidmet

VOLUMINA

György Ligeti
Komponiert Dez. 1961 – Jan. 1962,
revidiert 1966

1 (die Ziffern begeben sich auf die bestmöglichen Anordnungen)

2

fff Register-*diminuendo, poco a poco* -----

beide Hände auf demselben Manual

fff Register-*diminuendo* (wie im Manual) -----

W. rechter Fuß
W. linker Fuß

Pedal

Lindff/Peters No. 5985 50385 © 1967 by Henry Lindff's Verlag

Example 3. György Ligeti: *Volumina*, page 1.

Ligeti had very little experience of his own on the organ. When he finished *Volumina* in Vienna, he tried out the piece on a mechanical-action chamber organ in the Vienna Conservatory. That was how he first tested the continuum of clusters and sound effects. Everything went well, but later there were more difficulties than one may wish or imagine (Toop 1999, 89–93). The first interpreter, Karl-Erik Welin, tried out the opening of *Volumina* in a rehearsal on the Göteborg Concert Hall organ (Marshall 2012, 276), but the organ didn't behave as expected; electrical circuits were overloaded, smoke poured out of the pipes, and there was a stench of burning rubber. Various lead and tin components had melted. It was discovered that someone had made a running repair to one of the fuses by using a sewing needle instead of fuse wire! When the news of a smoking organ reached Bremen, the church council withdrew permission for the concert and for the broadcast. A little earlier, Hans

Otte's *Alpha Omega*, which involved dancers, had already been concern enough for the church council. For that reason, there was no “broadcast première” in Bremen; instead, it was recorded in the Johanniskyrkan in Stockholm and later broadcast on the radio as a première. Welin had already made the tape for it, and the case was almost finished. I say “almost” because the recording of Welin was too short. Ligeti found this out just a few minutes before the broadcast (Toop 1999, 89–93). Finally, some days later, the real première with the correct length of piece took place on the organ in the Westerkerk in Amsterdam. (Marshall 2012, 276.)

Some years after *Volumina*'s second version, Ligeti wrote two organ études, *Harmonies* (1967) and *Coulée* (1969). Actually, Ligeti's plan was to write four études, but he gave up on this because he had heard of similar experiments by other composers such as Kagel. One was planned to use only the wind-chest itself and unpitched wind-sounds. The other was to consist of a single note held down while stops were changed by one assistant while another assistant was within the organ itself, manipulating the pipes to alter the sound qualities (Thomas 1983, 319). Both pieces had, in the same way as *Volumina*, another composition behind them, and in the études, Ligeti again tried to transfer to the organ something he had already invented. Ligeti worked in 1967 on *Lontano*, which is an enormously sophisticated work and in which all the details are precisely marked. At the same time, he worked on the first organ étude *Harmonies*, and if one compares the scores, it is hard to believe that the composer of both pieces is the same. Interestingly, the pieces sound almost the same but the result has been achieved by entirely different means: full symphony orchestra versus one organist. If *Lontano* is meticulously notated, *Harmonies* is the polar opposite. It has 231 chords with no precise rhythmical character. This is pointed out by the indication *rubato, sempre legatissimo*, which gives the performers the freedom to do whatever they want with the rhythm: to extend the individual chords or to abbreviate and summarise them, all the while avoiding any kind of uniformity or similarity (Toop 1999, 120). The *rubato* is very important since Ligeti wants no element of metre or periodicity (Thomas 1983, 321). There is not even any evidence of the need for virtuoso technique, so I have wondered what makes this an “étude”? Toop has written that “maybe it is a ‘composer’s study’: a study in composing with deliberately restricted means” (Toop 1999, 120). In his *Requiem* (1965), Ligeti used a complex micropolyphony and may have been very conscious of the need to set rules and limitations for himself. In *Harmonies*, the intention is absolutely the reverse: to see how meaningfully the musical process can be extracted from almost absurd constraints (Toop 1999, 120).

As previously stated, there are 231 chords and 231 bars in *Harmonies*. Each chord has ten notes, so all ten fingers are in use all of the time. Each chord differs from the previous one only in that one finger has been moved up or down a semitone, usually but not always alternating between hands. The whole piece uses only manuals except at the very end, where the pedal plays three bars of low c with low 32' and 16' regis-

ters. As in *Volumina*, the piece needs registration assistants, because Ligeti demands registration changes constantly throughout the piece from the beginning to the very end. For sound, Ligeti also asks for “pallid, very alien, ‘decaying’ colours, ‘artificial consumptiveness’”, achieved through reduced wind pressure (Toop 1999, 120). The sound and the pitches should be constantly waving up and down. Toop has compared the étude to an exercise in subverting harmony (Toop 1999, 120–121). Ligeti reportedly told Hans-Ola Ericsson that the ever-changing wind pressure creates an intention “like a Camembert cheese that is three years too old” (Röhrling 1997, 5–6).

*) **Rubato, sempre legatissimo**



Example 4. György Ligeti: *Harmonies*, bars 1–10.

Two years later Ligeti wrote his second étude for organ, *Coulée*, and once again, behind the piece, there is another work, this time for harpsichord. *Coulée* looks like a transcription of Ligeti’s own harpsichord piece *Continuum*, which is one of his best-known works. But as Michael Hicks has pointed out, *Continuum* and *Coulée* are two independent pieces which have quite different starting points in harmony and form (Hicks 1993, 172–190). In *Continuum*, Ligeti’s motivation for writing his next work for solo keyboard was to write it “in the spirit of the instrument”, “a continuous sound that would have to consist of innumerable thin slices of salami”. On some occasions, he compared the effect to the wheels of a railway engine, which seems to stay unchanged once a certain speed has been reached, or even, viewed through another train window, to turn backwards. Ligeti insisted on writing a continuous kind of music for an instrument such as a harpsichord – music with speeds at such an extreme that separate repeated notes seem to fuse into a single line (Toop 1999, 121). *Continuum* represents a distinct category in Ligeti’s works and consists of patterns “like a precision mechanism”, as he said himself (Hicks 1993, 172).

The tempo marking is *prestissimo*; therefore, to achieve a continuous effect, the tempo must be extremely fast and the hands need to remain almost glued to the keyboard throughout (Toop 1999, 121–122). The result is cross-rhythms, micropolyphony or “sound-mass” in which rhythm does not come from the succession of notes of fingers playing. The actual rhythm is a pulsation that emerges from the distribution of the notes, from the frequency of their repetitions (Hicks 1993, 173). The piece is like one big arch from the beginning to the end. According to Ligeti (1969, 5), the duration of the piece cannot be more than three and a half minutes. The piece is divided into two larger parts: in the first part, the hands remain in overlapping registers, and in the second, they gradually drift apart (Toop 1999, 121–122).

Coulée was inspired by *Continuum*; only the interval in the beginning is different: there is a minor third in *Continuum* and a perfect fifth in *Coulée*. Actually, this difference is most radical between these two pieces. According to Hicks, *Coulée*'s opening interval turns out not to be a partition-interval as in *Continuum*, but a boundary-interval, which is then partitioned (Hicks 1993, 181).⁴ Both pieces open with single intervals, both have the obvious features of “mistiness” and “clearing up”, both have moments of inversional symmetry and both reach their highest pitch at the end. Yet, while *Continuum* has a strong sense of progression, *Coulée* seems convoluted. The one clearly drives toward cadences and evident formal thresholds, while the other suggests near continuous elision (Hicks 1993, 181). The form of *Coulée* looks even more “continuous” than that of *Continuum* because there are no punctuating “interval signals”, and the registration doesn't change until the last part of the piece, where both hands gradually drift up to the very top of the instrument and suddenly break off. This is a kind of classical Ligeti manner, as if the hands have fallen off the top of the keyboard. The most significant difference between *Continuum* and *Coulée* might also be the use of the organ pedals, which are present throughout except for the very end of the piece. In the beginning, the pedals are used like a resonance of the keyboard part, but on the second page, after about one minute, the pedal sounds form a very slow-moving, low chorale layer (Toop 1999, 125–126).

Prestissimo *

Example 5. György Ligeti: *Continuum*, beginning.

*) Prestissimo, sempre legato

Example 6. György Ligeti: *Coulée*, beginning.

The literature of organ concert études is rather limited. There are a few examples of études by Hermann Kretzschmar (1848–1924), Karl Hoyer (1891–1936) and Jean Langlais (1907–1991). Ligeti's pieces are also more for concert purposes than just technical études. Maybe the demand of high technical ability has justified the name of étude.

⁴ According to Hicks, the intervals seem to play at least four roles in the construction and blurring of signals: boundary intervals, partition intervals, projection intervals and blur intervals (Hicks 1993, 174).

A REFORMER OF PLAYING TECHNIQUE

Score and notation

I expect that readers will know the traditional way of writing music: pitches, rhythms, tempo and length of the tones are given precisely. In his organ works, Ligeti did everything in contrast to tradition (except for the *Ricercare* of 1953).

In *Volumina*, let us start from the individual notes: there are no individual notes, no rhythms or pitches. Ligeti determines the scope of the manuals as C–a⁶ and in the pedals C–f#⁴. In some places, he restricts the scope of clusters, but in most places, he gives absolute freedom to the player. The result is a continuously changing sound mass, which is produced by a new playing technique: large, broad clusters are played with the elbows, the lower arms and the hands, and different parts of fingers. The palms of the hands glide across keys and the manuals, keys are struck with the fists, and fast finger tremolos fly over the keys. Even the feet must master the technique of glissandos and clusters.

This way of playing has combined with the new registration practise, which must produce the “Klangfarbenmaschine”. Ligeti has included detailed instructions in his preface as to how various registrations are added or taken away to give different sonorities and colours, which are transformed and varied as in a kaleidoscope. Musical coherence depends on the imagination of registration because it is in seamless cooperation with the manner on the keyboards, especially by means of the motion of the clusters themselves, which build up or wither away and provide rapid internal movements, for instance trills or tremolos. Half-pulled-out stops are called for, if the registration gives that possibility. The wind pressure may also be altered, and the motor may be switched on or off (Röhring 1997, 6–7).

The result is a sort of organised chaos, which is produced by one player, while in the pieces for orchestra, the result is achieved by many players. I wonder what kind of notation a composer would need to use if all of the individual notes or rhythms had been notated exactly? I dare say that the result would have been almost impossible to play. It goes without saying that an extremely complex, exact score would be a great inconvenience if the same results could be achieved just as well through carefully-guided and circumscribed improvisation (Toop 1999, 89–93). By new, graphic notation and flexibility of registration, Ligeti has achieved a human way of producing complex music creating the fascinating result of a new kind of sound. The result is almost like electronic music, but produced by a real acoustic instrument.

Graphic notation makes it possible to give an impression of the average range and kind of activity, especially in the situation of an organ in a reverberant acoustic; while playing clusters, the exact pitches are largely inaudible anyway.

It is amazing that the études, which were written just after the new version of *Volumina* in 1967 and 1969, are parallel works with *Volumina*. Even though they have

been notated in the traditional way with notes without graphic notation, the result is more or less similar to that of *Volumina*. In *Harmonies*, the weaving of arhythmical chords creates a sound wall; a similar sound wall is created in *Coulée* by extremely fast speed. Both *Harmonies* and *Coulée* are harmonic studies by the composer, but on the other hand, they are also real études for organ. Both pieces study clusters: the first étude consists of static chords and the second, broken chords. Both études demand relaxation and independence of the fingers. They are also études of balance between speed and clarity.

Registration

For new ideas of registration practice, I have already discussed the *Ricercare*. The use of high pitches was something entirely new. Now, in Ligeti's *Ricercare*, the individual 2' and 1' stops have their own independent and equal roles among other foundation stops, while in earlier organ music, they were mostly added to the other foundation stops.

In *Harmonies*, Ligeti wrote that the whole piece is “soft to very soft”. This special registration is not the only thing which is needed but also, “denaturing the sound is best achieved by *greatly reduced wind pressure*” (Ligeti 1969, 4). He gives five different ways to do that:

- a. by using a weaker motor, like that of a vacuum cleaner, inserting the hose into the reservoir
- b. by adjusting the valve in the chief wind-receiver between the fan and the reservoir (for example, detaching the rope holding the valve or reducing the play of the valve so that the flow of air from the fan to reservoir is impeded)
- c. by opening the wind-chest
- d. by reducing the rotation speed of the fan by loading the circuit (installing an adjustable resistance in the circuit, for instance)
- e. by removing some low pipes from a pedal reed register; the relevant stop is drawn and the relevant pedals are held down throughout the piece, so that some of the wind escapes (other notes of this register cannot be used during the piece!) (Ligeti 1969, 4).

It is quite obvious that all of these instructions depend on the type of organ. In many cases the changing of the wind supply is not possible without partially destroying the organ in some way. However, the preface gives a good picture of what kind of functions Ligeti hoped for. The traditional, straight organ sound was really something that was not expected. The performer needs to keep in mind Ligeti's advice for

“pale, strange and vitiated” tone colours (Ligeti 1969, 4) when the registration for performance is being planned.

For the registration itself, Ligeti (1969, 4) asked that “the timbre alterations always take place imperceptibly and apparently continuously”. To achieve this, a special registrant is needed all the time during the performance. On mechanical organs, half-drawn stops are welcome, as are half-depressed keys (Ligeti 1969, 4). All of these remarks were totally new in organ literature and in performance practise.

Ligeti’s pieces have been recorded on large organs: Hans-Ola Ericsson (b. 1958) played them on the *Grönlund organ* in Luleå Cathedral and Gerd Zacher (1929–2014) on the *Schuke organ* in Lutherkirche in Hamburg-Wellingsbüttel.^{5,6} Ericsson made his recording under the guidance of Ligeti, and that gives a certain value to the result. Gerd Zacher is the organist to whom Ligeti dedicated the *Harmonies*, and his recording was made in the church where Zsigmond Szathmáry (b. 1939), one of the honoured performers of Ligeti’s music, played a great number of organ pieces in the avant-garde style. In any case, Ligeti didn’t have any special organ type in mind. His focus was on elements which have nothing to do with the features of traditional organ types. That means that his music is playable on many different organs, even on a historical baroque organ. The compass of these is often much shorter than in a normal concert or church organ.⁷ For that reason, the études can be transposed an octave lower. For this purpose, Ligeti gave special instruction in preparing the registration for *Coulée*:

Right hand: Hohlflöte 4’, Gemshorn 8’, Bourdon 16’

Left hand: Spitzflöte 4’, Rankett 16’

Pedal: beginning: Gedackt 8’.

For *Coulée* he also gave two other examples of registration: one for soft and light registration with 8’ and 2’ and another, louder registration with principals, mixtures and reed stops. Karl-Erik Welin also played the piece with simply a registration of high aliquots alone. The result was “denatured, astringent and hollow”, which seems to be as valid as the other registration (Ligeti 1969, 5).

⁵ Gerd Zacher recorded *Volumina* and *Harmonies* in 1968 in Hamburg. Deutsche Grammophon 00289 477 6443.

⁶ Hans-Ola Ericsson recorded *Volumina, Etudes* in Piteå in 1991–1997, Bis-509.

⁷ The pedal’s highest notes would be d⁴ or e⁴ and manual’s d⁶.

CONCLUSIONS

In this article I have drawn a picture of Ligeti as an organ composer, and we have seen the means by which he produced a new kind of sound on an old, traditional instrument. This is something unique: an avant-garde composer becomes interested in an instrument which has a repertoire going back to the 15th century. In discussing the relationship between tradition and reformation in terms of playing techniques in Ligeti's music, we have seen that Ligeti did not respect tradition in organ playing. Actually, for him there was no traditional way of playing the organ. If we do not count his early piece, *Ricercare*, he was quite revolutionary. In *Volumina* there is not one single note which should be played in a normal way, that is, by pressing the key down with the finger and then releasing it by lifting the key back up to the normal position. Ligeti's view of organ-playing in *Volumina* was for instance by the use of the palms in gliding across keys and the manuals. By using graphic notation, he could best achieve freedom for the player, and the result of integrating a new playing technique with a new kind of notation made the organ more like a timbre-machine than a hymn or fugue producer. The practice of registration also found a new level in Ligeti's inventions. *Volumina* is full of untraditional instructions, such as "bei mechanischer Registratur: verschiedene Registerknöpfe",⁸ "Register-diminuendo und graduelle Aufhellung des Klangs",⁹ "Gradueller Klangfarbenwechsel auf dem Manual" (Ligeti 1967).¹⁰ For Ligeti this liturgical instrument was anything but holy. He dared to revolutionise the use of this totally traditional instrument, which, given its location in a most traditional space – a church – gave it a sort of immunity.

The main question of this article was how Ligeti's *Volumina* and *Zwei Etüden* have changed performance practice and playing techniques of new organ music. *Volumina* was a ground-breaking work for organ, equivalent to Stravinsky's *The Rite of Spring* in 1913 for orchestra. The importance of these two works by Ligeti is the production of sound instead of the individual texture of notes. After *Volumina* was composed many composers adopted its graphic notation as a principle of notation in their own compositions. Ligeti himself achieved the cluster effect apart from notation.

György Ligeti's legacy in organ composition is enormous. After the massive revolution of *Volumina* and *Zwei Etüden*, organ-playing as a whole and especially the manner of composing for organ took a new direction. One could not imagine the organ pieces by Xavier Darasse, Morton Feldman, Brian Ferneyhough, Mauricio Kagel, Iannis Xenakis, Isang Yun and many others without Ligeti's remarkable example.

In Finland, the younger generation followed Ligeti's work closely. Erkki Salmenhaara moved to Vienna after his studies in Finland in 1963 and studied under the guidance of Ligeti (Aho 2011, 79). In particular, Salmenhaara's *Toccata* (1966)

⁸ In case of mechanical stops: different stops.

⁹ Diminuendo with the stops and gradual brightening of the sound.

¹⁰ Gradual change of tone colour on the manual.

for organ uses graphic notation, which was certainly influenced by Ligeti's example.

By studying Ligeti's organ music, we can also learn a new aesthetic way of understanding music in general. Rules of performance practice in historical organ music are often strict and confusing in the same way as Ligeti's remarks about playing his music, in which we usually try to do the best we can without the certainty of whether we are achieving the result which the composer wanted or not. Ligeti's goal through his notation and remarks was an experience in sound. Maybe it could be the same with the other older composers as well. In turn, Ligeti's prefaces for his organ pieces and remarks on the performance in the score are performance practice in our time, and we should appreciate it as much as we do historical performance practices.

Ligeti was certainly a revolutionary discoverer. He revolutionised everything from organ composition to playing. His influence has not yet reached organ building, but I am sure the time for this is still awaiting us. He made many good suggestions for extra facilities which could improve the organ for modern music. The organ is still a fascinating instrument for which new composers are continuously writing new music. This is no doubt a result of Ligeti's fine example. When will the next Ligeti turn up?

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