

# Composer-Computer-Interpreter. A Three-way Collaborative Process to the Creation of Two New Works for Multipercussion

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***Abstract.** Last decades we see a redefinition in the way of interaction between the performer and the composer, an interaction that led to the discovery of new paths of creative collaboration between parts. This article is a study of this relationship as presented in the works “Solo I” for multipercussion and “Solo for Two”, a duo for two multipercussion sets by Dimitris Andrikopoulos. We address, firstly, the collaborative process between the composer and the interpreters from the early stages of the creation of the works up to the moment of performance and recording of the pieces and how this process and collaborative attitude influenced basic parameters of the composition. Further, we address issues related to the generation of compositional material through algorithmic processes, material that was used in the creation of the pieces, itself a type of collaboration between the composer and the computer inside a Computer Assisted Composition environment.*

**Keywords.** Collaborative musical activities, multipercussion, CAC, unconventional setups, contemporary music

## 1 Composer versus Interpreter. A case of chickens and eggs.

The word symbiosis is the best word to describe the relationship between composers and interpreters throughout the history of western music. Even if this is a clear fact, this relationship took different forms in the course of time. In the early renaissance period, performers were expected to complete the scores of the composers by even “*adding accidentals and place the words under the notes in vocal music*” demonstrating the highly collaborative symbiotic system in order to have the works performed.

Slowly, with the development of a more adequate system of notation and the necessity of the composers to indicate more clearly their musical thought, we have a decrease in this highly collaborative relationship, even if much of the baroque period music still includes a high level of improvisation inside the basic skeleton of the notated musical text, arriving finally to the 19th century when we have a drastic change of the paradigm. Going into the nineteenth century, the new public attributes to the composer/performer figure almost supernatural abilities, Paganini and Liszt are great examples of this. Coming out of many centuries of tradition where the composer has always being deeply involved in the performance of his works even as a player, we are moving to a new era, where this image slowly fades away. A new distinctive role between performer and interpreter is formed, resulting in the participative role of the composer to the final performance to be given up. Adding to that, the individualistic new approach to musical creation by the composers at the time, led to a situation where the composer is considered a unique artist-creator, a “hero” to be venerated by the society, an artist which his works are slowly being personified, and in the same way as the composer himself, are iconoclastically worshiped by the audiences and have to be performed “as written in the score”.

With the more frequent performance of dead composers in the late nineteenth and early twentieth century, the gap of the historically close collaboration between composer and interpreter has only been amplified. Inside this schism, and at the same time as result of this situation, one thing became clearer; the necessity of composers to have a bigger control on the interpretation and performance of their music. This thing became possible through the only tool that a composer possesses: a more detailed and precise notation of the musical text. From the Doric style scores of the baroque era we are now in the time when a score through the detailed notation of dynamics, articulation, tempo variation, performance indications and even the suggestions over the emotional impact that music had to achieve in a given point, diminish even more the collaborative relationship between interpreter and composer and reduce the interpreter into a mere reproductive medium of the composers ideal interpretation of his text. A characteristic example of this attitude, we can note on a response by Gustav Leonhardt in an interview. Leonhardt responded: “*No, I have nothing to say, I am only a player.*” “*As opposed to?*” asked the interviewer, “*to a real musician, which is a composer*” the final answer (Sherman, 1997).

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Nevertheless, taken all this mythology apart, interpreters frequently throughout the history of western music rearranged the written scores. Even today we see, especially in vocal and operatic repertoire, a big amount of improvisation by the performers and many times even a “drastic” reinterpretation of the score, all excusable under a mighty word presented: “*Tradition!*”. Anyone who played in an orchestra has experienced the sometimes almost barbaric intervention of conductors, by introducing cuts and changing the duration of movements in order to please their concert duration necessities, or other times, by “improving” the orchestration of the score, or even changing the musical text itself. As we move further into the twenty-first century, happily, these attitudes become more and more stories from the past.

The next step in this relationship we can trace after the second world war. The power behind the radical change taking place after the war was the necessity of the composers to cut the relationship between the new music and the music of the past. It was a time for a music that aimed to express a new society with new ideals and being free of the social and artistic decadence, in their view, of the pre-war society. Taking in account as well the fast development and influence of electronic music and the new aesthetics introduced by the new studios that were appearing all over Europe and America at the time, we have a profound reevaluation of what musical sound is. All this influence, combined with the inquisitive minds of young composers, gave a start to an intensive research that led to a reevaluation of what instrumental technique is, how sound is produced by the instruments, the extension of sound resources beyond the spectrum of the until then accepted “*musical*” sound and the inclusion of noise into the possible sound resources used by the composers. Inevitably, all the above led to the change of paradigm of interpretation and performance itself (if Futurist composers were still alive, they would have been sitting in a corner laughing).

In this new environment, interpreters take a new role into the creative process. From faithful re-creators of the original idea, they become important elements in helping the composer to understand the new sound possibilities, to understand the new mechanics on how all these new sound palettes can be produced effectively, and actively contribute to the extension of the technical resources presented to the composer.

To this development, there is no better example than the research and collaboration between performers and composers when making music for percussion instruments. It is very often said that the 20th century has been the century of percussion development. Composers took advantage, as well as, an active role in this. From an emphatic role in the orchestra scores of the nineteenth century, the percussion family emancipated to an individual - always in development group - that gave an immense space to composers in order to challenge their limits of imagination and their creativity.

## 2 The big extension of the research on sound resources in percussion. A never-ending story.

Percussion has been part of human expression and communication since the beginning of time. Alongside with the voice, percussion is one of the first forms of musical enunciation and still is today a fundamental part of the popular musical manifestations from Africa to Asia, from the Americas to Europe. Despite the percussion omnipresence in the globe, in its many forms and cultural insertions, inside the scope of classical music percussion was relegated to a secondary plan.

The pioneering, and from several points of view, revolutionary role of percussion family in the development of Western music took place in the XX century starting in the decade of the 30s with the presentation of *Ionisation* by Edgar Varèse. *Ionisation* was the first work written for percussion ensemble. Composers like John Cage, Edgar Varèse, Henry Cowell following the visionary example of the futuristic movement altered the role of this instrumental family, from its traditional function inside the orchestra to a new and revolutionary character, as a sound extender, capable of accompanying the ever-growing needs of composers' imagination and virtuosity.

A varied range of traditional non-western instruments appears in the percussion section which, if on the one hand, respond to the ethnic-instrumental exoticism that composers of the time sought, on the other, compel percussion players to a mastery of wide performance techniques. The percussionist of the second half of the 20th century became a versatile musician. Composers delegate to the interpreter extended and increasingly complex functions that include, additionally to the mastery of the multiple instruments of the percussion family - skins, keyboards - the mastery over other unconventional sound sources. The development of percussion was effulgent in subsequent musical "revolutions" up to the present day. Music for percussion has become a flag of musical innovation.

The most notable characteristic of contemporary percussion is the infinity of its resources that allows both composers and interpreters to build their own musical entities. This vast amount of new resources and techniques create even more the necessity of a bigger interaction and collaboration between the composer and the interpreter from the early stages of musical creation. When writing for new instruments or instruments that are out of the sphere of the "conventional resources", new challenges arise to both composers and interpreters.

Except from the conventional instrumentarium, there is significant research on home-made, junkyard, unconventional instruments that require even more a completely different approach both on composition and interpretation as well as on issues of notation, intensifying even more the necessity for a closer collaboration between the composer and the interpreter.

The works by Dimitris Andrikopoulos "*Solo I*" and "*Solo for Two*" are two examples in this line, mainly in the research and the extension of new timbre resources. In both works, the sound sources/instruments have to be chosen by the interpreter according to some general instructions by the composer.

### 3 “Solo I” and “Solo for Two”. A search for new sound resources.

“Solo I” and “Solo for Two” are the first two works written for percussion by the composer, Dimitris Andrikopoulos. Both pieces are based on the idea of human language and speech. They express a research on the almost chaotic patterns created by a multitude of people talking at the same time, where the various rhythmic lines (in the instrumental musical discourse) coexist and interact.

Nuno Aroso’s work as an interpreter is mainly focused on an extended research to non-regular instrumental settings, settings that go out of the “canon” of traditional percussion, as for example home-made instruments.

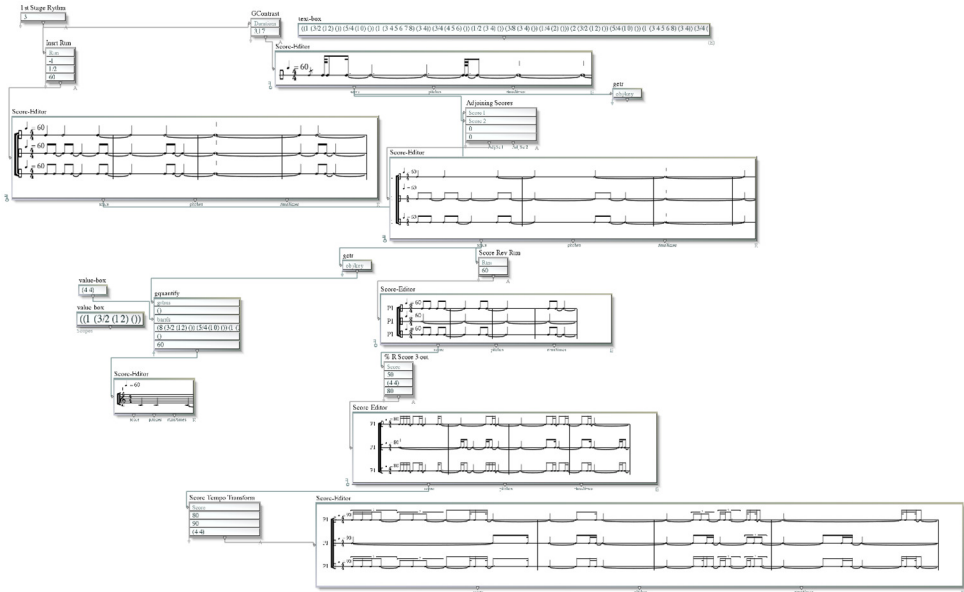
Both pieces carry this influence. From the early stages of the composition process, before even start dealing with the musical text itself, there has been a series of conversations between composer and interpreter over the sonic character of the works and the interest of both into exploring alternative instruments and timbres that, in the first place, could create an individual sonic signature in every piece and, secondly as a result of the first, create challenges to the composition process as well as to the final interpretation of the pieces. It is important here to say that both works are part of a major set of works for percussion, in progress, that looks into the above problematic.

In this sense, “Solo for Two” is more adventurous than “Solo I”. “Solo I”, being the first percussion work written by the composer, follows a more conservative approach to both questions. The compositional challenges are more present on how the compositional resources used in the piece are combined through the use of the different construction materials of the instruments (wood, skin, metal); in a way, a more “*contrapuntal*” approach between timbres.

For the creation of the rhythmic material used in the creative process of Solo I and Solo for Two, the Patchwork Graphic Language (PWGL) application was used. PWGL is a Common Lisp application and was developed in 2002 in the Sibelius Academy in Helsinki by a research team consisting of Mikael Laurson, Mika Kuuskankare, Vesa Norilo and Kilian Spote. It is a visual language combining the strong points of its predecessor Patchwork, developed in IRCAM in the decade of 1980, but with a modern, easier, more flexible and stronger user's interface. For the case of Solo I and Solo for Two, the Gestural Rhythms (GRhythms) library, created by Magnus Lindberg, was used as a central tool for the manipulation of the basic rhythmic material.

A 13-note series, used as a basic material for more works in the last years by the composer, serves as the starting point for the creation of the rhythmic material used in both pieces. The interval distances between the notes in the series (half-tone equals 1, whole-tone equals 2, minor third equals 3 etc.) become the basic numeric source used for the construction of the pieces. Both pieces use the numbers extracted from the fourth variation of the original series: (1 2 3 7 8 2 2 9 5 4 9 4 9). Through a series of diverse manipulations such as, insertions of constant values in different areas of the series, creation of new series out of the common attack points between two series resulting out of the previous processes, increasing the contrast of the values in a series by elevating them by an exponent and the readjusting the results into the previous

total length of the series, percentage manipulations of the original lengths or inserting different rhythmic structures inside other rhythmic structures, some of the many manipulations that the original material went through, created a considerable amount of rhythmic tables that provided a large spectrum of possibilities to be used in the different parts of the works. The final choice of the material used for the realization of the pieces was not subjected to any kind of formalization but was freely chosen during the composition process.



**Figure 1.** Example of the use of PWGL

On the instrumentation level, as mentioned earlier, there has been from the early stages of the creation of the pieces a close and collaborative relationship between the composer and the interpreter through various conversations on the sonic character of both pieces and subsequently, on the choice of the instruments used.

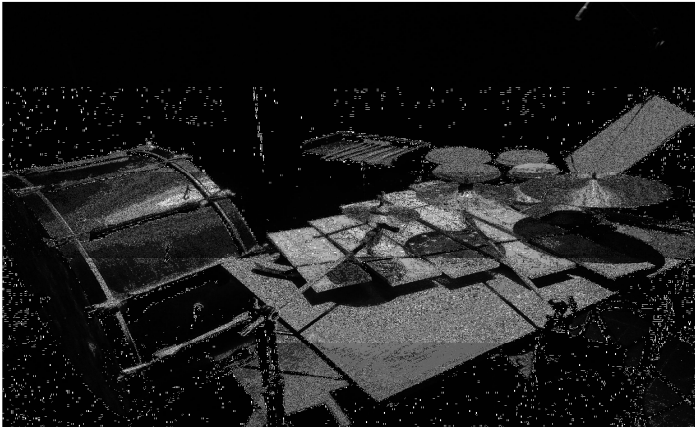
Related to the timbre character of “Solo I”, a more “naturalistic” approach was followed for the choice of the instruments used. The three major material families (skin, wood, metal) of percussion instruments were used. As a first try, the first instrumentation of the piece was including: Marimba (the lower first octave of the instrument), 2 Bongos, 2 Congas and a large orchestral Bass Drum, creating a 5 set of natural skin membrane instruments, 5 woodblocks and 5 cymbals where the lower 3 are sustained cymbals (low-middle and high) and the high 2 must be Chinese cymbals. The more interesting part of this instrumentation was that the large Bass Drum has to be taken out of its support mechanism, be placed on the floor and always to be played by the use of a foot pedal.

After the first performance of the work it was clear that the marimba was sounding as a foreign object to the sonic image of the piece, mainly due to the reason marimba being the only pitched instrument of the set in combination with the limited pitches used (only the first, lowest octave of the instrument). It was clear that a different approach had to be

followed. The nature of the marimba itself, a set of wooden plates of different sizes, gave the solution to this problem.

As so, 5 pine wood plates of different lengths were created, resulting in 5 different non-pitched sounds. The sound of the instruments has a distant resemblance to the traditional wooden Greek instrument, “Simantron”, an approximately 3 meters long wooden plate and its smaller variations, used in many Orthodox Greek Monasteries to announce the important parts of the day.

The marimba part was rewritten in order to use these newly created homemade instruments. Again, in this part, the collaboration between composer and interpreter was an essential factor for the solution of this challenge, mainly for the choice of the material and the size of the wooden plates used in the piece. The introduction of this new element intensified as well the sonic idiosyncrasy of “Solo I” and finally, in a practical sense, the absence of a marimba added to the flexibility and mobility, for future performances, of the work.



**Figure 2.** “Solo I” set up

Another important factor in this collaborative process has been the input of the performer to the creation of the final score of the work. Many times, the compositionally correct choices for the notation of a work made by the composer are not the most efficient neither the most intelligible ones for the practical realization of the piece by the interpreter.

In the case of ‘Solo I’, being constructed out of different layers of algorithmically generated material, the first choice was to create a score that could clearly demonstrate this process. This resulted in a 4-staff score demonstrating clearly its multi-layered compositional structure, but at the same time, the final result was moving away from the commonly used notation for a multi-percussion setup. Apart from the high level of difficulty of the piece, this type of notation created extra challenges to the interpreter. After a lot of conversation between the composer and the interpreter a new score was created, adapting a different approach to the notation of the work and coming much closer to the visual expectations of the performer than the, theoretically more correct, composers’ score.

**Figure 3.** First page of “Solo I”. First and second version.

“Solo for Two”, the second work in this series, has been a more adventurous work in terms of sonic research and the use of non-standard percussion instruments. From the early stages of the creation of the work there has been a close conversation between the composer and the Magnet Duo - Nuno Aroso and Mario Teixeira. The challenge in this case was to create a piece that had to go out of the standard instrumentarium of percussion instruments, through the use of different kinds of homemade instruments in order to create an even more individual sonic character.

For “Solo for Two” only metal instruments can be used. Even if there is in the scores a suggested instrumentation for the piece, the interpreters are free to choose a completely different setup with only two constraints applied. Firstly, they must combine for every layer metal instruments with a different sonic character, instruments with shorter and longer decay and a broad dynamic spectrum (ppp to fff). Secondly, the lowest line of the second percussionist, a larger, longer decay instrument has to be used and to be controlled by a foot pedal, similarly to the case of “Solo I”.



**Figure 4.** Different setup examples for “Solo for Two”

Up to the day, 3 different groups have performed “Solo for Two” and 3 completely different setups have been used by the performers. Metal pipes, kitchen pans, aluminum bars, hoes, anvils, different shapes and sizes of metal pieces in combination with different sizes of petrol barrels played with a foot pedal, have been some of the instruments used. Even if the



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rhythmic structure of the piece always remains the same, every performance of the work opened a completely different path to new sound worlds.

It is a fact that in both above cases, *“Solo I”* and *“Solo for Two”*, the research interests of the interpreters have been a crucial and influential factor to the work of the composer. It is extremely important to say that the creative space created by the performers, this opening they presented into new sound colors and their will for experimentation with different materials and homemade instruments provided a great opportunity for the composer to follow ways that went away from the traditional writing for percussion, as well as to extend in some cases the technical possibilities of the instruments used.

In order to compensate for some practical problems presented during the rehearsal period, problems resulting out of the sonic constraints of the homemade instruments, solutions had to be devised. A simple example is the foot pedal used in *“Solo for Two”*. In the case of the use of a large petrol barrel, a normal pedal beater because it comes closer to a hard head beater, produced much more high frequencies, erasing the lower and more resonant sound of the petrol barrel. In this case different solutions like adding a felt cloth cover to the pedal or in the latest presentation of the piece, “dressing” the pedal with a wool thread and changing its character from a hard to a soft beater was used in order to succeed the timbre that the composer asked for this part.

## 4 The Third Person: The Composer-Computer collaboration.

For the creation of *“Solo I”* and *“Solo for Two”*, as mentioned before, the PWGL application has been used.

From early in the decade of the 1950’s composers used computers as part of the creation process in order to solve compositional problems and make complex calculations, giving birth to what is known later as Computer Assisted Composition (CAC). An area of CAC that gained a predominant space into composition practice is algorithmic composition. According to Karlheinz Essl, an Austrian composer that dedicated much of his work to algorithmic composition, an algorithm is a “a predetermined set of instructions for solving a specific problem in a limited number of steps.” (Essl, 2007).

Even if the term algorithmic composition implies a use of computers, the idea of solving a specific, musical in our case, problem is much older than the discovery and the use of computers. Any simple set of rules, “constraints” in a more “binary” language, such as medieval counterpoint, Bach’s instructions in his Musical Offer or in his Goldberg Canons, the musical dice game of Mozart, or the use of the Golden Rule as the constant for formal segmentation in works by Debussy or Bartok, few of the many examples existing, are nothing more than individual algorithms that when put together produce the solutions to the musical questions asked by the composers. Even our simple understanding of the music of a period, what we call musical style, is a result of the rules that govern this particular style.

The big question in the case of the two percussion works is if and how we can consider the computer as a collaborator, a third party element in the realization of the composition process. If the answer is yes, until what point does this collaboration influence the creative process? In order to respond to this question it is necessary to mention the way that the computer interfered in the creative process.

The use of a CAC permits the creation of a massive number of solution variants on a previously formulated musical problem. By changing and experimenting different parameters in the different formalized elements of a piece, in the case of “Solo I” for example, the exponent values which the rhythmic cells have to be elevated in the rhythm-contrast process, different solutions have been presented. As a result, this firstly influenced the decision-making process of the composer. This real time multiple-solution process provides a variety of solutions that allow, metaphorically, to “tune” a musical idea, a musical concept. At the same time, if the results of the processes are not being up to the expectations, this demonstrates that there are flaws in the original concept. The system’s results are always dependable on the questions posed and the variation of the parameters given for the calculations. The computer’s “mind”, in a way functions as a mirror of our thought, an image that many times when composers are busy with the technical parts of the creative process, tend to forget. This demonstration of the flaws permits a fast reevaluation of the original concept in order to bring it up to the level that it can produce the expected results, a process much similar to the way that scientific research works.

Another important contribution is that the results produced out of these processes permit what is generally called a Class Composition. The production of a bigger amount of acceptable results permits a larger amount of variations of the particular piece. In this sense there is not only one way that can be followed for the realization of the work but many, there is not only one work but many variations of a work, variations that can provide different narratives and dramaturgical ways to be followed. As in many cases the focus for a contemporary composer moves away from the “how” to the “what”, to the adequate filtering of the results presented. And this is not something new.

Frank Dietrich mentions that the computer enhances the artist’s ability to set up “thought experiments” (Dietrich, 1987). In opposition to some traditional idea that somehow the use of CAC substitutes the composer’s ability to imagine, think or choose, CAC functions as an enhancement of the composers’ creative mind. It enriches the creative processes by creating the space for a deeper insight, a deeper understanding of the processes used during the composition of a work and on how these processes function practically. Many times, are assigned to the computer tasks that could consume a significant time for a human to realize, permitting in this way the composer to focus into more important issues as the narrative and the dramaturgy of a work. Is this a collaborative process? As in the case with the collaboration with the interpreter, yes it is, to the level that the composer permits these external parameters to influence and constrain his creative work.

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## 5 Conclusions

This study tried to present the different processes and ways of collaboration used during the creation of two works for percussion by Dimitris Andrikopoulos, ‘Solo I’ and ‘Solo for Two’.

All the processes presented arouse various questions related to the constantly changing relationship between composer and performer as well as the new founded relationship between the composer and his recently hired assistant, the computer.

It is more than normal to ask, are we in front of a new reality for composers? Are we in the early phases of a new relation between composers and interpreters? In order to respond this we have to ask ourselves, what is the difference to the past? And when we speak about the past, in this case we speak about the post nineteenth century solitary-genius tradition of western music that has been the predominant one up to our days.

One direct answer comes out of the percussion paradigm and the research on new timbre recourses that has been the focus of this study. The more intense this research becomes, the further from the historically established practices of interpretation we move, the more we look on the extension of the technical and interpretative recourses and the greater the level of specification on the way how the different sound elements of a work can be produced, the more active will be the participation of the interpreter in order to translate effectively and clearly to the score all this new information. The interpreter indirectly becomes as well one of the basic resources for the realization of a piece.

From the part of the interpreter, the more he influences the compositional practice the more we can speak for an individualization of the work created. Many times, this is part of the work itself. In the case of ‘Solo for Two’ the collaboration of the interpreters to the final realization of the work is indispensable. Due to the partially indeterministic character of the orchestration of the piece, it is up to the interpreters to give the final steps to the realization of the work. In a sense, the score is not finished when it is delivered to the players. There is a continuous development of the work when it is related to other interpreters. An ‘open-closed’ work. Metaphorically an asynchronous continuous collaboration between the composer, the work and its future performers.

Another interesting outcome from the collaboration of interpreter/composer, from the interpreter’s point of view, is that he conquers an ‘ownership’ of the artistic material as never before done in other creative processes guided by less shared principles. As he is part of the creation, by making decisions like the ones regarding instrumentation, for example, an idiosyncratic version of the work will be presented every time a new musician plays.

Michael Schrage in his 1990 book ‘The New Technologies of Collaboration’ defines collaboration as *“a process of shared creation, in which two or more individuals with complementary skills interact to create a shared understanding that neither had previously possessed or could have come to on their own”*. In many ways, the collaborative process between Composer-Computer-Interpreter falls inside this broad definition. A relationship that, probably, with the rapid development of technology and the creation and research of new musical resources is only going to be intensified.

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