Negotiating the Musical Work. An empirical study.

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Abstract

In this paper we explore the inter-relations between performer and composer through two empirical studies and the result of this work is intended to lay the ground for a new work for guitar and computer by Henrik Frisk for Stefan Östersjö. By better understanding the composer-performer interaction we also hope to better understand the necessary conditions for a successful performer-computer interaction. We approach the issue using a semiological approach and a qualitative method. In the works studied we find reason to suggest that composition as well as performance interpretation oscillate between constructive and interpretative activities. From this we draw some conclusions that we will attempt to develop and implement in the upcoming collaborative work.

1 Introduction

This article discusses the musical work prior to its ultimate notation and prior to its performance; we discuss the musical work in the Western art music tradition, specifically music for solo instrument and live electronics. In lack of a general terminology we use the term 'mixed media' in this article to refer to a work for instrument(s) and electronic sounds. By mixed media music we refer to music in which sounds produced on acoustical instruments are mixed with sounds from electronic sources or electronically processed versions of the acoustic sounds played back on loudspeakers. One medium of sound production (acoustic instruments) is mixed with another (loudspeakers). This project is part of our respective artistic research projects at the Malmö Academy of Music, Lund University and is an effort to combine reflection, analysis, and empiricism in the framework of artistic research.

Our purpose is to acquire a deeper understanding for the underlying processes in the communication between the composer and the performer and the social significance traditionally assigned to these roles in relation to their operative significance. By better understanding the interaction between the two parties involved in the creation of the work, we also hope to better understand the necessary conditions for a successful interaction between the performer and the electronics. Obviously one of the fundamental conditions for a study such as this is that the performer and the composer are both alive, and that the performer has a genuine interest in performing the work in question.

1.1 Music and notation

The invention of notation has not only given us the notion of the musical work but has also resulted in a split of 'the musician' into two agents, composer and performer (Wishart 1985). A musical work, in the cultural context of the Western art music tradition, is commonly regarded as the result of a process in two distinct phases; one constructive and one reproductive (Nattiez 1990). The composer produces a score, which in turn is handed over to a performer who makes an interpretation of the notation and reproduces it as specified in the score, hopefully quite faithfully to the composer's intentions. The notation constitutes the primary source of information. According to the line of thought in Paul Ricœur's hermeunetic philosophy, the traditional view of the author as a one-way sender of a message is disputed - the author is disengaged from the work by the act of writing (Ricœur 1991) (See also (Barthes 1971)). Similarly, we suggest that the construction of a score-based work consists of dialectic interplay between creation and interpretation, in which the composer, at times, has to approach his own notation by means of interpretation, even during the act of writing. On the other hand the performer does not merely reproduce the work such as notated, performing a score-based work is a co-creative act in which the performer necessarily has to make crucial artistic choices (Kivy 1995; Davies 2001). In other words, notation does not divide composer and performer into one originator (producing the work) and one interpreter (reproducing the work). Interpretation is a part of both creative acts.

2 Method

2.1 Semiological approach

Musical semiology has been constructed with the intention to provide tools for analytical understanding of the musical work in its entirety including the socio-cultural context. (For an excellent overview of the history of musical semiology (Nattiez 1989).) Attempting to move to a lower level of organization than that of musical notation may help to further clarify the issue in relation to a wider sphere of knowledge. (See Umberto Eco's discussion in (Eco 1971, pp.372)).

The three dimensions Molino reminds us that the hypothesis that there is a 'single, well-defined item of information to be transmitted, all the rest being simply noise' is 'dangerously inaccurate and misleading as soon as we move from the artificial communication of information to a concrete act of human communication as a total social fact.' Music, according to him, is a product and not a transmission. Hence Molino suggests a model for symbolic analysis on three levels; 'the poietic, the esthesic and the 'neutral' analysis of the object'. Three modes all representing the same work of art. The poietic level is the constructive phase, the esthesic is the interpretative phase and the neutral is the trace left by the poietic (or esthesic) process (Molino 1990). The tripartite model for analysis has also been proposed by another of the most important advocates for musical semiology, Jean-Jaques Nattiez:

> ...recognizing, elaborating, and articulating the three relatively autonomous levels (poietic, neutral and esthesic) facilitates knowledge of all processes unleashed by the musical work, from the moment of the work's conception, passing through its 'writing down', to its performance. (Nattiez 1990)

In the first empirical study in Section 3.1 we focus mainly on the neutral level whereas in the second study (Section 3.2) we map the processes onto the poietic and esthesic levels of analysis.

2.2 Qualitative method

The video documentation from the collaboration between Love Mangs and Stefan Östersjö consists of many hours of recorded data from different occasions. The selection of video clips to be analysed in the present study was made on qualitative grounds, but not using the typical method of theoretical sampling. The selection was instead based on the pre-understanding (*Vorverstehen*)[1] of Östersjö's, having himself been part of the collaborative process. From his knowledge of the sessions and the recorded material Östersjö suggested some sections that he found especially interesting. This approach to the analysis of video material generated in artistic research has been previously discussed by Östersjö and Hultberg (Östersjö and Hultberg 2005). Similarly, the selections made for the other empirical study was made based on Frisk's pre-understanding of the processes leading up to the different versions of the material in that study.

Qualitative Method in machine-musician interaction The selected video clips were transcribed verbatim by Frisk and Östersjö together. This turned out to be a very useful tool for the sake of keeping a detached and relatively objective point of view on the material. The transcription in turn was used as material for a graph that became an important analytical tool in the study. It was only at the point when the graph was produced that the implications of the study on machine-musician interaction started to materialise.

3 Empirical study

3.1 Harp piece

Introduction The work discussed here is a work in progress. It was commissioned by the Mexican harpist Mercedes Gomez in 2004 for harp and computer. The melodic material used for the piece consists of a small six note fragment that is transposed and repeated creating a tone row of potentially infinite length. Due to the cromaticism of the series the material isn't very idiomatic for the harp. It was chosen because of its inherent structure and its relation to the original vision of the music. But also because of a genuine interest for the process of negotiation between the fundamental building blocks of the composition and the idiomatics of the instrument for which the composition is intended. The process of adapting this specific material for the harp will inevitably involve constructive interpretation, performed by the composer on his own musical idea. In the case of the bars discussed below, much of these negotiations were discussions between Frisk and the performer. It is important to bear in mind that to some extent the notion of what is "idiomatic" and "playable" is relative to the technical approach and instrumental modes of expression of a certain performer. Naturally, many of the solutions and suggestions below relate very specifically to this collaboration and cannot be generalized as such. A certain amount of dialogue between idiomatics and musical ideas is likely to

[1] We use the term pre-understanding as a translation of Gadamer's notion of *Vorverstehen*; any kind of interpretation (of texts) requires an anticipated understanding of the analyzed object. (Gadamer 1960)

occur in any kind of compositional work but the conditions under which this work in progress has evolved makes the internal as well as the external negotiations stand out.

Analysis The following is a discussion on four notations of the same two bars of music. The first (Figure 1) is the original idea transcribed as closely as is meaningful into the atomized rhythmic structure of western notation. The basic musical idea at this spot is to have the same variation of the tone row in three individual parts, separated by octaves, each one following its own unique and precisely notated rallentando.

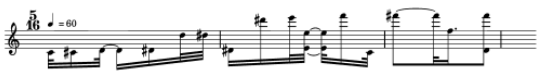

Figure 1: First transcription of the idea into notation.

In the second example (Figure 2) we find the first attempt at transcribing the musical idea for the harp. Pedal changes are not notated. At the indicated tempo, these two bars are still virtually unplayable on the harp. The F flat to F natural pedal change at the end of the first bar is a technical problem as is the G flat to G natural on the second eighth note of the second bar. After working on this passage with the harpist a version in the lines of Figure 3 was suggested.

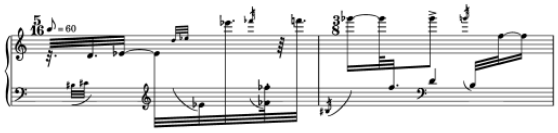

Figure 2: First transcription for the harp.

The third example (Figure 3) is rhythmically less complex. With a few written indications the effect of the slowing down of the music could be approximated. The pedal changes are resolved by means of pedal glisses. However the independent parts and their individual rallentandi cannot be traced in the image that this notation produces, which also means that a neutral analysis of this version will reveal little of the original intentions.

In the final example some of the rhythms have been simplified by use of grace notes and, as in the previous example, some of the pedal changes have been changed into pedal glissandos. This contributes to making the idiomatics of the instrument a part of the counterpoint and a balance, acceptable by both the composer and the performer between "authenticity" (to the original idea) and the playability of the excerpt,

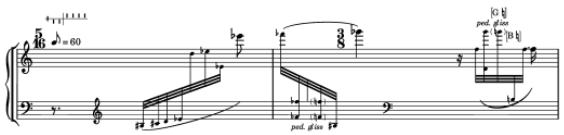

Figure 3: A transcription rhythmically less complex.

has been reached.

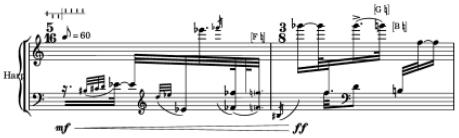

Figure 4: A final version. More idiomatic than the example in Figure 1, but closer to the original idea than Figure 3

Conclusions Considering the esthesic processes in the evolving notation of this passage in the light of the discussion in Section 1.1, it might be worthwhile to consider the significance of Frisk's conceptual vision of the work and how the negotiations between this musical matter and the idiomatic constraints of the harp lead up to a version of the work in musical notation. And further, how the presence of the performer in this discussion provides new impulses for the piece, specifically its notation and rhythmical articulation. The original vision is the trace that constitutes the source for the interpretative, i.e. esthesic, actions leading to the different notations. Though the notation is altered significantly through the four variations the core of the original musical vision remains the same throughout the different varitations; i.e. on the poietic level the negotiations did *not* alter the music. However, in a neutral analysis of these four excerpts we might be tempted to suggest that the process lead to four different kind of musics. In any event, we find that the study shows the recursive nature of the interplay between constructive (poietic) and interpretative (esthesic) processes both in the communication between the composer and the performer, but also as an internal process in which the composer himself is negotiating between the original vision and its representation in musical notation.

3.2 Viken

Introduction. Love Mangs' (L.M.) "*Viken*" for guitar, banjo, e-bow and electronics (2004-05) was commissioned for Stefan Östersjö (S.Ö.) by the Swedish Arts Grants Committee.

The project had several explicit intentions, apart from the mere production of a work for guitar and electronics. One was to use real time processing as the main source of electronic sound, the other was to explore the boundaries between composing and performing; between the performance interpretation of a work and how different kinds of fixity can be established in a work. This should be taken into account when studying the video documentation of this process. It would be a mistake to regard the material as documentation of a typical collaboration between a composer and a performer, as both L.M. and S.Ö. were well aware of the underlying intention to explore the possibilities for improvisation and other interactive ways for composer and performer to approach the process of creating a score-based work with electronics. While studying the video it is also of importance to remember that both parties involved are aware of their process being documented. However, the session is taking place less than two months prior to the scheduled premiere which implies that both parties are strongly focused on the task of getting the piece together.

The transcription has played an important methodological role in our analysis and can be found at `http://www.henrikfrisk.com/documents/vikenTranscript.pdf` and all references in this text to the video refers to sections of the transcription. The video clip is edited; sections with little or no action are simply removed but the order of events are not altered. A compressed version (QuickTime movie) of the edited video can be found at `http://www.henrikfrisk.com/documents/vikenMovie.mov`. For reference, an unedited version of the same passage can be found at `http://www.henrikfrisk.com/documents/viken-noEdit.mov`. The video was recorded during a session in the composer's studio on September 17, 2005.

Material worked out prior to the documented session. It is of importance to the analysis of the communication processes in the video to understand the material that L.M. and S.Ö. had at the outset of the session. L.M. had derived a melody from a filtered electronic sound clip, which originally wasn't intended for "*Viken*". As the process of composing "*Viken*" evolved he wanted to include the sound file as well as the melodic material derived from it in the work. Almost any kind of notation will inevitably be a reduction of the material that is the object for notation. Already when L.M. decided to make a transcription of the sound clip he subjectively chose elements to emphasize and elements to exclude; thus making an interpretation of his own material. He is working in the esthesic domain on the trace left by a work performed in the poietic domain.

What is interesting with the way L.M. has carried out the transcription is that he doesn't even try to establish a connection between the sound clip and its expressive qualities in the notation. Instead he has extracted an ordered set of discrete pitches that establishes a clear tonality (see figure 5). We can say that he re-constructed a musical motif independent from its source. In the context of his working on "*Viken*", what he heard in the sound clip was the melody. An action performed in the poietic domain as a result of working with the material in the esthesic domain but with 'knowledge of the poietics of the work' as Nattiez would put it, the work in this case, not being the context of the sound clip but the poietics of "*Viken*".

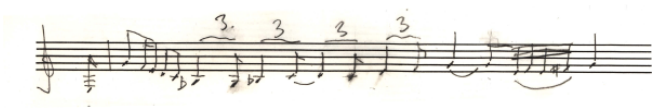

Figure 5: Love Mangs first notation of the melody derived from the sound file.

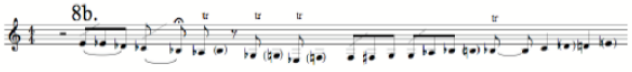

Figure 6: Material 8B from the final score of "*Viken*".

Analysis of the video. The agreed purpose of the session documented in the video, was to work out variations on the melody transcribed by L.M.. His intention was to use this melodic material in the piece.

In the first scene S.Ö. has just played an improvisation on the melody and on L.M.'s suggestion he is notating the new variation (see figure 6). S.Ö. is active in the poietic domain, constructing new material for the piece. He turns to L.M. for feedback, but at this point L.M. appears remarkably indifferent. This is illustrated by the arrow going from the *new variation* box in the poietic field on S.Ö.'s side of the graph pointing down towards L.M.'s side in figure 8. There is a lack of communication between L.M. and S.Ö. (illustrated by the dotted arrow going upwards from the *restless, passive* box) as L.M. does not respond to S.Ö.'s invitation to discuss the new variation. L.M. seems to have accepted the new material as it was played initially and instead takes the initiative (illustrated by the initiative axis going from S.Ö.'s side to L.M.'s), adopting an interpretative approach on S.Ö.'s variation. L.M. is now active in the esthesic field, suggesting to S.Ö. the addition of a fermata in the variation (line 24) represented by the *fermata* box in the graph. Now there is apparent noise in the communication (represented by the dotted arrow going from the *fermata* box to the *new variation* box): L.M. appears to be unclear of where in the notation the fermata should be.

This in turn leads to a misunderstanding by S.Ö. (line 59), taking L.M.'s suggestion to mean several fermatas (dotted arrow from the *several* box to the *fermata* box). Our interpretation of the dialog and the interaction here is that it takes L.M. a while to find the right spot in the notation (by S.Ö.). He seems to point at different spots in the score but in fact he is seeking for the end of the phrase which is where he meant for the fermata to be. Eventually L.M. points it out and for the first time a clear communication takes place, illustrated by the two arrows in the graph going in both directions (line 68 in the transcription). In this segment both L.M. and S.Ö. are acting in the esthesic domain, L.M. in his interpretation of S.Ö.'s notation and S.Ö. attempting to try out L.M.'s suggestion. S.Ö.'s initial misunderstanding of the fermatas seems to lead to the next initiative taken by S.Ö. and is illustrated by the initiative axis going from L.M. to S.Ö. at 75. Again in the esthesic field, S.Ö. suggests that long fermatas could be added to the last notes of the phrase. At first L.M. doesn't get the idea at all (line 78, dotted arrow going from the *long fermatas* box to the *what?* box) but eventually approves of the suggestion (line 85, solid arrow going in the same direction).[2]

This is followed by what seems to be an attempt on L.M.'s part to enter the creative discussion or to reclaim the artistic initiative. The response from S.Ö. is not related to what L.M. says (the dotted arrow going from the *4th string* box over to S.Ö.'s side in the graph at line 94). The passage ends with S.Ö. playing the whole phrase again giving L.M. a look at the end (*glance* box at line 111) without getting a noticeable response (dashed left bound arrow). It is obvious that the communication in both directions is very noisy - this passage is filled with unanswered questions and misunderstandings.

In the next clip S.Ö. is writing down the variation in more detail, inserting L.M.'s idea of the fermata as a normative inscription (line 119). In that sense the initiative is on L.M.'s side, in spite of the fact that S.Ö. is the physically active part with the writing. At this point S.Ö. is not artistically involved, basically just making a note of L.M.'s interpretative idea. L.M. then develops his idea of the fermatas and their significance in this passage, still active in the esthesic domain. The way we analyze this follows a model in which the difference between creative actions in the esthesic and poietic domains is a difference in what class of material the creative act refers to. Nattiez defines these as the psycho-sociology of creation and psycho-sociology of perception respectively (Nattiez 1990). L.M.'s discussion of the fermata emanates from his perception of S.Ö.'s improvised new variation at the very beginning of the video clip and is therefore to be regarded as an esthesic process.

The idea of inserting several fermatas, which in the beginning was a misunderstanding on S.Ö.'s side, is now completely accepted and incorporated in the music as it is envisioned by L.M.. However, just as in the previous passage, S.Ö. doesn't respond to L.M.'s remarks. Instead he starts playing the phrase from the beginning (line 139) and, at the time he reaches the end of the phrase, introduces new material in the form of an extended arpeggio (line 140). S.Ö. regains the initiative and moves into the poietic domain. The communication at the moment when the new material is discovered is immediate and distinct; S.Ö. gives L.M. a glance and L.M.'s humming reply is evidently positive (at line 145). At line 150 S.Ö. takes an interpretative approach, commenting on the sound of the new arpeggio. The clear communication at this spot is underlined by the fact, that for the first time in the video clip, L.M.'s attention turns to S.Ö. and the instrument and away from the music stand.

At this moment S.Ö. starts trying out a new context for the arpeggio which evolved from the previous variation but is of a different character. He plays with the minor seconds that since the introduction of the idea at line 140 have been leading up to the arpeggio and attempts to merge the new arpeggio with a series of chords from L.M.'s material notated prior to the session. At this moment S.Ö. starts to summarize the achievements so far during the day. He starts playing the version of the melody with harmonics. L.M. interrupts him by asking him to "notate the last thing you did!". The remark indicates that L.M. has decided to include the new chord progression in his conception of the piece (see figure 7) and thus his actions move into the poietic field. This leads to a discussion on how to define the passage in terms of musical notation. L.M. suggests that it doesn't have to be all that defined ("Just notate it as a draft", line 201). S.Ö. suggests a strategy for the notation of the phrase which L.M. finds satisfactory. In this last sequence L.M. is organizing the material and performs a typical 'compositional' action still in the poietic domain.

4 Discussion

4.1 Whose work and whose performance?

In the session with L.M. and S.Ö., the immediate impression for a viewer could be that of a complete swapping of the agent's respective roles: Who is the composer and who is the

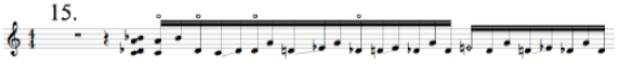

Figure 7: Material 15 from the final score for "*Viken*".

[2] In the final version of the piece the electronics end the section discussed in the session with a massive fermata.

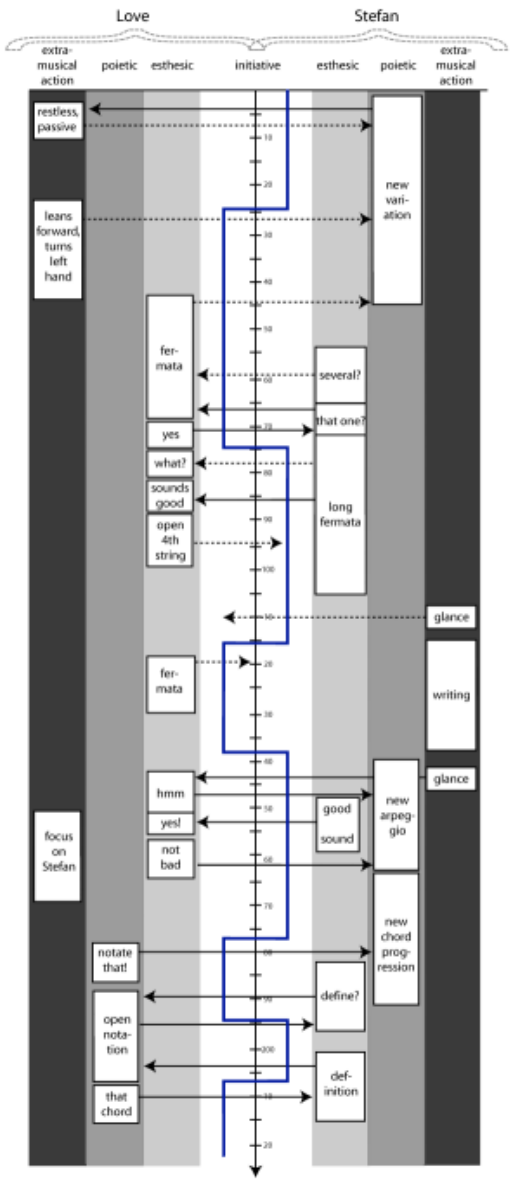

Figure 8: A graph of the interaction between Stefan Östersjö and Love Mangs in the session analyzed in Section 3.2. The scale in the center axis refers to line numbers in the transcription of the video.

interpreter in the first video clips? S.Ö. is writing music while L.M. is passively listening. L.M. suggests the addition of a fermata in the variation that S.Ö. has just notated. Our claim is that, even though we approach a situation in which the relative positions happen to be at their respective extremes, what we see is still within the boundaries of artistic practice both for composers and performers. The observed interplay is an example of how the roles of composer and performer in themselves overlap, and can even seemingly be interchanged in this way.

In essence this is a matter of ontology: On the one hand, what makes up the musical work, and on the other hand, what does performance interpretation amount to? Just as was suggested in Section 1.1 S.Ö.'s actions in the video clips involves a strong element of construction. What performers do is making versions of works, and these versions are in a sense the performer's co-creation of the composer's piece.[3] But what then defines the composer's work independent of its performances? Following the line of thought of Stephen Davies, it is the work-identifying instructions that delineates the work (Davies 2001). For a musical work these instructions are usually regarded to be some of the fundamental aspects of the notation. However in Section 3.1 we observed how the work assumed a number of different representations. In that case, though the notation will be fixed and may eventually be said to constitute the 'work-identifying instructions' we will argue that the work does exist even prior to its notation since, on the part of the composer, it makes up the reference against which the negotiations are held. Furthermore in the case of a piece for instrument and electronics, much of the identity of the work is also specified in the computer programming and in the electronic sounds. This is important to bear in mind while studying the session with L.M. and S.Ö.. The point of departure is a melody that L.M. has derived from a previous tape composition. The musical material that evolved from L.M.'s transcription appears in a context where real-time processing and pre-prepared tape material contributes strongly to the identity of the music.

If we accept the idea that L.M. and S.Ö. are acting as composer and performer respectively and consider how their actions can be divided between the poeitic and esthesic fields, also taking into account the discussion in Section 3.1, we may draw some important conclusions from the empiric studies:

- Composition may be regarded as a complex interaction between esthesic and poietic processes.
- Performers may similarly be said to oscillate between these two modes of artistic activity.

What further follows from this is a possible contribution to the semiological model of the musical work, with a more detailed understanding of the esthesic and poietic processes at play in the process of producing a score-based work in performance.

[3] For a more elaborate discussion on this topic see (Kivy 1995) and (Östersjö and Hultberg 2005).

4.2 Interactivity

The flexibility that we can observe in the interaction between the two agents in the video clip is remarkable. Complete misunderstandings and miscommunication does not halt the process nor does it appear to lead to false conclusions; it is only at a close examination of the flow of events in the video that we can observe the misinterpretations. In the end some of the misunderstandings, such as the idea of adding several fermatas (line 59 in the graph, see figure 8) worked their way into the final version of the score.

The quote from Molino in Section 2.1 can now be read in the light of the performed analysis. Although the misunderstandings can be regarded as 'noise' when analyzed from the point of view of information theory, in the collaboration between L.M. and S.Ö. it rather seems to be an integral part of the artistic process. It shows how the classical notion of the 'creative misunderstanding' really can play an important role in artistic work.

The way the computer part in "*Viken*" is set up, S.Ö. has a pedal that controls the synchronization between himself and the computer. This method of resolving that particular issue in mixed media music is not uncommon. It relates to the notion of synchronization as purely a technical issue; a unidirectional stream of communication. Though the occasional pressing of a pedal does not resolve the critical issue of rhythmic alignment and musical timing on the micro level, it does keep the musics of the two parties aligned in the larger structural meter. That is; when it comes to synchronization of preprepared elctro-acoustic material with acoustic instruments what is achieved is a series of meeting points and more seldom an integrated flow of events. Now, in the context of the composer/performer interaction (see the analysis in Figure 8) there is a striking lack of synchronicity between the different actions. There is an evident and independent flow of the initiative, of the constructive and of the interpretative input between the two agents.

Would it be possible to use the knowledge gained from the analysis of the video in the design of an interactive interface for a mixed media piece to be performed live? Before drawing any conclusions it must be stressed that the session with L.M. and S.Ö. is obviously not performed under the same conditions as are required for a performance of a piece of mixed media music. When it comes to real time electronic processing and synthesis the processes quite naturally translate themselves into the language of esthesic and poietic. In general - and somewhat simplified - we can assert that processing of acoustic sound input is an interpretative action and the generation of new sonic material is a constructive process belonging in the poietic domain. The actual program, and the code and the run-time instructions that constitutes it, can be analyzed on the neutral level. Finally, as has already been asserted, the program or computer part may affirm important aspects of the work-identifying instructions that a graphic representation of the computer part may not harbour.

5 Conclusions

Following are some conclusions that we may draw from these studies.

5.1 Noise in communication may not be a problem.

We may be used to thinking of a computer based interactive system as a cybernetic system in which information is transmitted from point A to point B and where great care is taken to avoid noise in the transmission. Think of the pedal that S.Ö. is using in "*Viken*" to step through the piece. If the signal going from the pedal to the Max/MSP patch running the piece was noisy or ambiguous it would probably be useless. 'Almost a pressed pedal' is not a valid message in that system.

In our joint project we will attempt to avoid the kind of binary oppositions that require a clean control signal path (such as the pressing of a pedal) in the design of the interactive system. It is our belief that this can be achieved in approaching the issues differently but more experiments have to be carried out. Obviously this will also affect the way the instrumental part is written.

5.2 Direction may be more important than synchronicity.

A few remarks needs to be made regarding this if we want to successfully transfer this knowledge to a practical musical situation:

- In the video S.Ö. and L.M. are not performing a musical work in real time but interacting and improvising in the process of compositional work. Time is not an issue - the result is not affected if it takes them 15 years to finish the process.
- In performance musical time is an integral part which always has to be taken into consideration.

Accordingly, the musical synchronization and low level time scale has to be dealt with; but on the structural level above that, perhaps a sensitive interactive real time performance system can deal more freely with time and that such an approach will result in a more natural interaction from the point of view of the performer. We believe that this kind of flexible machine-musician interaction calls for flexibility also

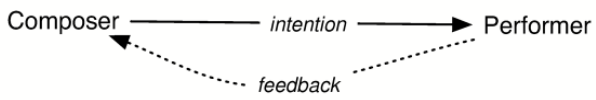

Figure 9: Intention in the documented session between S.Ö. and L.M..

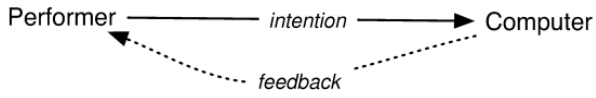

Figure 10: Intention in the performance in the suggested project.

in terms of musical notation. The concept of the open work is one of the early ideas of musical modernism and obviously not a new thing in itself (Eco 1968). In other words there is a great deal of experience to be gathered from these early experiments. However, our attempts at creating a dynamic score, a framework of musical notation in which different paths can be taken, is not implicitly related to the stylistic and esthetic grounds of the open work in the modernist era but instead related to its impact and operational function in machine-musician interaction today.

5.3 The initiative may shift independently of the esthesic and poietic processes.

What this may translate to in the context of an interactive real time performance system is that no matter what the current process is, and regardless of the current mode of interaction, the initiative can shift back and forth between the performer and the electronic part just as it does in the documented session between S.Ö. and L.M..

The way the idea of the composer has been deconstructed in this study, what remains of it is 'the one with the intention to create' (see Figure 9). On a higher level of intention, L.M. is the only agent aiming at creating a musical work named "*Viken*". S.Ö.'s higher level intentions are towards performing L.M.'s work once it is finished and contributing to the process of completing it. In the case of a performance of a mixed media work we find that the same model transcribes to the level of performer and computer. The flow of intention in the performance is on the performers side, the computer being the responding part (see Figure 10). In other words, the attributes we assign to the composer in the documented session belongs to the interpreter at the stage of performance.

5.4 Future work

As already mentioned this study is intended to lay the ground for a collaborative project - a piece for guitar and computer by Henrik Frisk for Stefan Östersjö. It is our belief that thanks to the research performed in this study we are both able to enter this project with a slightly different view on our respective practices. The concepts summarized in Sections 5.1-5.3 will form the conceptual outline for the interaction between the performer and the computer. This will give us a chance to further evaluate and refine or denounce the principles sketched out in this study in the context of our respective practices.

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