

Overview and conclusions of the Music Interfaces Panel Session at the MOSART Workshop (Barcelona, 2001)

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Abstract

In this paper is presented an overview and conclusions of topics and ideas discussed in the e Music Interfaces panel that took place during the MOSART Workshop – Workshop on Current Research Directions in Computer Music - Barcelona, November 17th of 2001.

The invited members of Panel were: Antonio Camurri (DIST-University of Genova, Italy); Sergi Jorda (IUA-Pompeu Fabra University in Barcelona, Spain); Roger Dannenberg (Carnegie Mellon University, Pittsburgh, USA); Leonello Tarabella (CNUCE/C.N.R. in Pisa, Italy).

The Chairman for the Pannel was: Johan Sundberg (KTH-Royal Institute of Technology, Sweden).

The panel had the duration of approximately one hour and it was structured in 3 parts: An introduction to the theme of the panel by the Chairmen; A five minutes introductory open statement by each one of the members; An open discussion on the introduced topics and ideas opened to the audience.

1. Introduction

This panel focuses on scientific as well as artistic research perspectives on interactive systems. Main issues that will be discussed include the following:

Interaction Metaphors and Mapping Strategies: from the "musical instrument" metaphor (interaction with an object, immediate cause-effect response), to "dialog" paradigms (interaction as a dialogue with human as well as virtual agents; virtual agents can be auditory, and possibly visual, robotic in a Mixed Reality scenario).

Can models of Expressiveness, Kansei, Emotion influence/improve interaction metaphors, integration of modalities, and mapping strategies? How can such models contribute to more effective interactive systems?

Which methodology and evaluation methods to verify and consolidate results from scientific research?

Are state-of-the-art sensor systems mature enough to capture the physicality, the

sensibility, the expressive content from music performers, dancers, and spectators...?

Reports on good examples and lessons learned from experiences with artists (composers, performers, dancers...) can be very useful as feedback for scientific research. Which models demonstrated successful from artistic productions?

2. Opening statements

The opening statements started with **Roger Dannenberg's** presentation, which focused mostly on his personal perspective of what are the main problems and new directions on music creation using interactive systems.

Some of the main difficulties are that enabling technologies have not yet reached a desirable point, real time systems are difficult to create mostly due to the constraints of existing tools like for instance the MAX/MSP software, programming languages and related devices are not easy to setup or the fact that as of now

it is not yet defined a standard I/O portable interface for low level music input and output. Some new directions that should be pursued are for instance the integration of the Look Ahead concept (always present in the way musicians plan and execute their compositions and performances) with sensor technology, the use of artificial intelligence techniques and again, how this could be intergraded with sensor technology, trying to improve existing technology with the use of visual content, the use of the web (on which the work of Sergi Jordá is a reference) ^[1] or the use of robotics.

The following opening statement was by **Antonio Camurri** that started of by planting the question:

Why interactive performances are so bad?

According to Antonio Camurri one possible answer is that so far composers and performers have managed to learn how to control sound in space, however it is still necessary to learn how to manage action in space.

This is an extension of musical language that is very difficult to manage, and the main issue is to find deeper correlation between music language and gesture.

There is consolidated research in the field of controlling action in space, like for instance the work presented in the MOSART workshop by Sergio Canazza e Giovanni de Poli ^[2], however it is necessary to integrate this knowledge in musical performance.

Antonio Camurri also announced the Gesture Workshop for the spring of 2003 that will take place in Genova Italy and will be a good opportunity to consolidate the community of researchers interested in this field.

Following up **Leonello Tarabella** started his presentation by answering Antoio Camurri's opening question with another question:

Why is computer music not so spread out as other forms of music? Maybe because real time performance is so bad.

For Leonello Tarabella we are at the "Stone Age" of this culture, and that is quite clear because so far it is not easy to define how to use the computer as an instrument, the way it can be done with traditional instruments.

The effort that must be made is towards fulfilling musicians needs, realising that technology developments are the driven force to the creation of new movements in music, like it happened for instance with rock music that had its origins on the use of the electric guitar has a new instrument made possible by technological developments.

The final opening statement was by **Sergi Jordá** that started of bay claiming that he was moved to use interactive systems with computes to create music because he was a bad jazz performer.

Sergi Jordá agrees with the fact that there are many constrains in the existing languages to develop interactive systems, and this has the effect of increasing the complexity of the mapping.

One of the most common problems, caused by the fact that controlers are often separated from the synthesis engine, is that when designing such a system you cant build a sophisticated controller without previous knowledge of what you are about to control. To address this problem one has to think about parallel design of the input and the output of the system.

On the topic of current state of sensor technology, Sergi Jordá points out that the question is not whether sensor technology is mature enough to allow de creation of interesting music, but instead one should think that technology is never enough in any case, and so we should use what we have.

Computers are not instruments, but a paradigm to create instruments with infinite possibilities, and therefore we can have complexity in this area, however what we really need is simplicity.

Another important point is that the current state of technology allows the creation of instruments that can be performed collectively by several users, that often are untrained musicians.

In this case one should consider that the instruments should be designed to be simple and very constrained.

On the Sergi Jordá's opening statement, Roger Dannenberg commented that although he agrees that we don't need to wait for technology to start creating and that we should use what we have, one should be aware that we are close to the arrival of a revolution in sensor technology.

Sergi Jordá replied that this could lead to an overload, since we have not used what we have yet.

3. Open discussion

The Chairman of the Pannel, Johan Sundberg, introduced the open discussion session proposing as a theme the topic of mapping, stating as an example the difficulty of mapping voice which is the most common instrument. Is one to one or many to one the best strategy?

Sergi Jordá believes that at least the many to one mapping strategy is flexible enough, but the focus should also be on another critical point, which is the feedback that is always present in traditional music instruments at a physical and visual level and that hardly exists in sensor technology.

Another important point is that we don't have to think that with computer instruments we have to map physical gesture into sound, but we can map into higher-level musical forms.

Leonello Tarabella pointed out that the mapping is the critical point to actually create an instrument, given as example, that the "Twin Towers" device presented earlier in the conference^[3] is a controller that can map to different synthesis engines, however a Theremin is a musical instrument since its coupled with a fixed synthesis engine.

Roger Dannenberg added up that also the concept of a musical instrument comes from that past and it's not a requirement that we must follow this model.

The audience addressed one final comment to the panel, pointing out to the fact that music has the ability to raise emotions, however for a new instrument to succeed it should not only be able to raise the emotions we have inside, but it should also create new emotions.

On this topic **Leonello Tarabella** states that at the current moment the direction being followed in new musical instruments design should be towards the traditional musicians performing paradigm, and only future generations will succeed in a different approach.

Sergi Jordá adds up that by performing mouse music, he found out that the interface he designed for the general community of Internet users is the one that he likes the most.

As a final statement **Roger Dannenberg** pointed out that when the composer designs the controller it has a tremendous influence over the final result of the piece and the performance.

4. Conclusions

From the discussion on this panel some strong ideas and questions that were raised could be considered as references and issues to keep in mind on future research work in this field.

One of the strongest ideas is that mapping is a crucial problem.

One could think of mapping as part of the composition or part of the instrument and therefore it has a tremendous influence in the performance.

Mapping strategies depend on the context and the purpose of the interface, and for general purpose musical instrument a simple mapping strategy is sufficient, however in a more complex situation, like controlling action in space during a performance, one needs, for instance, to integrate knowledge about musical performance, and therefore increasing the complexity of mapping. This knowledge should be incorporated on the mapping strategy as an extension to the musical language.

It is clear that the study of mapping strategies is, still at an early stage and that the definition of mapping strategies for different contexts, applying results from research work related with expressiveness analysis and control technology, has tremendous potential.

Another strong question that was raised, was if the environments to create music or music applications should or should not be constrained?

The overall tendency is that the more general is the users universe that will use the controller, the most constrained it must be. On the other hand controllers designed for smaller groups usually constituted by experimented musicians are much less constrained and are more flexible.

However it is clear that there is a need for more scalable environments, which can be constrained at an entry stage, when the user/performer/composer first starts to use the system, and that after a certain point can be configured to be unconstrained and flexible enough to allow an implementation close to the original concepts of the musician.

A final idea that was present in this panel session was that although current work in this field is aiming more towards the need to expand the existing paradigms for music performance and composition, the true potential of this media in order to create new forms of musical language could be unveiled by looking for new paradigms. These paradigms might be limited by the current state of technology development, but must not necessarily be alike the traditional musical instrument model that we know.

References

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