Feel-in-Touch!: Imagination through Vibration

A Utopia on Vibro-Acoustic Technology, Puppetry and Multimedia Art

Oguzhan Ozcan

Problematic of Imagining in Art

As known for a very long time, we can animate surrealistic characters, things, places and events through advanced visual and audio technology. We can create three-dimensional virtual things and places through optical techniques. We can help user manipulate compositions in visual reality using devices such as electronic glove. We can feel actions in display through vibration technologies.

Therefore, it is possible that we obtain interactively sophisticated and effective art works whose visual quality is remarkable.

Yet, there is an important point to consider: many of these interactive spaces which represent surrealistic things and events in a more realistic way diminish our *imagination* and provide *illusions* for us to perceive things in one dimension.

As we know that, various cultures looked for realism in their works of art as long as they existed. On the other hand, consciously or unconsciously, they sometimes attempted to create an atmosphere of imagination rather than that of illusion. These kinds of works encouraged us to imagine more and to think more creatively.

We can examplify this assumption in various ways:

Perceptions of definitions, things, places, events and emotions in oral and written literature change from reader to reader. In drama, especially in the art of miming, abstract and concrete concepts are expressed to encourage us to imagine them only through human body. In the art of *picture-story telling* which can be traced far back into old Indian culture, narrator's or

story-teller's verbal and bodily expressions help us perceive and imagine stable visions as if they are active (Mair 1998).

We can increase the number of examples. We understand from the researches in these kinds of art that the relationship and balance between *imagination* and *illusion* in art is one of the most important *aesthetical* issues of today's art. If we would like to continue to help the society develop creative thinking, we should provide solutions to this issue using today's representation techniques.

Setting off from the above assumption, this article questions how it to increase the degree of imagination in an interactive work of art.

Enhancing Imagination in Interactive Media Art

Naturally, media art which consists of **audio - visual** and tactile technologies uses virtual reality intensively. Due to this fact, *illusion* is always strong, whereas triggering imagination is not very easy. However, it is not impossible to suggest alternative methods and compositions.

We think that two compositions are alternative in Interactive Media Art:

The first one is creating a virtual landscape only through audio and tactile technologies. This construction has been used for a very long time in interactive radio plays. One of the most important works in this fashion is *The Wheel of Fortune* by Nick Fisher.On September 19th and 20th 2002, BBC Radio 3 and 4 broadcasted two versions of this play. Primary emphasis in the play is on encouragement of listeners to imagine the place, characters and events through stereophonic sound effects. In addition, listeners can switch between each others at key points, effectively creating their own plays. (In this case, switching has the role of touch). For

listeners tuning on the Web, the website carried a third stream. There are potentially billions of ways of listening from start to finish. (Fisher, 2002)

The second one is the composition, through which imagination created in an interactive work of art, which has visual and tactile technologies except sound which is only felt.

While suggesting this composition we immediately recall silent movies because one of the most important aspect of these movies was imagining all actions and events for they had only written explanations. Briefly speaking, written explanations are not themselves enough for us to understand the music and sound in silent movies. We should provide alternative solutions to overcome this difficulty.

In this article, we would rather focus on the second composition. In other words, we are going to search for possibilty of any contribution of perceiving sound through alternative ways except hearing to imagination in an interactive work of art.

A Review of Current Research on Feeling Sound

Two basic group of researches are made on feeling sound:

The first group consists of the researches on Vibrotactile Communication Systems. In these studies, researches work on developing appliances which help people with hearing deficiency feel sound through mechanical vibration applied to different parts of their bodies. These appliances are generally communication devices which help people with impaired hearing to recognise the sounds related to TV, cinema, phone and their surroundings.

Technologies / techniques mentioned above, are also attempted to be used in interactive media projects designed for healthy individuals to enhance perception. One of the last examples in Vibro Tactile Aid is ComTouch project by MIT Media Lab. Tangible Research

Group. In this project, they developed a device that supplies remote voice communication with touch, by converting hand pressure into vibrational intensity between users in real time (Chang 02). This concept is demonstrated in mobile telephones.

Vibro Tactile Aid is attempted to be used for Interactive Cinema. In these kinds of projects, special belts, worn on different parts of the body, have been developed in order to help the users feel sound through vibration. Eric Gunter's *Cutaneous Grooves* project is a good example to this (Gunter 01). The *Cutaneous Grooves* is a showcase of the idea of "tactile composition". It is essentially a concert for the skin; a dance that you feel rather than see. A space is set up for ten people with an individual vibrotactile stimulation device for each audience member. During the show the audience would experience choreograhped vibrations against the surface of the body. Most of the pieces were accompanied by music while some were exclusively tactile. (Gunter 91).

In our case, we can see that it is possible to enhance imagination through similar techniques in an interactive work of art which combine visual and tactile compositions. However, these systems which are still experimented in laboratories are expensive and are not as much practical as watching movies on TV or in the cinema. In addition, the fact that these systems require fixing some appliances on the body of the audience and reading instructions before use shows us that dissemination of them will be difficult. Apparently the same problem has already been experienced in virtual reality technologies. In addition, the fact that systems are expensive, and that some equipments such as helmets and electronic gloves should be worn, prevents their dissemination although VR technologies are highly advanced and help us create an effective virtual atmosphere.

Another research and application area is the method of *Vibro Acoustic Therapy* which is developed for the people with impaired hearing. In this long studied method, vibration systems are developed to help these people perceive rhythms of music on different parts of their bodies. In order to realize this, special bed, chair, flooring, upholstery and wall panels are designed to transfer vibration through the body.

Headphones linked to a normal hi-fi system are located in a Vibro Acoustic furniture covered with a plastic or fabric clothing in order to help the body perceive resonance of the sound. The person touching the furniture can understand the nature of the sound and the rhythm of music through the vibrations transferred to the surface of covering. Olave Skille and Tony Wigram are the pioneers of this method (Skille 92; Wigram 96).

There are two different functionings. In the first case, music is played in the headphones and the vibration in the object is unrelated to the music. In the second case, the vibration is driven by music itself (Dalgarno, 00).

There are also some suggestions regarding the design of a Vibro- Acoustic Furniture as an industrial product (Chamberlain, 99). Beside the leading example of Petri Lehikoinen's chair in Finland, some Scandinavian firms pioneered in marketing and manufacturing Vibro-Acoustic furniture (Hooper 02). However, today, products by American Somatron Corporation (Somatron, 03) and British SoundBeam (Sound 03) are on sale much more than those of their pioneers.

The most common of all these are the products of Somatron. The firm manufactures furniture in various forms such as wall, upholstery, bed and chair for clinical application and everyday

use. These products can be used both by healthy people and people with impaired hearing for therapeutic reasons. In Somatron products there are four headphones. Two of these are located near the user's head to hear the music, one of them is located in the furniture near the back of the user and the other one is located near the user's calf. Beside the sound vibration, music can also be listened. On the other hand sound of the music can completely be turned down. When the music is down, the vibration coming off the headphones is so low that other people around the user cannot disturbed it.

When compared to Petri Lehikoinen's chair, in Somatron's products, the difference in the increase and decrease of the sound cannot be understood, blend of music cannot be felt in a standard application, either. (Hooper, 02)

Various researches are made for Somatron products especially focusing on improving the perception of blend of music. Some of the researchers have found out that the top of the lungs at our back perceive the sounds better than the other parts of our body. Depending on this finding, they suggest that when vibrations of separately recorded sounds of more than one instrument are transferred through a Somatron furniture, people with impaired hearing can perceive a multi-sounded musical work (Dalgarno, 00).

In our case, since we focus on creating a work of art within the confines of existing equipment rather than developing a new product, we do not discuss about performance of these products. Therefore, while we develop our scenario, we try to develop a *utopia* depending on the modules and limitations of Somatron's Vibro-Tactile Room.

Imagination and Interactivity in Related Art Works

As we mention in the beginning, our goal is providing solutions to energize imagination and interaction in an interactive work of art. Seeing the issue in this light, we remember that traditional puppetry play put forward different solutions related to imagination and interactivity through its own limitations concerning method and materials.

Art of puppetry sometimes sets up a realistic approach to narrate the concept whereas time to time, it also uses very simple forms in order to express its subject matter. For instance, in the traditional Turkish shadow puppetry, human and animal figures do not use all their joints. The actions in the descriptions are limited. The actions are imagined by the audience through puppeteer's narration and sound effects. This may be why shadow puppeteer is called hayali (dreamer[1]).

Today, modern art of puppetry create imagination assigning meaning for the objects. For example two simple boxes may turn into Romeo and Juliet when they take their role in the art of puppeteer. Here, what puppeteer does is to help the audience create their own Romeo and Juliet through action and sound effects provided for the boxes.

[1] **Hayali**. Original Turkish word is an adjective which implies what is imagined, dreamt or what is not real. Since the word is used as a noun to define a craftsman in the art of puppetry, we suggest that it should be read as the person who sells / creates dreams rather than the person who dreams. (translator's note)

Figure-1 A Scene from "Romeo and Juliet", Student Preformance, International Institute of Puppetry, © 2003 Christophe LOISEAU

Beside creating imagination, tactile relation between the audience and the art was attempted in a performance of American Indian Art of Puppetry long before the multimedia systems. American Indians developed various settings in order to protect their children from wild animals. In these settings, events concerning the animals were drawn on a 'separator' through simple lines and icons. In some parts of the picture, for example a snake outstripped the frame as a three dimensional puppet. The puppeteer behind the separator moved these puppets occasionally. If necessary the story drawn on the separator was presented by a story teller to the audience of children in front of the separator. In an appropriate part of the story the story-teller encouraged the children to touch the puppets placed on the drawings in the separator. When the children touched them, the puppeteer behind the separator moved for instance the snake puppet and hissed like a snake as the story-teller warned the children not to play with a snake in case they could be harmed (Geertz p.229).

American Indian Puppetry has an imaginative and interactive structure which is also very subtle. Symbolic expressions and puppets on the curtain do not themselves imply any meaning. However, the audience is encouraged to imagine the concepts, which story-teller and puppeteer want to confer, through story-teller's voice, actions of puppeteer and sounds he produces.

As far as our utopia is concerned, we also depend on the basic composition which is used in Turkish Shadow Puppetry and American Indian Art of Puppetry as we mentioned above. This type of composition has these characteristics:

1. Actions / Movements are limited.
2. Materials are symbolic but they do not imply any meaning without sound effects.
3. Composition includes sound but also necessitates tactile elements to comprehend

Utopia of *Feel-in-Touch!*

Feel-in-Touch! is basicly a multimedia work in which the audience is expected to set up a composition and to interpret it through visual and tactile clues which he/ she chooses.

Feel-in-Touch! is manipulated by two spectators-users. There are a *control panel*, a *feeling wall* to lean and a big *main screen* in front of each of the spectators-users. The spectators-users share the main screen. There are two characters styled from Karagöz and Hacivat[2] figures on the main screen. Five meaning and five comment icons are located on the control

[2] Karagoz and Hacivat are two famous figures in traditional Turkish Shadow Puppetry. They are two friends but they always quarrel because of lots of petty things. The story generally is drawn around their conversations. Karagöz is more traditional and less refined than Hacivat who is more cultivated and intelligent.

panel for the choice of the user. Feeling wall is a product of Somatron Vibro-Acoustic Room which is mentioned and detailed above.

Interactive performance starts when two spectators-users take their places and lean against the feeling wall. There are two Karagöz and Hacivat figures styled and symbolized within the starting composition on the main screen. Both figures seem to be in a conversation. This is implied by the spectators-users through the actions of the figures, sound effects coming from the feeling wall and speech bubble placed on the screen. The spectators-users could not understand the fact that the figures are Karagöz and Hacivat because there are not any elements in any compositions in the performance, which could be directly recognized. The spectators-users should assign a character and a meaning to them in his imagination, which is the main goal of the composition.
Each of the spectators-users manipulate one of the figures through *control panel* in front of him/her. Thus, each of the spectators-users take the role of one of the figures as in a puppet show.

Each spectator-user places one of the *meaning icons (*war, love, child, car, song) in the *control panel* into the speaking bubble in order to set up dialogues between the figures (themselves). It is important to point out that act of choosing the meaning icon and the sound effect related to the icon from the *feeling wall* are parallel and can be understood clearly by the spectators.

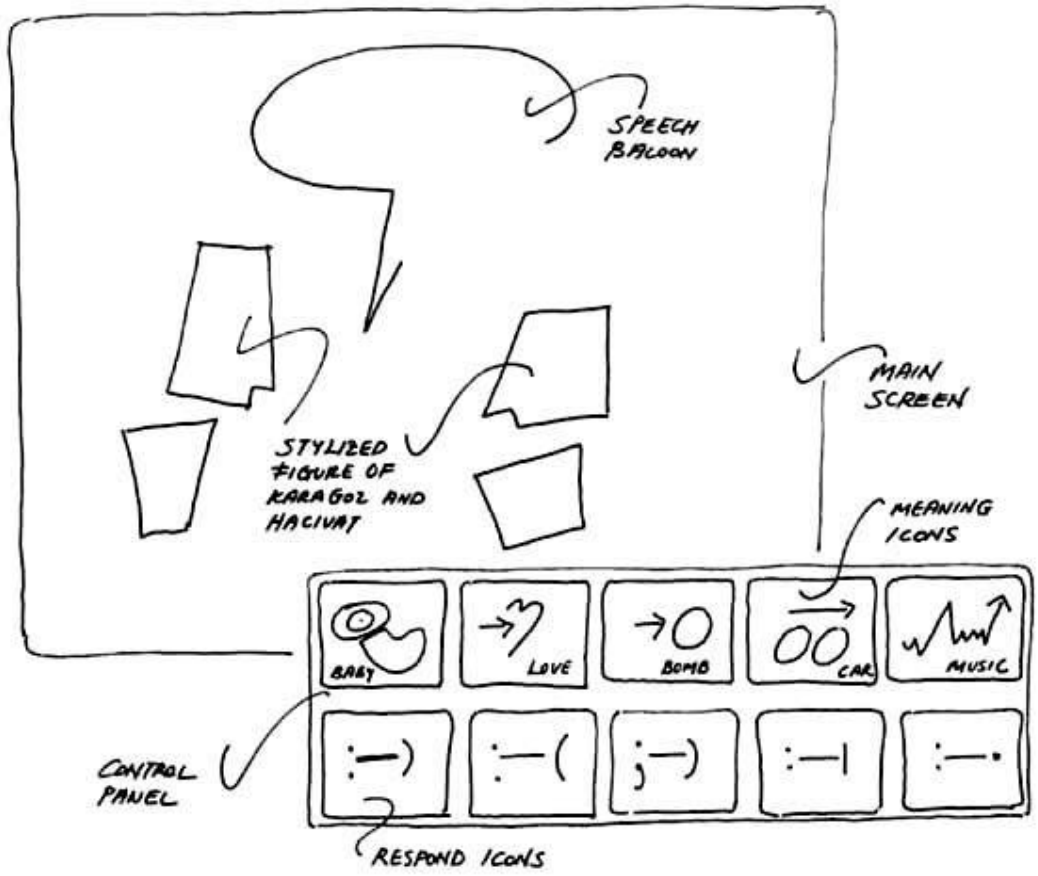

Figure 2- Main Screen and Control Panel, ©2003, Feel-in-Touch, Oğuzhan Özcan

The *meaning icons* are designed not to provide a visually direct recognition of them. Therefore when the spectators-users look at them they try to guess about their meanings. As the spectators-users place one of the icons into the bubble, the sound effect produced by the feeling wall will only give some idea about the nature of the icon. The spectators-users will sometimes fail and sometimes guess correctly.

While one of the spectator-user assign a meaning icon, the other spectators-user tries to understand this icon through the sound effect he/she feels at the feeling wall, and he reacts to the former spectator assigning one of the *comment icons* (joy, surprise, worry, no comment, wink) in the control panel to his figure. *Comment icons* have been chosen from sign jargons in the internet chat so they are completely clear in meaning. The figure assigned with a comment

icon acts on the screen appropriately as the comment necessitates and the spectators feel a suitable sound effect on the feeling wall. The comments may sometimes oppose to or may sometimes agree with the meanings.

The spectators-users are not given any instructions from the very beginning till the end of the performance. Neither the styled Karagöz and Hacivat figures, nor the meaning icons themselves have meanings. The spectator-user is supposed to choose the meaning icon, place it on the main screen, feel the sound effect related to the icon and react through comment icon in order to realize imagination process. Consequently, all visual and tactile perceptions have their meanings in the imagination of the spectators. Thus, a dialogue emerges between two individuals through abstract images and vibro-sound without speech. The spectators try to understand each other through visual and tactile perception not through spoken language.

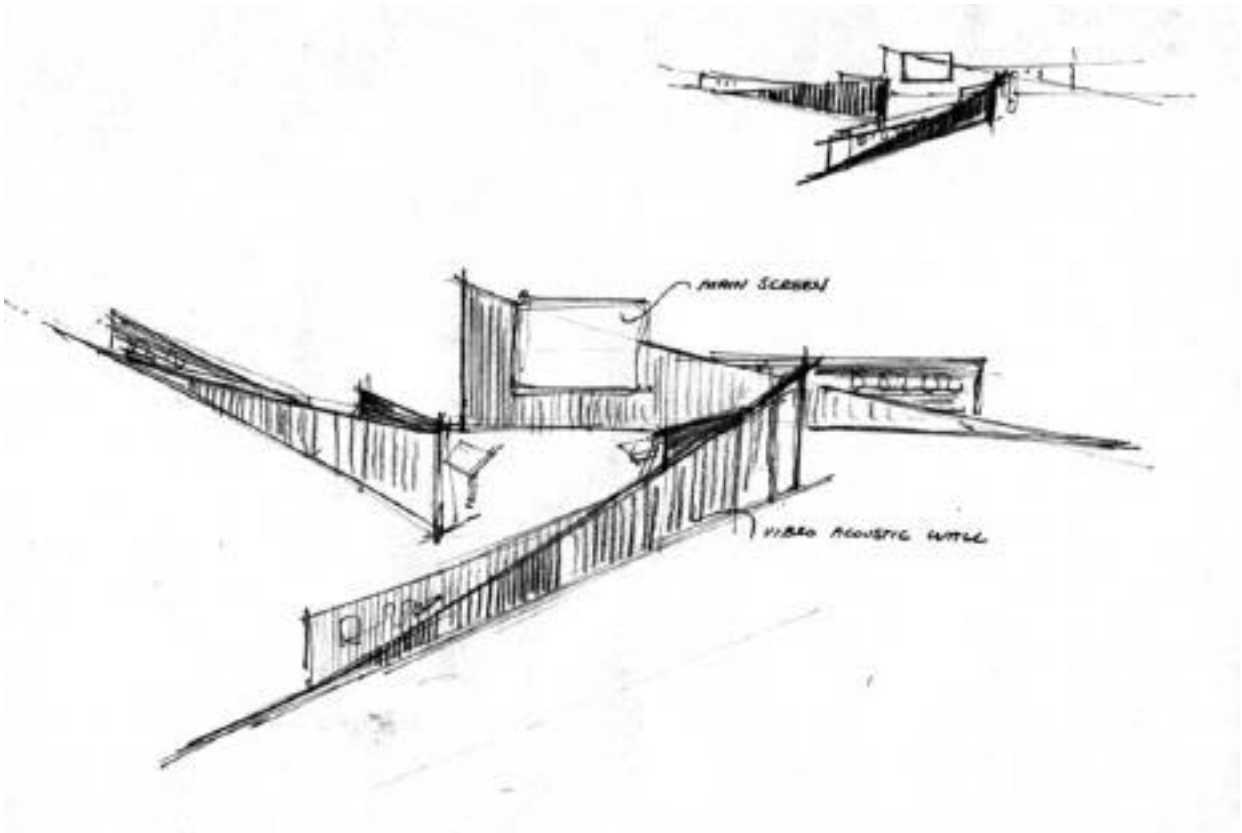

Figure 3- Principles of Stage Design, ©2003, Feel-in-Touch, Oguzhan Ozcan

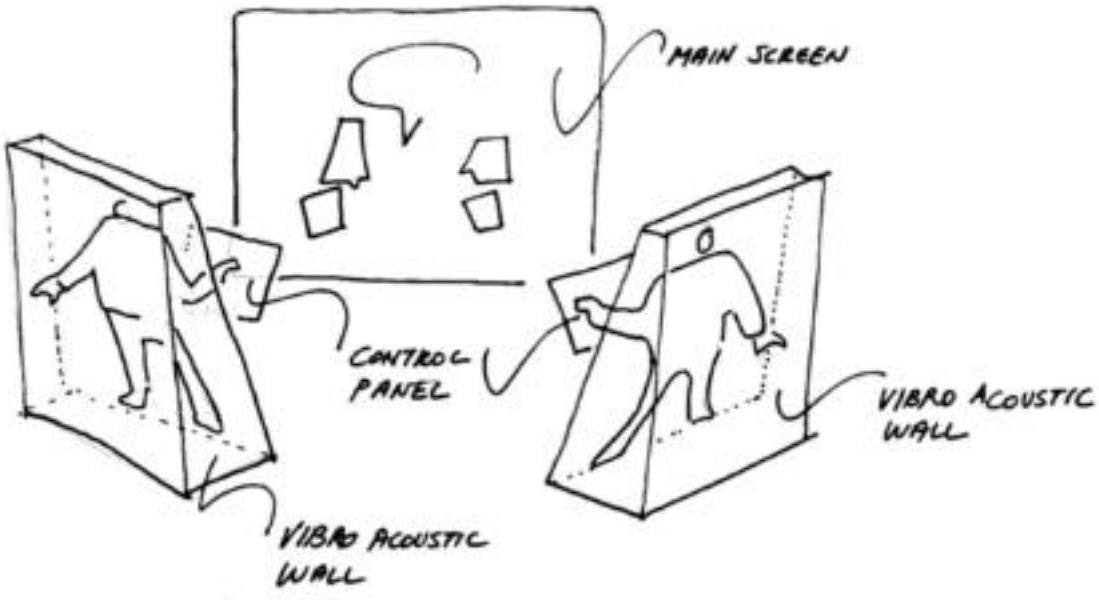

Figure 4- Principles of The use of Vibro Acoustic System , ©2003, Feel-in-Touch, Oguzhan Ozcan

Conclusion:

In this utopia of us named ***Feel-in-Touch!*** and in our research, we tried to realize a kind of *brainstorming* about the nature of an imaginative composition and structure in one of the recent popular forms of art: the interactive media art. This work is not an executed one but it is an idea that we entertain in our minds and talk over it. We think that it carries significant suggestions for the future of multimedia art.

These kinds of brainstorming activities suggest various advantages:

First of all, we generally use all the advantages of audio-visual technology as we design a multimedia work. Virtual reality helps us express all the meanings. We are also very careful to design clear and precise icons in a multimedia product. These facilities help us significantly to transfer our messages as artists.

Certainly, we design a great number of experimental designs in this traditional structure. However, in this work of us, we have become aware of a fact that when we ignore audial or visual elements of a composition, the challenges we come across considering the narration of the message may provide us with unique visual flavor and ideas. In addition, using the old methods that puppetry found long before multimedia inspires us to better adventures in interactive media art world.

Consequently, we can see the fact that imaginative nature of a work of art is important regarding its role to encourage society to think more creatively. We think that this is one of the most important outcomes of this study.

Acknowledgments:

I am hugely thankful to Dr. Zeynep Altun of Neure Science Department, Albert Einstein College of Medicine in New York for the idea and helping me contact with related people in the States. I owe thanks to my wife Meltem Özcan for her support. I am also grateful to Brigette Behr of International Puppetry Institute in France for her extraordinary support in research which was realized under Unesco-Aschberg. Lastly, I thank Sophie Bon and Florence Dekeyser for scanning their private collections and their helps.

Bibliography

1. Chang Angela, O'modhrain Sile, Jacob Rob, Gunther Eric, Ishii Hiroshi (2002). "ComTouch: Design of Vibrotactile Communication Device, Design Interactive System 2002, London, pp.312- 320

2. Chambarlain Paul, Roddis James, Press Mike (1999). "A case study of design-led collobrative new product development in the field of vibro sound therapy". Third International Conference of The European Academy of Design. http://www.shu.ac.uk/schools/cs/cri/adrc/research2/page_link_pages/vibrosound.pdf (accesed in 05.05.03)

3. Dalgarno G.(2000). " Good Vibration :A vibroacoubtic to improve perception of music by deaf people and for generela therapeutic use". ICMPC Proceedings http://www.tomarse.f9.co.uk/etsam/dalgarn1.htm (accesed by 09/05/2002)

4. Fisher Nick (2002)http://www.eastgate.com/HypertextNow/archives/Fisher.html http://www.bbc.co.uk/radio4/wheel/

5. Gunter E. http://ic.media.mit.edu/icSite/icprojects/CutaneousGrooves.html

6. Hooper, Jeff. (2002) Is VA therapy, music therapy? Music Therapy Today, http://musictherapyworld.net (accesed in 05.05.03)

7. Lahtinen Ritta (2003). “Music Floor”. http://www.kollumbus.fi/ritta.lahtinen/music.html (accesed in 05.05.03)

8. Mair Victor H. (1988). Painting and Performance: Chinese Picture Recitation and its Indian Genesis, University of Hawaii Press, USA.

9. Skille, Olave (1992). Vibro Acoustic Therapy : Manual & reports. Levanger, Norway. ISVA

10. Somatron, Somatron Coporation, USA http://www.somatron.com (accesed in 05.05.03)

11. Sound, The SoundBeam Project, UK. http://www.soundbeam.co.uk (accesed in 05.05.03)

12. Wigram Tony (1996). The effects of Vibro Acoustic Therapy on Clinical and non- Clinical populations. PhD Thesis. http:://www.members.tripod.com/~quadrillo/VAT/tonyphd.html

13. Mair Victor H., (1988), Painting and Performance, University of Havaii Press, USA, p.92

14. Geertz Armin W., Lomatuway'ma (1987), Children of Cottonwood, Piety and Ceremonilizm in Hopi Indian Puppetry, University of Nebraska Press, USA .