# Co-created Staging – Situating installations

Birgitta Cappelen
Institute of Design
Oslo School of Architecture and Design
birgitta.cappelen@aho.no

Anders-Petter Andersson
Interactive Sound Design
Kristianstad University
anders@interactivesound.org

## ABSTRACT
*Staging* is the creative act of showing something to an audience. When staging, the artist chooses and creates the *context*, *situation* and *structure* of the presented object, play or installation. The chosen context and situation provide background for the audience *interpretations*. Meaning is co-*created* between the artist and audience, based on the cultural and individual understanding of the context and situation. The term *installation* is *open*, ambiguous and undefined. One does not completely know what to expect and where to find an installation. It is open towards many interpretations. In this paper we present a model for staging and how we worked with staging of two interactive installations in different exhibition situations, to provoke and motivate different *interpretations, expectations* and *interactions*. We argue for staging as a *communicative strategy* to attract and motivate diverse audiences and user groups to collaborate and co-create through interpretation and interaction. Further we argue that installations have to be open to many possible structures, interpretations, interaction forms and roles the users can take, and *shift* between dynamically. When the users dynamically re-structure, interact and shift roles and thereby re-situate the installation, the users are co-creators in the staging act. We call this *dynamic staging*.

## Keywords
Interactive art, staging, interaction design, tangible interaction, context, co-creation, situation, genre, installation, music

## 1. INTRODUCTION
Staging within theater is the creative and aesthetical act of presenting a play on a stage. It includes several activities like; interpretation and adaptation of a text to a performable text, for the actors. Casting and giving the actors characters to play, actions to act, cues to be where and when on stage. Creating the physical environment, set design, lighting and sound that make-up the environment for the actors to act in. Staging is also used when designing other temporal dramatised events, both fictional and real [3, 2, 5, 21]. Like a family conflict, or a historical event in a museum, with real or interactive actors. The act of staging means to interpret and *dramatise a situation*. There are many aesthetical techniques, on different levels and stages, one can use in the process. For instance visual techniques like changing the light on the stage and thereby shift focus. Rhetorical techniques, like an actor changing his tone of voice, and then change the audience expectations. Temporal and narrative techniques, like using pauses when talking, and then changing the user's attention. Or actorial techniques, like making an actor speak to a chair on the stage, and thereby giving the chair the role of a listening actor, just to provide a few simple examples.

In this paper we argue that these staging techniques have great potential, when creating and designing interactive installations, to motivate diverse groups of spectators to interact with the installation. Since we work with interactive and tangible installations, we have used many of these techniques and designed and programmed them into the installation as qualities and potential staging solutions. Solutions, that are revealed through interaction, in the actual situation. Other staging techniques are used, when designing or setting up the installation. But then the installation must facilitate different types of staging, depending on the exhibition event, in order to communicate to different audiences in different situations.

## 2. FRAMING STAGING
### 2.1 What is an interactive installation?
Installation art was established as an accepted art genre in the late 1980ies, but one of the first examples of site specific environmental exhibitions was created as far back as the late 1950ies [19]. The essence of installation art is spectator participation. That the installation offers the viewer activities to take part in, and that the meaning of the work, evolves while interacting in the installation [19]. Already in the 1960ies, technology and computers was used in installation art [8]. Since the practice based art field just recently has become academic, not much has been written from a research point of view, regarding the art of staging installations. What can be found, from the art, design and communicative perspective, is exhibition catalogues and set design handbooks for building theatre or film sets.

From a technological and Computer Science point of view it looks very different. A lot of research has been done the last 20 years in the Human Computer Interaction (HCI) and Interaction Design fields. With a handful exceptions [15, 6, 10], it has taken long time before aesthetical and communicative, not only the functional and efficient aspects of computer interaction, have become relevant in this research. Tangible Interaction is a rather new field within Interaction Design, but built on a long tradition within HCI, that might enrich the Art field with its understanding of interaction with technology. The Art and Design field, on the other hand, might contribute with practice based knowledge about the aesthetic challenges and possibilities. So the fields can mutual contribute to each other. With this paper we like to contribute to this mutual understanding with our practise based research and discussion of the possibilities that lies in staging as a communicative strategy.

### 2.2 What makes a situation?
Every action creates a new situation, and action, as well as learning, understanding and remembering, is situated, argues Lucy Suchman [22]. She is one of the leading advocates for the situated action theory within HCI/Interaction Design [22, 4].

Instead of focusing on the structure and the content of communication, she encourages us to look at how we say or do things in a particular situation. A critique against situated actions comes from activity theory. Activity theorists like Bonnie Nardi argues that context and situation is created through *intentional* actions. [18]. It is the *goal behind* a person's action that makes it possible to separate one action from another For us who work with interactivity and computers, both perspectives are inspiring when designing interactive installations. Since the computer potentially can register all actions through sensors, and one can programme the computer to make interpretations of the actions, both perspectives on situation and actions represents an interesting design potential when dramatising a situation.

But both situated action and activity theory lack a discussion of aesthetic potentialities and experiences. In our view they miss the potential in combining situatedness with aesthetical and rhetoric knowledge of how to stage situations.

With *set design* the theatrical room, lighting and props create a dramatic dichotomy between physical space and the imagined place, making it possible for the audience to identify with a character in a situation far away and long ago. The stage is a *cross-media* place where light, music, visuals and movements help dramatise the situation. *Dramatical* effects and the *narration* create expectations [16, 2] of actions that the character will make, based on the audiences genre competence [9]. A relevant tradition is the *Forum* theatre that invites the audience to take active part living out ideas and emotions in singing, speech, movement and dance, whether it is in a play, therapy or educational situation. [3]

The interaction with computers can be designed and programmed to offer aesthetical qualities like pace, rhythm and resistance, to dynamically dramatise the situation [10, 6]. This is often used to create playability in computer games, products and interactive art.

These aesthetical qualities calls for a *poetics of the situation* that we find in Umberto Eco's term *Open work* [7]. Open work is a concept and aesthetical ideal from the 60ies which we find inspiring when working with interactive installations because of its programmable possibilities. Eco's examples of open works was avant-garde music by Henri Pousser and Pierre Boulez who's musical works partly was open for a kind of collaborative live staging done by musicians. They created systems of musical pieces that could be combined by the performers in real time. It is an aesthetics that welcomes *openness, ambiguity* and *interpretation* as important staging qualities for the creation of expectation and motivation [16].

## 2.3  How to stage a situation?
Sociologist Bruno Latour, who's studies concern use of physical and technical things [14, 13], has a theory of mediation in actor-networks that we use to describe the possibilities for staging [13, 12]. Based on dramatic models he describes how people create relations to things and how things mediate human actions and meanings. He shows how things can act, not only as neutral objects, but as active actors, with abilities to influence scientific results and everyday life.

Latour shows how spectators/users are motivated to identify with a person or an object and act in a situation by *shifting*. The term shifting comes from semiotics and explains how a reader is motivated to identify with the text's main character. The reader, or in our case the user, can shift from identifying with the main

character to a more peripheral character. Latour calls this actorial shifting [13]. The users can also be motivated by the story of the text, or in our case of the design, to shift position in space to another location and to another time. Like an old picture of Copenhagen can make us imagine walking down the cobbled streets in the old days, even if we are in Oslo in 2011. Latour calls this spatial and temporal shifting. These shifts changes our *expectation* in the situation. What Latour recognized was that when including interaction with physical artefacts, yet another type of shifting takes place, where the user of the artefact not only *thinks* about shifting. Instead the user *delegates* meaning and actions to the artefact by using it. In addition to Latour's time, space and actor/role shifts, we suggest adding a 4th, *genre shift*, where the shift of a person's cultural and aesthetical mind-set [9] potentially changes the user's expectations. For us who create interactive installations this represents a design potential that can be included in the installations as possible choices.

## 2.4  What qualities must an installation have?
Based on our discussion above, Eco's ideal of openness [7], Latour's theory of mediation [13], and our practice based research over the years; We suggest that an installations should offer openness in many dimensions to facilitate staging on diverse levels. In our cases later in this paper we will show how we designed to accomplish this goal of openness towards staging.

**Genre choices.** The experience and meaning the artist or designer want to communicate are in installation art expressed through the audience participation and interaction. [19]. Different audiences have different expectations based on their knowledge, cultural background, motivation and interpretation of the situation. If the installation can be exposed in several ways, spaces, institutions, events, to several types of audiences and *still communicate the artist intention* we call the installation open to several genre choices.

**Temporal choices.** Everyone is somewhere, just now. If one can move mentally to another time, or change the order in a sequence, one has the possibility to make temporal choices. If the installation is open to temporal choices, one can change the narrative design during setup, or use of the installation.

**Spatial choices.** If the artist/designer during setup, or the spectator/user during interaction, with the installation, can change the set design, lighting, sound and positioning of props, we call the installation open to spatial choices.

**Actorial choices.** If the installation offers the designer during setup, or the user during interaction, possibilities to change roles to take, the installation is open to actorial choices.

## 2.5  Staging and Staging levels
We define staging as dramatisation of the situation. Based on the discussion above, our understanding of situation and staging, we need to divide the staging process to gain a deeper understanding of the potentiality of staging. Thereby we can more consciously use the possibilities that lie in staging as a communicative strategy. We suggest to divide the staging process into four:

**Potential Staging.** This is the staging process one does when designing and creating the installation. How the artist/designer imagine and evaluate the different situations and make decisions related to genre, temporal, spatial and actorial possibilities. All in

order to create an installation open to dynamic and co-created staging.

**Strategic Staging.** This is the strategic staging process related to exhibiting the installation, what audiences to reach, what the installation will communicate in this actual institution and other strategic communication choices.

**Tactical Staging.** This is the staging process performed by the artist or designer when setting up the installation in a chosen institution and space. This staging process includes decisions about how to arrange the physical space, the lighting and sound mix to motivate the spectators to interact and co-create in the installation.

**Dynamic Staging.** This is the staging process performed by the spectator or user during interaction. It might include genre choices to change the experience, temporal choices to change the narrative experience, re-structuring the physical space or change roles.

## 3. STAGING CASES

### 3.1 Two open installations

In the following part we like to show how we have worked with staging on several levels when designing and exhibiting two interactive installations.

We will show how we have designed the installations to facilitate *many types* of staging, what we have called designing for *potential* staging. Further on, we will show how we in actual staging situations, have made concrete choices in a number of specific exhibition situations. How we performed the *strategic* and *tactical staging,* to communicate the installation's intentions and facilitate the audience participation, and *dynamic staging,* in the use situation.

### 3.2 Unfoldings

Unfoldings is an interactive audio-tactile installation created by MusicalFieldsForever [17]. It consists of 18 body sized sleeping-bag-shaped modules, or cushions (see Fig. 1).



**Figure 1. Unfoldings modules in different formations.**

Each module contains two digital and one analogue bend sensors that register when someone sits down, touches or move the cushion around. The thick part of the cushion is filled with bean bag filling pellets, offering volume that makes it possible to sit on without the risk to squash it flat. The thin part of the cushion is filled with polyester padding, so that the form bends when placed on its end (see Fig. 1). In this transition between soft and firmer padding we have placed the analogue bend sensor that registers how much the cushion is bent. Along its edge the cushion has a chain of lights that synchronise and change with the interaction and the music composition. Two of the cushions have microphones. When the audience is talking, singing, and in other ways make sound, Unfoldings translates by synthesising the sound into musically varying responses.

### 3.2.1 Designed for Potential staging

We have made a range of design choices to facilitate a series of different types of staging on different levels, on a potential, as well as a strategic, a tactical, and a dynamic user level.

On the potential level we have given the module a form, so that it is as ambiguous as possible, and at the same time has a strong and clear identity. For instance, the module has no up or down, front or back. The choice of filling makes it possible for a module to stand on its own and offer volume to sit on, at the same time as it bends in a natural way, and becomes almost like a body (see Fig. 1). The module is bright poppy-red on one side and dark wine-red on the other. We have attached hooks around the edge of the cushion, in order for it to be possible to tie several cushions together, in a shoe-lace manner. It makes it possible to join cushions together, so that they resemble other forms such as a flower, anemone, a chair, body parts, a playful ball pit, or a pile of bleeding, radiant bodies.

**Designed for many genres and experiences.** Unfoldings is designed to function as a modern, high-tech furniture, and as an organic sculpture, a physical argument in a design research discourse where it in a practical manner argue for the aesthetical potential of ambiguity (1, 11). The modularity of the cushions makes it possible to group them loosely or tie them into formations, depending on what is suitable for the specific stage.

**Designed for many narrative paths.** Unfoldings creates sound and musical answers based on real-time live sound recordings. Some music is created as direct answers to interaction with the bend sensors, and some as communicatively varying answers, delayed, as after having a moment of reflection. These choices are made to open up Unfoldings for spectators to take different roles.

**Designed for many roles to takes.** The spectator/user can choose to experience the installation as an organic, light and sound sculpture, or sit down and actively play on it as if it was a musical instrument, or take pleasure in the ambient music and intimate experience of warmth, colour and abstract dynamic graphics projected onto the wall. Or one can watch others interpret and act, and make one's own interpretation of what they do. If nobody has interacted for a while, Unfoldings takes initiative and tries to wake the audience interest to look, listen and interact. Also based on what the microphones continuously record, Unfoldings compose music from its interpretation of what happens in the room. Even the name, Unfoldings, is chosen to support this type of ambiguity. It is an invitation to the audience to unfold themselves bodily and creatively, as well as it is the sculpture /installation that unfolds, and the unfoldings of theoretical design arguments in an art discourse.

Above we have tried to show how we have designed to open up the installation for different types of staging; So it on a *strategic* level is possible to choose what type of experience the installation should offer a person, by selecting the relevant institution and event. That it on *a tactical level* is possible to set up the installation and the make the set design choices in the specific exhibition situation. And finally that the user *dynamically*, in the actual spectator and use situation, can change the staging.

In the part that follows we like to show how we in some actual situations have staged, that is, chosen and designed for these different levels in the Unfoldings installation.

### 3.2.2 From avant-garde sound art to interactive toy

**Strategic Staging.** Unfoldings was developed and exhibited for the very first time at the Stockholm New Music Festival at the House of Culture in 2003. The festival was one of the main events within experimental music in Sweden. We were asked to make an interactive installation for the festival, whose main activities took place on the 3 floor, in a traditional concert hall at the House of Culture. There were several dedicated exhibition rooms in the building that were isolated and closed off from the messiness of the public spaces. However, we choose the vestibule area with stairs and escalators, surrounded by glass walls only, to be a mediator between the different target groups and events taking place in this multicultural and multi-functional house, where people from different classes and ethnical backgrounds met. In this respect the House of Culture in Stockholm is a unique environment. By placing Unfoldings in the vestibule on the way into the festival's concert hall, Unfoldings could be part of different experiences, genre wise, depending on the audience background and expectations. The initiated group of music connoisseurs could experience it as an avant-garde musical piece and an introduction or entrance to the festival. For others, on their way to the café on the 5$^{th}$ floor, Unfoldings was a new piece of furniture for the foyer, sculpture, or something made especially for children, due to its soft, organic look.

We chose to put a big sign on the wall with the title and information that it was an interactive installation. Unfoldings was mentioned several times in the press, among all in the newspaper Metro that reported from Unfoldings where "the cushions could talk". The articles made many young people with a video gaming interest come to try out and experience the installation.



**Figure 2. Mother and daughter interact in Unfoldings.**

**Tactical Staging.** On a tactical, set design level, we chose to place the installation on both sides of a huge column, marking out, for the audience, a natural movement around the stairs. The two spaces, one on each side of the column created a public and a more private room well-defined by the glass wall façade. Thereby the glass wall also created a relation to the activities taking place at the Sergel's square, Stockholm's famous central arena for protesters and demonstrators. We divided the installation in two parts with 9 modules in each. In one part we tied them together into a big anemone, in the other we let the modules be loose, as in a pile of lifeless bodies.

**Dynamic Staging.** The two installation parts therefore gave completely different interpretation possibilities. While the tied-up "glowing flower" was easy to sit down in, like in an armchair, the "body pile" was more problematic and ambiguous to relate to. A Kurdish woman, protesting against the war in Iraq began to cry when she saw the bodies and said that it looked like the war crime scene when Sadam Hussein had used poison gas weapons against the people in Halabja. Meanwhile small kids climbed and played with the loose modules as if they were in the ball pit at IKEA. For some, Unfoldings offered an intimate and peaceful place, in a stressful everyday. For others, Unfoldings was news about where technology might be heading, and therefore worth exploring for 5 minutes. For the security guards Unfoldings was a soothing and chatty friend at night that they visited to bid farewell on the very last day of the exhibition.

### 3.2.3 From sculpture to co-created concert

**Strategic Staging.** Later Unfoldings was selected to be exhibited at the Cybersonica International Festival of Music and Sound in London. Once again the exhibition space was oriented towards a limited avant-garde and experimental art music audience, although with a more international outlook and better knowledge about interactivity. The festival was arranged by the Cybersalon at Institute of Contemporary Art (ICA). Mainly, the audience that found their way to the gallery was art and music connoisseurs.

**Tactical Staging.** Our installation was placed in a white gallery together with the other sounding installations. All the others were square and machine-like boxes with control buttons, and compared to them Unfoldings was very different being interactive for many people, creating physically and visually sensing experiences. We tied all the modules loosely together, with enough distance to the wall for the audience to view the abstract video projection. The light from the projection and the glowing red modules created an intimate "circus under water" atmosphere in the "white cube" gallery (see Fig. 2).

**Dynamic Staging.** The curator at the gallery said that he never had experienced behaviour like this from his audience. Peopled stayed longer, interacted, smiled, took pleasure in being in the installation, explored it, in a way they normally never acted in an art installation. On Midsummer's eve we arranged a sleeping bag concerto for the festival participants (see Fig. 3). Professional musicians played laptops and acoustic instruments, placed behind the installation and directed towards the generative interactive video projection, with Unfoldings and audience before them. The audience improvised on the Unfoldings modules. Unfoldings answered and the professional musicians improvised in response. A crowd of audience was surrounding the ones interacting, watching what was happening. The audience had roles, both as spectators and as co-musicians. Everybody participated in the co-creation of the collective visual, tactile, and musical experience.

**Figure 3. Musicans and audience improvise together in Unfoldings, ICA June 2003**

## 3.3 Orfi

Also Orfi is an interactive audio-tactile installation created by MusicalFieldsForever [17]. It consists of 26 soft tetrahedron shaped modules in three different sizes from 30 to 90 centimetres. The modules are made in black textile. Most of the tetrahedrons have orange origami shaped "wings" mounted with an orange transparent light stick along one side. Every module contains a micro computer and a radio device, so they can communicate wirelessly with each other. The modules can be connected together in a Lego-like manner into large interactive landscapes. Or, the modules can be spread out in a radius of 100 meters. The "wings" contain bend sensors. By interacting with the wings the user creates changes in light, dynamic graphics and music. Some modules contain speakers, so one can experience the vibrations from the sound by sitting, or holding a module in one's lap. The installation contains 8 different music genres the audience can choose between. Two orange tetrahedrons contain microphones which in the Voxx-genre create live music based on the users own voice and environmental sound input.



**Figure 4. ORFI modules hanging from the ceiling in front of the dynamic video projection.**

### 3.3.1 Designed for Potential staging

Orfi is created after Unfoldings, and a great deal of the knowledge and experiences regarding designing for openness is developed further in Orfi. The shape, size and that it is wireless are important qualities that make Orfi more open to dynamic and co-created staging.

Orfi is designed to be a hybrid between furniture, an instrument and a toy, in order to motivate different interpretations and forms of interaction. One can sit down in the biggest module as in a chair or play on it as an instrument, resulting in immediate response to interaction. Or one can talk, sing and play with it, as with a friend or a co-musician, who answers with imitation and variation after a little thinking pause. The 8 different genres one can choose between, when setting up or using the installation make it open to many staging possibilities. Each musical genre has its own dedicated dynamic graphics projection, aesthetically different from other genres, that effects the whole expression of the installation [5]. Therefore choosing genre is a very efficient way to stage the installation. One can stage a dark red jazzy experience or a crazy pink techno session just by changing genre, by bending the wings of the genre module. The modules contains different components, input and output devices. So by moving or placing the modules one can change the staging dramatically. For instance, when placing the big modules containing speakers far away from the modules with wings, one changes the spatial experience because the musical answers comes far away from where the interaction takes place. This moves the focus from the interaction towards the sound and video response, and makes the shifting of space and time an important part of the staging experience. This space and time shift also changes the role of the module and installation. When listening to the immediate response to interaction, the module becomes a funny looking and amusing instrument, when focusing on the varying and shifted response in time and space the modules gets the role of a co-musician or answering actor. This shift in genre, time, space and roles makes Orfi open to many staging possibilities on several levels.

### 3.3.2 From art installation to ambience

**Strategic Staging.** We were invited to the exhibit Orfi at the Museum of Modern art in Stockholm during the celebration of Arts Birthday in February 2008. This is a yearly avant-garde art event, where the most of Stockholm's contemporary music and art audience participate. There were a few art installations in the exhibition hall outside the concert hall, where around 15 concerts were held and everything was broadcasted through the European radio network. By participating with Orfi on this avant-garde art event we defined Orfi as art, even if it was originally created as a communication medium for children with special needs.

**Tactical Staging.** We spread the Orfi modules on the floor in front of the big 4*3 meter video projection. We projected from the floor and up, which moved the focus in the room down towards the floor and on to the rhythmic glowing Orfi modules. Orfi's dynamic graphics and music created a disco like feeling in the room where partying people talked, drank beer and relaxed.

**Dynamic Staging.** In the Orfi area people begun to sit down by the modules and started play with them. They who experiences that Orfi answered to their interaction continued to play in different ways. Some started to throw the modules to each others. Others put the modules containing speaker onto their body to experience the sound vibrations. The interaction changed from conscious art audience that wanted to understand and interact in the right way in a process oriented art installations, to party minded people that made Orfi part of their ambient Arts Birthday party.

### 3.3.3 From instrument to band member

**Strategic Staging.** At the boat and new media scene Half Machine in the docks of Copenhagen we exhibited Orfi together with other interactive performance works in the summer 2008. The audience were young and shared a deep knowledge and experience of interactive art works.

**Tactical Staging.** We hang the Orfi modules on elastic ropes from the ceiling in front of the staircase, and thereby made Orfi a lighting mobile in Calder style. The video projection was the first the audience met when coming down the stairs to the ground floor. This made Orfi easy to see and interact with when entering the big hall down stairs. We decided to only show the Voxx genre, in order to invite the Half Machine audience to sing and create the sounds themselves.

**Dynamic Staging.** The audience was expecting interactive installations and had no difficulties to sing and interact with Orfi. Many interacted and co-created music and dynamic graphics together and had great fun. During concert sessions on the stage nobody used Orfi's microphones, but they listened to the music and heard that Orfi started imitating and playing by itself. Orfi became a band member in the performance group, and in doing so, changed the stage by expanding it to include Orfi. Some of the audience were inspired and started to interact with Orfi. It became a unique hybrid jam session between the concert on stage, the interacting audience and Orfi.

### 3.3.4 From art installation to therapy

**Strategic Staging.** In spring 2009 we were invited by national art society "Konstfrämjandet" together with other contemporary artist to create an installation in a room at the rehabilitation centre at Rosenlund hospital in Stockholm. Six artists had exhibited before us under the name "Art for all senses" to offer people with special needs a unique and accessible art experience.

**Tactical Staging.** We placed the projection screen onto the floor opposite the entrance door. On the floor we put a neutral carpet and all the Orfi modules. The room was approximately 4*5 meter so the projection, carpet, music and light created an intimate, ambient and sensoric feeling that reminded of the other multisensory rooms (Snoezelen rooms) at the Rosenlund rehabilitation centre.

**Dynamic Staging.** When the clients entered the room they were familiar with the expression of Orfi, even if they had not seen it before, because it reminded them of the other multisensory rooms. Some lay down to experience the ambient sensual feeling. Others interacted enthusiastic together with their assistant and therapist. Two genres were usually chosen and toggled between; one highly rhythmical, and one calmer. These choices gave them space to negotiate so they could shift roles, actions and activity level.

### 3.3.5 From instrument to health furniture

**Strategic Staging.** In 2010 we received funding from the Norwegian Research Council under the Verdikt-programme to develop musical tangibles for children with special needs. The goal is to improve health and well-being [20] by reducing passivity and isolation through use of musical tangibles. Haug school and resource centre outside Oslo is our partner with long experience in using art in their therapeutic practice. We have made tests in their small music room during spring 2011. The small music room is usually used by music therapist to play piano, sing and use other acoustic instruments, so the children expected musical activities when they entered the room.

**Tactical Staging.** We changed the music room dramatically to stage the events. First we moved all chairs, piano and other instruments. We blinded the windows and placed a full wall projection screen against the windows. Orfi's changing graphics created a living ambient expression in the room. We put a neutral thick carpet on the floor and placed the Orfi modules on the carpet, to make an intimate and soft stage for the action. We placed the large modules containing speakers in the corner, where it seemed most natural to sit, facing the projection without shadowing it. The small music room looked really different from what the children and their assistants were used to, with a dreamlike, soft and seductive expression.

**Dynamic Staging.** Some children sat in wheel chairs and we lifted them out and placed them on the big Orfi modules containing speakers. Some walked into the room themselves. The children felt the music and vibrations and their assistant helped them to bend the wings to create music, and shift to the genres they liked. During the many test sessions, the children played on the modules like instruments, threw the modules and changed the stage as in pillow fights and rested together on the vibrating and glowing modules as if they were furniture. They changed the staging dynamically, both spatially by changing the modules placed on the stage, temporally by creating their own narrative experience in the room and actorially, role wise, by giving Orfi and the assistant different roles.

## 4. CONCLUSION

In this paper we have discussed the creative and communicative potentiality of *staging* of interactive installations. We define staging as *dramatisation of the situation*. Further we have discussed the term situation in relation to relevant theories to develop a deeper understanding of the potentiality of staging. We have presented a model to understand and work with staging on several phases or levels. Staging during design of the installation, *Potential Staging*. Staging related to the strategic choices where and when to exhibit the installation, *Strategic Staging*. Staging when setting up and creating the actual set design, in a specific place, *Tactical Staging*. And finally the staging the spectator or user does during interaction with the installation, *Dynamic Staging*. We have presented four kinds of qualities an interactive installation should have in order to offer staging possibilities.

The installation should offer *Genre* choices to change the desired experience of the installation. *Temporal* choices to change the narrative design of the installation. *Spatial* choices to change the set design of the installation. And finally, *Actorial* choices to change the character and roles of the installation and thereby mutually the audience. These choices in all or several staging processes. When the spectator or user stages through interaction the staging is dynamically co-created.

Finally we have presented how we used the staging model for design and exhibition of two installations, staging them for different events, for different audiences.

## 5. ACKNOWLEDGEMENTS

## 6. REFERENCES

[1] Andersson, A-P. Cappelen B. Ambiguity—a User Quality, Collaborative Narrative in a Multimodal User Interface. Proc. AAAI, Smart Graphics, Stanford. 2000.

[2] Bal, M. 2009. *Narratology, introduction to the theory of narrative*. University of Toronto Press. Toronto.

[3] Boal, A. 1995. *The rainbow of desire : the Boal method of theatre and therapy*. Routledge, London 1995.

[4] Chen, C. & Rada, R. 1996. Modelling Situated Actions in Collaborative Hypertext Databases. *Journal of Computer Mediated Communication* 2(3).

[5] Chion, M., 1994. *Audio-vision, Sound on Screen*. Colombia University Press. New York.

[6] Dunne, A., Raby, F. 2001. *Design noir : the secret life of electronic objects*. Birkhäuser, Basel.

[7] Eco, U. 1989. *The Open Work*, Harvard University Press. Cambridge Mass.

[8] Experiments in Art and Technology (E.A.T.), 9-evenings, 1966: www.fondation-langlois.org, visited April 26 2011.

[9] Fabbri, F. 1981. A theory of musical genres: Two applications. Horn, D. & Tagg, P. (ed.), *Popular Music Perspectives*, Göteborg and Exeter: International Association for the Study of Popular Music. pp. 52—81.

[10] Fishwick, P. (ed.) 2006. Aesthetic computing. Cambridge, Mass. ; MIT,.

[11] Gaver W., Beaver J., Benford S. 2003. Ambiguity as a resource for design, *SIGCHI conf.*, pp. 233-240.

[12] Hennion, A. 2003. Music and Mediation, Toward a New Sociology of Music. The *Cultural Study of Music, a Critical Introduction.* Clayton, M., Herbert, T., Middleton, R. (ed.). Routledge. New York. pp. 80—91.

[13] Latour, B. 1999. *Pandora's Hope: Essays on the Reality of Science Studies*. Harvard University Press. Cambridge Mass.

[14] Latour, B., Woolgar, S. 1979. *Laboratory Life: The Social Construction of Scientific Facts*. Harvard University Press. Cambridge Mass.

[15] Laurel, B. 1993. *Computers as Theatre*. Addison-Wesley. Reading Mass.

[16] Meyer, L.B. 1956. *Emotion and meaning in music*. University of Chicago Press. Chicago.

[17] MusicalFieldsForever: www.musicalfieldsforever.com, visited April 26 2011.

[18] Nardi, B. (ed.) 1995. *Context and Consciousness: Activity Theory and Human-computer Interaction*. MIT Press.

[19] Reiss, Julie H. 1999. From margin to centre, the spaces of installation art,  MIT Press.

[20] Ruud, E. 1998. *Music therapy: improvisation, communication, and culture*. Barcelona Publishers. Gilsum.

[21] Small, C. 1998. *Musicking : the meanings of performing and listening*, Wesleyan University Press. Middletown Connecticut.

[22] Suchman, L. A. 2007. *Human-Machine Reconfigurations: Plans and situated actions* (2nd edition). Cambridge University Press..