Abstract

This thesis stems from a common interest in sound, perception and user-centred interaction, and emerged in the belief that the quality of sound is not extensively explored in the creation of immersive universes. Thus, the aim of this thesis is to examine the potential of sound to create new user experiences and alternative modes of interaction exclusively through sound.

The thesis is based upon the design process of an auditory location-based game we have designed and the different theories in the fields of aesthetics and interaction design our game is affected by. It will address the design of the game, the gameplay, basic technological requirements for implementation, and will discuss more general aspects of sound, as well as premises for sound design and how sound is perceived and effects the user experience. We approach this through our design process and different theorists from fields of HCI, interaction design, architecture, musicology and art history. Furthermore, we relate our game to other computer games, location based concepts, play, installations, films, soundscape-compositions, music, etc.

The game is a multi-player experience that utilises sound as its interface and creation of atmosphere and suspense, where the players are physically present instead of being represented by an avatar. It should be looked upon within an experimental framework within which it is made possible to intensively explore sound. It employs a multiple speaker system, with the basic rules of the game influenced from the rules of *Capture the Flag* and *Tag.* It takes place in a blacked out room with a speaker placed in each corner of the game area with every player carrying a PDA. The system continuously registers where each player and both flags are located, by keeping track of the PDA's in the room. With this information the system develops an adaptive soundtrack and sends information out to the PDA's. This information triggers the global sounds, which are broadcast through the speakers, and the individual sounds, which are broadcast in the headphone of the relevant player. The atmosphere created in the game affects the way the user acts inside the game, and these actions in turn affect the output from the system. A relationship is thus established within the adaptive musical soundtrack, uniting the players' movements, reactions and feelings within the game with the real-time development of the soundtrack.

In so doing, we have developed a design for an intelligent soundscape in a purely auditory universe, in which the player will be able to explore an immensely emotional experience of a new universe. At time of writing however, we have only had limited opportunities to fully test the system in situ, but these tests need to be made before the full game is commercially produced.

Nevertheless, through the design process, our preliminary tests, interviews, theories and different experiences with sound-art, games, music and films, we find that sound has a transient and manageable form, and is a well suited tool for modifying existing elements, such as the experience of the texture of a room. Furthermore, our work has led us to the assumption that sound can be used to create an enhanced, immersive interaction and user-centred experience. Also, we believe, by using sound as a response to the player's reactions, we emphasize that the connection between the players emotional state and their reactions – and hereby the interaction with the system – is infinitely related.

In conclusion, we believe that a greater emphasis on sound when creating immersive universes is strongly recommended and would be very fruitful for both the designer and those people experiencing it.