

“Walk on the Sun”: an interactive image sonification exhibit

Marty Quinn

Received: 5 November 2010 / Accepted: 9 August 2011 / Published online: 16 September 2011
© Springer-Verlag London Limited 2011

Abstract “Walk on the Sun” is an interactive experience of image as music. As explorers move across images that are data projected onto the floor, their movements are visually tracked and used to select pixels in the images which they immediately hear as musical pitches played by various instruments. The sonification design maps color to one of 9 instruments, brightness to one of 50 pitches, and location in the image to panning position, creating 57,600 differentiable musical events. This high resolution and interactive auditory presentation of pixel data enables the blind to explore images of the Sun from the STEREO space mission, nebula and galactic images from Hubble, as well as art masterpieces. Specifically, the blind can hear when hot spots cross the center of the Sun or the solar winds and corona are changing by sonifying virtual geometric structures, such as lines and circles, to create chords of music reflecting the changing content of the selected pixels within that structure as images are played as movies. Originally funded by a NASA/STSCI Ideas grant, the exhibit has toured to more than 12 cities in the US, visiting blind and science centers in the process and receiving enthusiastic response throughout. Plans for additional work furthering NASA wide image sonification standards are in process.

Keywords Image sonification · Movement sonification · NASA · STEREO · Interaction design · Blind

1 Introduction

Since 1992, Design Rhythmics Sonification Research Lab has been involved with numerous scientific projects to represent data through the cognitively rich domain of music (Quinn 2001; 2010; Quinn et al. 2003). Over the past 3 years, and in collaboration with the McAuliffe-Shepard Discovery Center in Concord, New Hampshire, USA, and the Space Sciences Laboratory at UC Berkeley in San Francisco, California, USA, we received a 2-year Space Telescope Space Science Institute NASA Ideas grant to develop an interactive science museum exhibit using image sonification as a primary means of communication. This was followed by a 1-year NASA grant program called “Light Runner” to tour “Walk on the Sun” to science museums and centers for the blind in 12 cities across the US.

The 2-year development/prototype phase began in 2006. The goal of “Walk on the Sun” was to enhance the accessibility of increasing numbers of images (now around 2 million) recorded by eight cameras on board each of NASA’s twin Solar Terrestrial Relations Observatory spacecraft. It also sought to informally teach various aspects of solar science related to the mission. It was hoped that blind and sighted visitors alike could perceive scientifically significant features in the images through musically encoded image sonification, thereby acquiring new knowledge and understanding of the Sun.

An exhibit prototype was demonstrated to two blind students in May and June of 2008. Keene State College students Andrew Harmon and Chelsea Duranleau after exploring the capabilities of the exhibit recorded these comments:

“I was able to pick up the ideas and controls of the process fairly easily. I am honored you allowed me to

M. Quinn (✉)
Design Rhythmics Sonification Research Lab,
92 High Rd, Lee, NH 03861, USA
e-mail: marty@drsrl.com
URL: www.drsrl.com