

Auditory Icons: Research on their Design and Physical Characteristics

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論文審査の結果の要旨

In the 7 Chapters of this dissertation, the design, the usage, and the physical characteristics of auditory icons were investigated. First, an extensive literature review was performed in order to identify the most common fields in which auditory icons had been used, and to analyze the acoustical properties and interpretation of auditory icons that had been designed so far. The results of the review showed that auditory icons had been mostly used in the fields of informatics, aviation and the automotive industry. Many studies had not taken into consideration the influence of the users' cultural and professional background on the interpretation of auditory icons, and few studies had provided a precise description of the physical characteristics of the sounds in auditory icons.

Based on these results, the influence of the cultural background of the users on the interpretation of auditory icons was further investigated. The results showed that auditory icons characterized by the presence of bells, ringing, and siren sound(s) (artificial sounds), and auditory icons characterized by the presence of voice sound(s) (natural sounds) were interpreted most of the time similarly between Japanese and Indonesian participants. Interestingly, the influence of the participant's cultural – professional background appeared in auditory icons consisting of more complex sound(s) to represent the referents. Following this, the influence of icon duration on its interpretation was investigated. The results showed that the duration of an icon had mixed effects on the perceived relation between the icon and its referent, although in general, longer auditory icons (2800 ms) were described with fewer unique words, suggesting that there was higher listener consensus about their meaning. Together, the results show that the cultural – professional background of the listener and the duration of the auditory icon could influence its interpretation. Overall, the research clearly shows a need for the analysis of the acoustic properties of auditory icons and how they influence their interpretation.

Overall, the number of experiments, the level of the research in general and the conclusions described in the doctoral thesis merited a high evaluation by all committee members. As a result, the committee decided that a doctoral degree (Doctor of Philosophy in Design) can be conferred upon Mr. Joao Paulo Cabral. 本論文は博士（芸術工学）の学位に値すると認められた。