



The multidisciplinary integration of tools, approaches and knowledge: toward the Sensory Human Experience Centres

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The technological progress of the last decades has significantly contributed to the development and innovation of several areas, such as engineering, architecture, and medicine, providing new possibilities to measure, control, simulate and assess most of the physical phenomena of the environment and the corresponding reactions of the individuals. This has shifted the attention of researchers toward the need to understand, in deep, the mechanisms which influence the perception and well-being of humans in complex environments (e.g. cities, urban parks). In this light, can be expected that the first-person experiences will be assumed as the new frontier of futures decision-making and design processes, as they may involve representants of local communities and group of interest. This approach leads to a multidisciplinary integration and contamination of the scientific competencies for all research groups involved in the so-called holistic research.

Overcoming the concept of noise that has dominated until the end of the last century and considering the environmental sounds as a 'resource' rather than a 'waste', with the introduction of the Soundscape approach, psychologists and sociologists have provided several tools (e.g. questionnaires, scales, tasks) to measure the perceptual, emotional, and cognitive reactions of the individuals when they are exposed to the sounds. Different multidisciplinary research groups are involved in studies that adopt, refine, or propose new investigations' tools, to assess, modify and manage the sound of cities, and their effects on the satisfaction and well-being of the population.

Moreover, the huge development of miniaturized and powerful hardware and software of the last decade allowed the reconstruction of audio-visual scenarios with a very high degree of realism, and with the possibility to interact ecologically with the virtual environment in a fully immersive experience. The recent possibility to measure the physiological and neurological reactions of the individuals has opened to a further road to extend the knowledge about the effects of noise and the weight of the other physical factors on the populations.

A scheme of a Sensory Human Experience Centres, where approaches, tools, competencies of various disciplines are integrated, is presented. These kinds of centres could represent, in future, the places where concentrate the selection and validations of design alternatives (e.g. product, building, city and infrastructure scale) at the local and national levels.