

167th MEETING OF THE ACOUSTICAL SOCIETY OF AMERICA

Rhode Island Convention Center
and Omni Providence Hotel
Providence, Rhode Island
5- 9 May 2014

Session: Soundscape methods and case studies in architectural projects

Title: Traffic design for soundscape improvements

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Abstract:

Different kinds of traffic contribute to urban acoustic environments and therefore have a major impact on urban soundscapes. The noise of traffic depends on several aspects like traffic management, traffic routing, traffic composition and infrastructure. In the past, any optimization of these aspects target only on sound pressure level reduction neglecting perceptual relevant phenomena. It is well known that the human hearing does not work like a simple sound level meter. Besides loudness, humans perceive psychoacoustic properties of noise and notice certain sound events and sources. Thus, any improvement of traffic noise must be guided by knowledge from psychoacoustics and cognition.

To sustainably improve the appraisal of a soundscape, traffic must be deliberately designed. In different research projects, the psychoacoustic potential of traffic design was systematically investigated. For example, the perceptual difference between roundabouts and intersections with and without traffic lights was investigated, psychoacoustic requirements for the layout of road markings were studied and the required penetration level of electric cars for a substantial noise reduction beyond sound pressure level considerations was an object of investigation. Options and possibilities of traffic design from a psychoacoustic perspective and their implications for urban planning will be presented.

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