The analysis of affectivity of traffic noise abatement in town areas

In the first part of our project we want to **make noise-maps** of some relevant places of Budapest: major traffic junctions, railway stations, airports, and the inner parts of the highways. We measure the intensity of the noises in these areas and plot them. We want to demonstrate how the intensity of the noises varies in space and time. How the intensity of noises decreases moving away from the source of noises, and how the different kind of environments (buildings, parks, etc) affects it. We will investigate the average, maximum, minimum and the variance of intensity of noises at different parts of the day and making these different types of noise-maps. Using these results, we want to give a complex answer of the noise load of the investigated places.

The second part of investigation is the **spectral analysis of the noises** generated by traffic. In this type of analysis, with a mathematical tool, we decompose the noises (or any kind of sound) to the sum of sound waves with different frequencies (deep, middle, and high voices). The spectrum of a noise shows the intensity of the components at different frequencies. Analyzing the noise spectrum of the different vehicles (e.g. cars, trucks, trains, airplanes, etc.), we can separate the common and the specific components of them.

Using our previous results we want to find out the **psychical effects of noises**. We want to explore how the noises coming from traffic decrease the concentration ability, and how the characteristic spectrum components correlate with the psychical effects. It could be a useful way to design effective and "psychically good" noise-abatement materials and methods.

Basing the outcome of our investigations above we try to evaluate the effectiveness of the noise reduction wall constructions in use. This evaluation will be made in two different respects: the noise attenuation capabilities, and beyond this, the spectral characteristic of them. The spectral behavior is of great importance, because of the relevancy of the psychic effects of noises. In the same time we want to **find out effective noise reduction materials**, and make prototypes of environmentally-friendly, effective and good noise reduction panels using waste materials. In this part of the project we want to make a general overview the special national regulations in this field.