Soundscape planning is not about quietening—high quality soundscapes are not necessarily about low sound levels or about silence. What they are about is sounds that are appropriate to that place—achieving congruence between landscape and soundscape.

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Acoustic Design of Outdoor Space

I loved what I heard when I was in Catalunya Square, Barcelona; pigeons flapping and cooing; people walking; voices and children, the sounds of splashing water from the fountain. In truth, it was a loud place, full of sound, full of energy and vitality—and a delight to experience. All of the sounds present in this place made up its acoustic environment, and people’s experience of this acoustic environment is the soundscape of the place.

My enjoyment of this place was enhanced by its soundscape. And if you take a close look at the activities and postures of the people in the photograph, they too were enjoying the environment this square provided. Of course, as an acoustician, I was very much aware of the acoustic environment of the place. While I do not make the assumption that other present were necessarily consciously listening as I was—it is not at all unreasonable to surmise that the acoustic environment enabled their enjoyment of this place. Sound is only one component of people’s experience of place; there is also the visual experience, the temperature, the wind, the vegetation, the different materials of the surfaces, the physical safety of the place, their own activities and the activities of others present, their own motivations and expectations. While experts tend to dissect environments into their component parts, the reality is that people’s experience is of the whole of their environment.

“All of the sounds present in this place made up its acoustic environment, and people’s experience of this acoustic environment is the soundscape of the place.”
Managing the sounds of places is soundscape planning, soundscape design, or soundscape management.

I have seen expressions of high-quality soundscapes in many places: a transportation soundscape in Helsinki (the sounds of waves on seawalls, gulls calling, the sound from a small diesel-powered fishing boat), within the soccer field of a restored outdoor market place in Budapest (a dull bubble of people buying and selling, occasional local calls of ‘Alaba’, melodies moving around); in a tiny garden park in the midst of downtown Manhattan (nearly the sounds from a water structure in a reverberant space). These high-quality soundscapes have not only been urban places, but rural and country ones too, areas of outdoor recreation, and natural parks and wilderness. While the source of sounds may be very different across these different domains, as many of the activities people underwrite within them, there are some fundamental principles that underlie soundscape planning and management, and these principles are the same irrespective of the domain.

There is much we still do not know about soundscapes of the outdoor environment: how to properly measure people's experience of it, the effect of on this experience of people's levels of engagement with the space; the soundscape's effect on the soundscape; the potential aesthetic functions of soundscape, the role of human sounds in soundscape, the role of landscape, the role of interspecies communications in the soundscape.

The important question for this forum is: “Do we know enough to provide advice on soundscape design or soundscape management?” Scans with these potential shortcomings in our knowledge. If in any of the places I have described, the soundscapes were not pleasant (even if, perhaps, probably worse), it is possible to identify the underlying principles that make the soundscape of each of these places special. And, how can these principles be incorporated in design as a design for the acoustic environment of outdoor space?

Firstly, is it not just a matter of making such places quieter? No. Quiet can be of importance in some soundscapes, but very few. As in Caracas Para, Barcelona, many maxilium urban soundscapes are, if not loud, at least from quiet. Even in wilderness, nature is very rarely quiet. One can be unquiet about some soundscape planning is about quantifying—high-quality soundscape is not necessarily about low (sound) levels or about silence. What are about is sounds that are appropriate to the place—achieving congruence between landscape and soundscape.

One useful way to illustrate the underlying design principles for soundscape planning is by contrasting the way noise control and soundscape approaches differ. There is already quite a widespread understanding of the approach of managing the outdoor acoustic environment through noise control. It is critical to identify how different the soundscape approach is to noise control (Table 1), and to avoid confusing the two. They are not complementary, not competing (Brown & Mulcahy, 2004).

In noise control, sound is seen as a waste product to be managed like all wastes. It deals with sounds that cause human discomfort. In fact the model underlying noise control is that the level of discomfort is proportional to the level of sound and that management is achieved by reducing its level.

The soundscape approach, by contrast, considers the acoustic environment as a resource. Rather than focusing on unwanted sounds that cause human discomfort, the concern is much more with the sounds people want or prefer—and, critically, preferences may, or may not, depend on the level of sound.

What sounds do people prefer? The results from the available research (e.g., Tang & Keng, 2007) are consistent and unambiguous: moving water—-in all its forms; the sounds of nature—birds and animals, wind in trees, and the sounds of people (voices, traffic), for example, not only for low sound levels, but also for medium-levels (transport, machinery, vegetation). Such human preferences in any place is highly dependent on context. Within a particular setting, it is likely to be too difficult to generalise the comfort in understanding which sounds are preferred.

The final two rows in Table 1 identify the final principle. Nearly all acoustic environments in outdoor places of interest will consist of sounds from many different sources. High quality acoustic environments result where the dominant sounds heard in a place are those that are wanted or preferred in that place. It is that sounds that are not wanted or preferred in that place are not heard. According to the soundscape approach, this is the desired outcome.

Table 1. Comparison of Noise Control and Soundscape Approaches.

<table>
<thead>
<tr>
<th>Noise Control Approach</th>
<th>Soundscape Approaches</th>
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<tbody>
<tr>
<td>Sound as waste</td>
<td>Sound as resource</td>
</tr>
<tr>
<td>Concerns sound of discomfort</td>
<td>Concerns sounds of preferences</td>
</tr>
<tr>
<td>Human response related to level of sound</td>
<td>Preference often unrelated to level—quiet not the objective</td>
</tr>
<tr>
<td>Measures by integrating across all sound sources</td>
<td>Requires differentiation between sound sources: wanted sound from unwanted sound</td>
</tr>
<tr>
<td>Manages by reducing level</td>
<td>Manages by &quot;wanted sounds&quot; masking &quot;unwanted sounds&quot;</td>
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The design process for outdoor space, which incorporates these principles, includes 4 steps. Step 1 requires consciously defining the place of interest and context (who are the people involved, what are they doing, what are others doing, time of day, weather, motivations, expectations, and so forth). In Step 2, the acoustic objectives for this place and context need to be established (using the normaliser process by which planners gain community or focus group consensus in similar matters). Some example acoustic objectives, which take into account the soundscape design principles, of preference and masking include moving water should be the dominant sound heard; a particular (compositional) sound should be clearly audible over some area; hear, mostly, (non-mechanical, non-amplified) sounds made by people; not be able to hear the sounds of people; the sounds of nature should be the dominant sound heard; only the sounds of nature should be heard; suitable to hear amplified speech (as music); suitable to hear amplified speech (as music); acoustic sculpting, and so forth.
Ensuring the iconic sounds of a bell tower can be heard throughout the village and not masked by unwanted sources, would require management of levels from such sources (e.g., traffic, ventilation plants, amplified music, etc.).

Measuring mostly the sounds of nature in a park requires management of unwanted near and distant mechanical sounds to ensure they do not always mask the sounds of rustling leaves or bird calls. In the park, occasional human voices, or footsteps, are acceptable.

...ture installation sounds should be clearly audible; sounds conveying a city’s vitality should be the dominant sounds heard.

Based on the principles in Table 1, and unlike noise control where acoustic objectives are usually specified in terms such as “levels should not be greater than x dB,” the objectives include specification of the wanted sounds in this place (e.g., moving water, nature, speech, music, church bells), sometimes the unwanted sounds (e.g., not able to hear the sounds of people), and specifications of the extent of masking required—whether masking should be complete (the only sound heard) or partial (the dominant sound heard). If planners complete Steps 1 to 3, acoustic specialists can be charged with investigating the opportunities for acoustic management and design in Step 4, using all of the skills and tools normally applied in noise management and acoustic design.

There are many candidate locations for soundscapes planning, design and management within parks and gardens, country parks, recreational areas, malls and pedestrian precincts; and even some residential precincts. Opportunities are likely to be greatest when areas are being redeveloped, or in initial design stages. The design of outdoor acoustic space requires careful specification of acoustic objectives. Consideration of soundscapes in the planning and design of outdoor space can reinvigorate management of the outdoor acoustic environment.

References

