Is Acoustic Ecology About Ecology?
- Reflections on the International Conference on Acoustic Ecology "Stockholm, Hey Listen!" 1998

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ABSTRACT
There are advantages with integrating the study of soundscapes with a more general framework, such as ecology. Soundscape studies will be able to use the rich theoretical framework of ecology, as well as benefit from publicity due to the current ecological movement. However, ecology puts new demands on the theoretical concepts used in soundscape studies, and these new demands are likely to cause some problems. This article aims at exposing one of the basic conceptual differences between soundscape studies and ecology –the difference between a phenomenological and an ecological approach- and to discuss some of its consequences.

Keywords
Soundscape design, acoustic ecology, phenomenology, affordances.

INTRODUCTION
The study of soundscapes is an interdisciplinary research effort, and it is probably necessary to keep it that way. There are great advantages with interdisciplinary work, but there are also problems associated with differences between research cultures. Some of these problems concern the concepts used to construct the theoretical framework. This article aims at describing one such problem within acoustic ecology –i.e. the differences between a phenomenological and an ecological approach- and to discuss some of its consequences for soundscape design.

Hopefully, this critique will be taken as an attempt to start a debate about the concepts used in acoustic ecology, and not as a critique of the project as such. The author does not attempt to cover all aspects of the theoretical framework of acoustic ecology (as represented in for example [8]), but addresses one general question that seemed to be of importance at the conference "Stockholm, Hey Listen!", namely whether acoustic ecology is about ecology or not.

PHENOMENOLOGY AND ECOLOGY

The study of soundscapes is about the experiences of sound, in contrast to the physical properties of sounds. It is about "Ear-mindedness" [10] and conscious awareness of the sounds that surround us. The first-person perspective and personal *experience* are central, making this approach essentially phenomenological. Ecology, on the other hand, is about the *interaction* between living plants or animals and their environment (including other plants and animals).

Although at least some parts of the ecological movement are human centred, ecology is not only about us - ecology forces us to consider the living conditions for other species than our own. This makes it impossible for ecology to be based on a first-person perspective, because even though we might know what the experience of another human being is like –and even this is not trivially true- we will probably never know what it is like to be another animal [cf. 6].

This is not to say that we have to adopt a mere behaviourist approach to the study of soundscapes, but rather that we have to complement our phenomenological approach with something that acknowledges the many different forms of interaction between agents and their environment. There are research approaches within acoustic ecology that focuses on interaction [cf. 1, 7, 9], but these are human centred and must be complemented if they are to be applied within an ecological framework.

WHAT INDICATES A GOOD SOUNDSCAPE?

Given that we have to complement our phenomenological approach with something based on agent-world interaction, will the present criteria for good soundscapes still do? Truax's description of a good soundscape seems to be typical: "The criteria for soundscape design are embodied in the ideal of Schafer's "hi-fi", balanced soundscape which promotes active listening and even sonic delight which he describes as the "soniferous garden." The predominant strategy is to maximize pleasing and informative sounds and to minimize unwanted or uninformative (e.g. flatline or broadband) sounds." [9, p. 11]. These criteria take the listener's experience as the starting point, and before we can conclude that these criteria are ecologically valid as well, we have to examine them further. According to the argument made above, we have to substitute the listener's *experience* with conditions for agent-world *interaction*.

"Informative" Sounds

One of the most discussed sources of noise pollution is the sound of traffic. The constant noise in a city might not be a good soundscape, but does it consist of non-informative sounds? Consider for example listening to noise due to traffic when trying to get to sleep. The noise is likely to disturb us, as our current activity requires silence. The constant noise does not seem to be very informative at all.

However, when in the street walking or biking, the very same sounds might be very informative. The sounds of the cars around an agent specify what is happening and helps the agent adapt to rapidly changing conditions. An approaching car will be noticed, even if it is not seen due to the sounds it makes. If cars were silent this would not be possible (Henrik Karlsson -organiser of "Stockholm, Hey Listen!"- warned us about the fast cyclists in Stockholm: "They are silent and therefore dangerous!"). To the agents involved in traffic, the sounds are of vital importance to their interaction with each other. The sounds of the cars are also informative for the agents driving the vehicles: the sounds inform about when to change gear, when to stop and serve the engine etc. Apparently, the very same sounds can be both informative and non-informative.

The property of being meaningful might not only depend on different activities, but on for example how far from its origin an acoustic event is propagated. This is certainly true in some situations. The sounds of cars surrounding an agent walking in the street would not be meaningful (in the sense that they help the agent to adapt her behaviour) if the sounds did not come from the cars actually around her, but instead were sounds propagated from cars further down the road. However, it is not necessarily the case that sounds propagated from far away are uninformative. Sounds also help orientation, and the sound of traffic might for example inform an agent about the direction to a nearby city or road. This can be quite valuable information, when for example lost in the woods.

The eventual meaningfulness of sounds also depends on other sounds in the present soundscape. The sound signal of a mobile phone can be informative if there are only a few phones in the immediate environment, but it can also be quite uninformative if there are many phones around and it is difficult to say which one is calling. This problem partly depends on the way the signal is designed (hard to differentiate in terms of identity and direction), but also of the signal's secondary function: to inform the user's surroundings that she owns a mobile phone.

"Pleasing" Sounds

That ideas about beauty and aesthetical values vary enormously is not a very controversial statement. We all have our own view on what our environment should look, feel, smell, and sound like. However, even if there were something called "pleasant sounds" that we all could agree upon, it is not trivially true that these sounds would

make the soundscapes we want to have. The calm and rather silent sound of dropping water is probably an acoustic event that at least many of us would agree upon to call a pleasant sound. The sound of dropping water can nevertheless be extremely annoying, for example when trying to get to sleep (especially if it comes from a leaking tap you know you ought to fix).

Although silent, meaningful sounds influence an agent's present activities -that is what makes them meaningful and informative- and sometimes this can be quite disturbing and not a very pleasant experience at all. This might be one of the reasons why some people find certain types of noise relaxing - it does not inform them of anything that might influence their current activities, and if you are trying to get to sleep, it does no harm if the noise makes you tired as well.

INTERACTION AND EXPERIENCE

As it seems, the 'meaningfulness' of sound depends on the interaction between agents and their environment - to what extent and in what way the acoustic events influence an agent's activities[1]. This is not to say that there are no meaningful sounds, but that there only are sounds meaningful to an agent. The relation between interacting with the world and experiencing it, is also evident in our ways of expressing ourselves. Consider again the example with the person trying to get to sleep and the one biking in the street. They will probably describe their experiences differently. The person trying to get to sleep might say "the noise of traffic", describing undifferentiated and disturbing sounds. The cyclist might instead say "the sound of the car", describing an informative and differentiated acoustic event. It seems that how we interact with our environment and how we experience it, are intimately related.

As some readers might have noticed, the analysis made here has a lot in common with Eleanor and James Gibson's ecological psychology and particularly their theory of affordances [cf. 2, 3, 4, 5]. The notion of meaningfulness employed in this article is basically their concept of affordances. Eleanor and James Gibson's ecological psychology is one of the most interesting candidates for the complement we ought to be looking for, but that is a subject worthy its own article.

[1] The use of "activity" does not imply a behaviourist notion of action and behaviour, but includes mental activities like planning, problem solving, reasoning etc. as well (to the extent that the agent in question possess these cognitive abilities).

DISCUSSION

Ecology forces acoustic ecology to consider the acoustic environments for all species and not just humans. In order to do this, acoustic ecology has to complement its present phenomenological approach based on personal experience, with something that enables the community to describe and theorise about conditions for interaction between different sorts of agents and their environments.

When substituting acoustic ecology's focus on *experience* with ecology's focus on *interaction*, we seem to have to face a relativism we do not want. Criteria for good soundscapes, such as "informative" and "pleasing" sounds, do not seem to hold in an ecological context. This text contains just a few examples, but they are taken from typical domains were the criteria are employed. Using criteria such as these should prove even more problematic in more remote domains of acoustic ecology, especially when our own experiences are not in focus.

The property of being a meaningful sound clearly depends on the interaction between agents, activities, and their acoustic environments. However, a complement that would satisfy the new demands of ecology, might not have to force us to leave phenomenology. Using a theoretical framework like the theory of affordances or a notion of meaningfulness such as the one employed in this article, enables us to keep the phenomena while acknowledging the many and complex ways of agent-world interaction. Such a framework would also acknowledge the intimate relation between listening and soundmaking, and can encompass the notion of the listener as composer (as whether a certain acoustic event is a musical one or not, depends on the way the listener is listening).

All of this comes at a price, though. Due to the intimate relation between the properties of sounds and the interaction between agents and their environments, it will be impossible to classify a sound or soundscape as good or bad, without also classifying the activities performed in them correspondingly. When promoting, protecting or prohibiting certain sounds and soundscapes, we will also be promoting, protecting or prohibiting ways for agents to interact with each other and the rest of the environment. This –i.e. soundmaking as only a part of behaviour in general- is a much more difficult problem, especially when it comes to our moral guidelines about what to accept and what not to. Moreover, if acoustic ecology is not to be thought of as a form of aesthetic moralism, the guidelines for soundscape design must be argued for very carefully. The ecological movement may have its own special aesthetical values, but that is not what makes it ecological.

Finally, the author hopes that this article might contribute to a discussion about the concepts used in

acoustic ecology, and about what the aims of the community of acoustic ecology really are.

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