Design for Sound Hiders

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1 Introduction – methodological background

…there is a story about a possible near future when it will be possible to hide sounds like other things we usually hide, hide to get rid of, to keep secret etc. – as long as we know where they are hidden we can find them, but it is our choice…

We used this story as a conceptual background for a series of design experiments concerned with the expressions of textiles as sound absorbing and sound reflecting material. The basic motivation for the experiments was twofold:

(i) to use conceptual design as a driving force in investigations of the expressiveness of given material,
(ii) to use material experiments as a basis for critical design.

To investigate given material as design material, means, among other things, to investigate the space spanned by the expressiveness of the material. Such investigations can be guided by specific problems, expressed in terms of functionality; the problem of muffling noise in a given context, for example. But in order to solve this type of problem, there is a need for more basic investigations, where we try to map out the design space in more general terms. (Cf. [Braddock 1,2]). This type of investigation must necessarily be based on scientific knowledge about material, i.e. the physics, chemistry etc of the given materials, but the investigations themselves are more phenomenological in nature, i.e. understanding and describing the expressiveness of material with respect to some given context of use. (Cf. [Shaeffer]). The basic question is then: how can we use this material in design praxis? This is a more direct question than relying on art practice as the main source of knowledge about the expressiveness of material. Experimental design can in this context be seen as a counterpart to basic research in natural science. We need to set up experiments and “test” ideas about expressions and expressiveness.

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Such “test” ideas can be expressed in terms of a conceptual design, which so to speak gives us a context for the experiments – which corresponds to the testing of a hypothesis or a theory. Typically the conceptual design sketches a context of use where the expressiveness of the material is critical. Thus a general background story may give a framework for a program of experimental design with focus on the investigations of expressiveness of some given materials. In the present case the purpose was to investigate expressional properties of textile material as sound hiding material. It’s a world of its own… it’s both a matter of fashion and functional design, in a sense. We have to invent “sound” situations, test materials, listen, listen…then name, describe and list specific properties.

Design for sound hiders is also a program for critical design where we try to use design aesthetics to discuss and analyse ideas about the future use of technology. (cf. [Dunne1,2]). As we insist on using textiles as basic design material we filter the idea of a possible technological future through inherent expressiveness of a given design material.

Below we sketch a program for experimental design (Cf. [Hallnäs]) with focus on investigating the expressiveness of textiles as sound absorbing and sound reflecting material, a program where we use conceptual design to map out a fictitious design space and where investigations of materials give a foundation for critical design. Rather than just a theoretical discussion on a such possible program we choose the form of a series of museum installations to describe and discuss basic ideas (*). This means that we have done some experiments, some listening, some reflections…but to develop the necessary descriptive tools needed for the formulation of precise questions and systematic results there are lots and lots of further experiments to be done.

2 Design for sound hiders

2.1 The stories
Sometimes you feel haunted by sounds, you more or less desperately try to hide from them; you close the windows, you pull a thick woollen cap over your head, you put ear-plugs in your ears, you flee out into the woods, you install triple-glazed windows… Now, suppose we should try to hide the sound instead, collect it like water in a bucket and put it where we want it…

Now, as we know, it is very difficult to collect sounds and hide them, but we imagine a possible near future when sensor technology and modern computational technology makes it possible to catch and hide sound in an efficient and simple manner. A near future when we may become sound hiders.

In our installations we use this story to discuss and illustrate the aesthetics of sound hiding using textiles as a basic design material, i.e. designing for sound hiders with textile material.

We consider four scenarios, four examples of sound hiders:

1 Around
Radka is getting more and more tired of the noise constantly surrounding her in her city apartment. The traffic noise is there almost all the time, people shouting in the street… that’s enough to make the signals from the phone or the door bell almost unbearable irritating…the radio, the TV…

So we have devised a big box for her where she can hide all the sounds surrounding her. She may place the box in the middle of her living room and visit the sounds when she feels up to it; now she rules the sounds. She only has to press a button and all noise around here will disappear into the box. The box has textile walls absorbing and reflecting sounds in intricate patterns, the sounds bounce around inside the box and are muffled as they are absorbed by the thick layers of textile material.

Installation: A scaffold triangle dressed with various textile materials in several layers; solid reflecting material, soft, thick, heavy absorbing material, rubber carpets etc. Inside the triangle loud street noise comes from two studio monitors.
Textile material: Side one: materials made of natural wool-fibres. One part of the wall was made of several layers hanging over each other made of knitted and tangled wool. The knitted wool-material was dyed yellow with special wool-pigment. The second textile part of the wall was made of thick stamped wool felt. The felt was dyed yellow and had a printed pattern made with pigment colour. Both these textiles were sound absorbing.

Side two: the textiles on this side were made of rubber conveyor belts. The belts were made of rubber principally but had several included textile layers. These belts were sound absorbing.

Side three: one of the textiles on this side was made of a knitted polyester fabric in several layers. This knitted fabric was sound absorbing. The other textile on this side was made of different laminated materials originally made for soles (of shoes). These laminated soles had a hard and stiff surface which implied sound reflection.

Each side of the scaffold triangle was also covered in part by Plexiglas-frames laminated with a non-woven polyester material.

Sound material: Street noise recorded about 15 m above ground. A mixture of very loud low frequency noise from accelerating motor-cycles etc with high pitched clatter and a more or less constant background of almost white noise.

2 Along
Me and my alarm clock… how could we learn to get along in a civilized manner? I really don’t know. Waiting for an answer to this question I hide its sound in a tube forgetting its intended functionality. It’s a sort of redesign where hiding the wake up signal is in focus.

Installation: A two meter long fragment of an old ventilation shaft; at one end I put my alarm clock, at the other I insert textile lids of various textures to muffle the sound of the alarm clock.

Textile material: The textiles in this installation were made of wool- and synthetic felt. The textiles were circle-shaped and used as lids. Each lid had a screen-print, printed with puff-binder.

Sound material: An amplified signal from a typical digital alarm clock.

3 Round
Erik is very tired of all this nagging… can’t they just stop nagging about going to bed early, washing this or that, picking up clothes, plates etc from the floor and so on… Finally he gives up, presses a button and collects the sound that brings the nagging and put it under lock and key. The sound passes through several filters that cleans it from all its emotional charge and transforms it into some sort of sound poetry. After a while he gets tired of this poetry, wraps a long woollen scarf around it and goes on with more important things in a nagging-free environment.

Installation: A two meter high sheep-fence cylinder. Inside the cylinder the are two loudspeakers. The cylinder is covered with long woollen scarves that muffle the sound coming out of the loudspeakers.

Textile material: long thin felt-stripes were winded many times around a fence cylinder. The felt material was knitted and dyed. Some felt-stripes were printed with pigment colour.

Sound material: An eight voice “nagging”-canon.

4 Over
Cajsa, a stock broker, is by now very tired of all depressing news about the stock market that comes out of her TV. She collects it, and puts it under her favourite chair which she covers with thick woollen cloth. She is sitting there now waiting for better times to come.

Installation: A chair covered with woollen-cloth. Under the seat of the chair there are two loudspeakers directed upwards.
Textile material: Knitted and tangled wool. Several layers of wool-cloths make the sound from the chair softer.

Sound material: A mixture of several cut-up layers of radio economy news.

3 The aesthetics of textile sound design – near field design

To know the principal acoustics of a given textile material is of course essential in textile sound design, but we also need a phenomenological description of its expressiveness as a “sound design” material. If we say that that the woollen-cloth covering Cajsa’s chair muffles the sound, that doesn’t tell us much more than what is obvious somehow. Pure acoustic facts about muffling properties for low and high frequencies don’t help much either. What is the character of the material with respect to sound design in a given context? To answer this type of question we may use the given conceptual context that guides the experiments. In designing for Cajsa we might be looking for material that is “dark”, “sombre” etc. The material we need for Radka’s box should perhaps be “solid”, “calm” and “open” etc. Other types of material for sound hiders could be “secret”, “lying” etc. The conceptual context can in this way provide a foundation for the phenomenological descriptions that are basic in design practice.

Our experiments also constantly reminded us about two “leitmotifs” that somehow seem intrinsic to textile sound design:

(i) To look and to hear - the contrast between characteristics of visual and audible expressions is a very rich source for different strong design expressions; the light and dark clothes, the absorbing and glittering textiles etc. The true strength of these expressions always refers to a specific context that plays a basic role in defining the expression characteristics.

(ii) It’s a subtle matter - although we know as a matter of principle how to accomplish very strong effects of sound absorption and sound reflection, using textiles in various ways, the effects are in many situations of a much more subtle nature. Small interesting effects; a fine structure of sound characteristics. It is to a large extent a matter of near-field design.
4 References


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