MOBILE ROOMS

version 1.2

SUPERFLUXUS MEDIA
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Introduction

I have been working with audio for years (in fact it was a part of my professional life), so I could follow the development in audio engineering: how the machines were getting smaller and smaller, how tubes turned into processor units and, in the end, how the studio itself, as a material place, disappeared. But not really, since it reappeared again, as a so called *virtual studio*. I am not inclined to worry about all that, the one and only thing which is important though – and in particular for contemporary sound design – is the question, what kind of change this is. To put it technically: it is the question, if the virtual studio is just a digital resurrection of the bulky mixer or something, which brings new elements into play. One of the dreams I had in mind when I started working with acoustic material, was being a sound stroller, wandering – or even better: flying through unknown spaces, experiencing rooms which could turn into something else. What I wanted was nothing less than *space morphing*, but there was hardly a machinery available to fulfil these demands. If you ever worked with a sequencer software you will understand. Although most of the manipulation processes affect the spatial quality of the sound, the space itself is completely absent in the sound processing.

So one of the fascinations of 3D computer games was the notion, that this technique could be useful for the fulfilment of that dream, that space could be used as a utility and therefore could form, in a literal sense, a *virtual studio*. Compared to visual processing sound is – at least from a viewpoint of information weight – a quanité negligable. And when I heard that the producers of audio cards, Creative™, had introduced a standard that allows realtime processing of 3d audio, there was the idea that it was time to realize a tool I always wanted t work with.

Although designed for sound design – in the broadest sense - *Mobile Rooms* is not another sequencer. In a way it is just a beginning of a something totally different, which is hard to label. One could speak of environmental, total surround, but in my thinking it s much more a philosophical turn (and this tiny little program being a pure symptom of that). We are on the brink of a paradigm shift which is deeply rooted in our cultural history: it is the moment the time bar turns into a space bar. I just state that here (I wrote on that extensively) – and a manual is not a seminary. So, if you are fed up with sequencers (as I am), this tool might be something for you. And if you're player, then even more. And if you are just curious - jump!

Berlin, November 2002 Martin Burckhardt

3d audio

In the current state (version 1.2) Mobile Rooms is designed for 3d material. What does it mean? It means that the current *stereo* notion is outdated and that you have to go back to times, where sound had only one channel (which is in fact far more realistic than depth simulation by the means of two channels). In regular life you won't find stereo sounds, just monotonous sound sources. So please – if you want to use your own sounds (not just the samples delivered with this package), please change them into mono files. If you don't, the system won't bother, it needs just a little more time to transform your stereo sources into mono files. Another requirement: use files with 44.1 sample rate.

Let's start. First thing we have to do is to hear something. When you open up the program it will show s screen like this:

There's a room, a status bar at the lower part of the screen - and a main panel at the top. This main panel will be your navigation port, so let's have a closer look:

I am quite sure that this bar will get bigger and bigger and that it will be rearranged, so let's concentrate on the meaning of the icons.

terminates the program

gives information about the version number

opens up the data manager

with this icon you usually start your session. It opens a window that shows the available wave files and allows you to position them in space.

the green icon opens up the *environment setting*.

this opens the *sound setting.*

this should be self explanatory and says: start playback.

stop playback.

this opens the recorder bar

a toggle that hides or displays all the environmental eyecatcher elements

a toggle that hides or displays the sound elements

movement control

path control

Generally – besides the play and stop function the main panels does not execute any commanda, its function lies mainly in opening and closing the various areas of manipulation. So if you click once, the window appears - if you click the icon again, it disappears.

There's another aspect which you will soon realize. The icon colours correspond to the dominant panel colours - so this may serve as a colour sign system.

Third thing: in order to click you have to make the mouse visible. This is done by a rightclick. (You have, I am sure, noticed meanwhile, that this program does not match to the usual windows grey. Yes, that's right, it is much more like a game environment. There are disadvantages, particular for the programmer: he has to reinvent windows again. And since this is an arduous task, the interface is – to put it mildly – improvable (scrolling windows and so forth).

Setting up my first sound

If you want to import a new sound, you have to chose a sound source. In the current state the program offers you all the files it finds in the WaveFiles subdirectory. At the moment there are just 4 sample sounds (because to save download time), but I would strongly recommend that you copy your own files into that subdirectory (remember to transform them to 44.1 mono files).

Click the yellow button of the main panel. The following window appears:

On the display you see the list of the available sound files. (In case you copy your own files into the subdirectory, they will appear here too). At the right you see some radio buttons: the allow you to control some time and event aspects. you can determine whether you sound shall play looped or just once.

On the to you see two buttons that seem in a way redundant: *prepare* and *create*. Why should I prepare a sound - why not create (position) it right away? The answer is simple: before you want to play the sound in the environment you may want to hear and fine tune its characteristics. This is what could be understood as *preparation*. To chose a file, simply click on the filename and then on the prepare button. You will hear the sound immediately.

Generally the logic goes:

prepare -> create

What happens if you create a sound? Visually you will see a yellow sphere - which is a placeholder to make you see what is invisible otherwise: sound. This visualization will help you to find you

sound object easily.

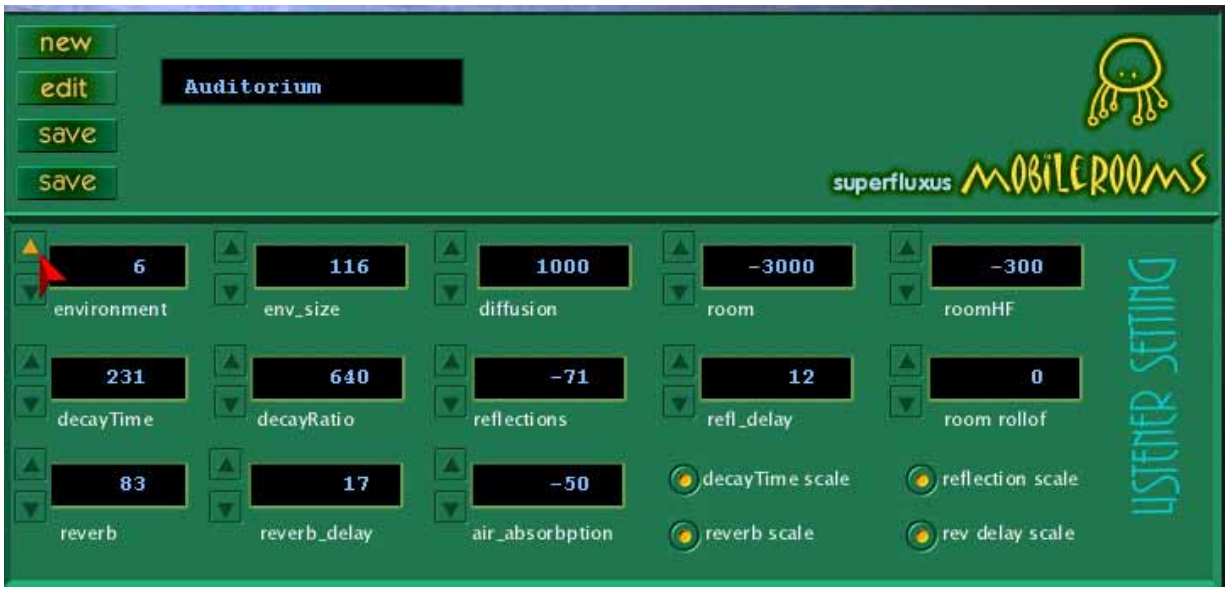
When you click on such a sphere the sound setting window will pop up (which will be explained in

detail later). That means (again a contrast to sequencer logic) that the object itself stores the object related information.

On the display you see the name of the sound - and all its parameters. When you change them you may or may not here some difference. That depends upon the parameter you are affecting. But before we study this we are looking for the environmental aspect of this.

Environment setting

Actually - the overall environmental setting may affect a sound dramatically, much more than its



individual characteristics. Sounds - if you put it that way - are communistic by nature. Because of that we will shift our notion to the area, which is common for every single sound: the space they reside in. To this purpose click the green (ecologic) icon - the following window will appear on the screen:

I have to admit: this might look like one of these effect machines that abhor people to work with audio material. But even if you declare yourself an acoustic analphabetic, it is not as bad as you may think. You could live with just one parameter, which is the first number and is called *environment*. If you click up and down you will see on the display that the title changes. The auditorium may get a forest or a bathroom - and you notice immediately (although a saxophone player in a bathroom may sound somewhat strange): This is a bathroom.

Actually there is a number of 25 presets stored (which have been delivered with EAX). These may not be edited, but this is no limitation at all. You have the opportunity to store your own settings too. Actually there is an unlimited number of rooms.

So - if you don't want to plunge into the subtleties of sound programming just use this button. For those who want to store their own rooms here, a few words to the single parameters:

environment if you click this you go another environment. And you will see: all the parameters will change

env_size this is an abbreviation for environment size. Normally small values between 1-50 make sense.

diffusion this controls the echo density in the reverb part of the sound. If it is set to 1000 the most dense, diffuse state is obtained. Whirlwind. (But be aware: if there is no reverberation, nothing happens at all)

room stands for the surplus room effect which is added to the singe sound. It is, to take up the political metaphor, what the *system* does to you - the extent to which you are informed/deformed.

roomHF what the hell is HF? It stands for the high, shrill frequencies of the system added sound. And this parameters attenuates these shrill parts, leaving just the low, dark frequencies unattached. This gives kind of a dark murmuring aspect. 0 means no thing, -1000 means - there are no high frequencies left in the reflected sound.

decayTime in milliseconds (the durance of the reverberation)

decay ratio - this get somewhat complicated. Once again it about frequencies. You know that low frequencies means low tones. DecayHF ratio controls the durance of the low and high tones. If it is set to 100 there is no effect at all, if it is below 100 the high frequencies are faster attenuated than the low ones. This is the *natural* way of things: Remember sitting at a lake and hear distant music - it's slow, murmuring waves. If you set the value above 100 you go into the supernatural: the shill, brilliant frequencies will last longer than the lower ones.

reflections think of sounds as ping pong balls. So the number of reflections are the number of balls that may be reflected by the walls. It's obvious: if your inside a room there are more reflection than outside. (min -1000 - max 100)

room_rollof this attenuates distant sound. This parameter is extremely important, and I think that the Creative presets do not get the maximum out of this. To use an analogy: room rollof is for 3d audio, what the main fader is for the sequencer logic. So – play around with this, to see what kind of effects may be achieved.

reflect_delay the delay time of the reflection. If you have a big hall there will be considerable delay time (min 0 - max 300)

reverb reverb aspect relative to the room characteristics. It increases and decreases the loudness of reverberation.

reverb_delay his delays the starting time of reverberation (in milliseconds)

air absorbtion with this you can simulate sound passing through foggy, dray air etc.

You see it is not a big deal. Just play around, and after a while you will get accommodated.

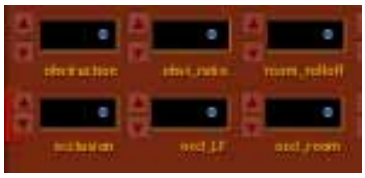
Editing sounds

Once you have created a sound, you see his placeholder sphere. If you click on it, the sound setting window will pop up - with the name and attributes that are stored for that specific sound.

Usually you are inclined to change this and that, so we have to talk about the parameters (for the easy going guys: there are just a few you have to know).

The first and basic you have to know is the concept of minimum and maximum distance. If you set a minimum of 5 meters, it is guaranteed that the absolute loudness of the sound begins at a distance of 5 meters. If you have, for example, an aeroplane it would be recommendable that the minimum should be 50 meters. If the object of the sound is a small insect, the minimum distance should be less than a meter. But the irony of it: if you measure the sound in absolute numbers the sound of a bee and an aeroplane make no difference at all. What differs, is just the distance these sounds may pass
without being attenuated. If you grasped that, the concept of the max_distance is self explanatory. It is the moment where the sound is on the brink to silence.

So - these values are the most important ones (and they substitute and refine the volume concept you know from your cassette decks).



The next parameters which have as dramatic effect on the sounds as this will be found a few lens below. They are called occlusion and obstruction (and they are accompanied by the respective filter setting).

Occlusion stands for the phenomenon you may know as TV next door, a muffled sound. So if you want to create the illusion of something being separated by a wall, you would play around with that parameter.

Obstruction produces a similar effect - but is not made for simulating walls but an object which lies between the listener and the object. So the direct path is muffled, but the reflection (echo, reverb etc.) remain unchanged.

Also something new for the newbies in 3d audio are the parameters outer cone/inner cone, inner volume, outer volume. Generally: these parameters allow you to create the illusion of directed sound. Normally: a sound source is thought as an emitter that emits its waves circular to all directions. A directed sound would narrow the diameter of 360° - its cone would be different. Inner cone stands for the inner opening (and inner volume for the respective volume), outer cone means volume and cone at the outside of the sphere. I have to say: you need a little training to get accommodated with these settings, but they help you improve your sound picture dramatically.

Ok, let's go on with the rest:

direct allows you to increase/decrease the sound volume

directHF – HF stands for high frequencies, so this may be compared with an equalizer

Outside Volume HF – enhances the directional aspect of the sound

Room and RoomHF – by these values you control not the sound volume itself, but it's »social life«, that means: the volume of resonance and room reverberation
So this how it sounds. But there remains the question that has been the realm of sequencers. When? I guess you are not astonished to hear that this concept is treated in a different way. In this program time unfolds when you move – so it is not something as such, but your own time. Nevertheless *Mobile Rooms* allows you to control certain time and event related aspects of the sound (and in the next version there will be something which looks like a sequencer). You see these parameters at the top right side of the Sound panel, articulated as a yellow button. You may determine whether a sound is looped, played one, and if so, regularly or randomly differentiated, and you may further decider whether the sound is triggered by distance.

Playing a looped sound is something we are used to, hearing something once also. The interval seems accommodated too, although it should be mentioned that the term relates to the interval between the repeated sounds – the pause, as a musician would put it. But what is random interval? Very easy: it stems from the notion that mechanic repetition can be annoying. Therefore a slight - or in certain circumstances: a big deviation could enhance the perception. Does it come again – or has it stopped? With the random factor you control the percentage of deviation. If you take a value of 10 that will mean that the interval can be plus/minus 10 percent long.
The trigger aspect is one of the most interesting aspect for our way of looking, or better: hearing things. It means: that the distance between the sound and the listener determines when the sound begins to play. Trigger works like a photoelectric barrier. But if you set a high distance it could be used as a way to spare the processors capacity.

Making sounds fly around

If you have worked with conventional sequencers, you are used to filter management. Generally: besides being a time machine, a conventional sequencer is a big filter machine. And the art of audio engineering is commonly considered as the mastering of this field. So you might miss such an instrument when you begin to work with Mobile Rooms. In this regard the difference (and the conceptual novelty) of this program gets evident. In contrast to a conventional filter machine which treats the individual sound as a single entity, you have to be aware that sound in Mobile Rooms is always a symptom of a spatial relationship. So it fades away when the distance grows, and it fades in when you get nearer. The very same logic applies to all the characteristics which up to now have been managed by filtering. Take a common effect like vibration. If you work with Cubase, you would just trigger the vibration effect machine – and if you want to change the effect over time (making it increase or decrease), you would make a record of that effect channel.
Mobile Rooms offers something totally different. Instead of simulation vibration by means of an effect machine, it allows you to create actual vibrations – to spin the object around. Let's have a

closer look at this.
Rightclick on the sound sphere – and the following panel appears.

This is all you need to create some strange effects. As you see on the first glance everything here is about spatial positioning. You have the axes x y z, you have a combined xy and a a combined xyz axis (to allow you to create circular with ease), and the you have the angle axes: pan roll and tilt. There are just two basic parameters for you, the sliders that are entitled radius and velocity. Let us begin with a simple example.
First we click the on off button at the top. If it turn green our slider movements will affect the soundfile, which is displayed at the top of this sound movement panel. Let us choose combined xy – that means a simple circle (the radius of the x and y axis are equidistant). If we increase the radius we see that the sound sphere is going to circulate. By means of the velocity slider we can control how fast our sphere is spinning around. The may go up to extreme velocities the graphic will not display anymore (but in term of audio it will be calculated properly). Bringing the sound sphere into a circular movements affects the sound dramatically. Corresponding to the environment and sound settings you will hear a constant fade in fade out, equalizing etc. With one setting you create an effect which would usually afford numerous effect machines, and a delicate fine tuning of all the involved parameters.
You do not have to fade anymore. What you do instead (which is the equivalent of a fade): you set a radius, you set a room rollof for the sound and the environments respectively.

But lets us take another step. Though it is nice to see the sounds fly around – there are a some other aspects which lie dormant here. What about changing the angles while the object is moving? Very easy. You create a double circulation: the object circles around an absolute and a relative centre which is its centre of gravity. And if pan roll and tilt axes are implied, you may creating some strange behaviour. But what does this mean in terms of acoustics? Here comes the concept of directed sound into play – which we have touched in the previous section. To create a directed – we remember – we have to change the outer and inner cone angle – and the respective volumes too.

Immediately we hear that the sound begins to change its characteristics. One could say: the sound is beginning to breathe, producing the minor deviations which create the illusion of a living being. This might be an interesting option for midi music – or synthetically produced sounds (further versions of Mobile Rooms will support MIDI). So it is the interplay between static sound and environment characteristics and movement which determines the field – and mastership of this kind of audio engineering will lie in the subtle understanding of their interplay. If you want to convince yourself how a single parameter may effect that relationship, go to the environment setting and play a little bit with the room rollof factor.

Fly yourself

If sounds can fly – why not fly yourself? Nothing easier than that, since you can transform a sound sphere into a leader, or better into a vehicle that you just enter. To do this, click the path icon on the

main bar. Another panel will pop up at the up (which will we discuss later). For the moment we are just interested in the button which is entitled *object*. When we click that, we are asked to right click on the sound sphere that we have chosen to be our spaceship. It is self evident that it should be a moving one, otherwise you will just reside at the position the object occupies. If you choose an object you will notice that another pops up. This is the monitor which follows your spaceship. Instead of using such a monitor I could have decided to use the whole screen – but after I did that I found out that this is really difficult. If you use pan and tilt, the view turns into a roller coaster ride which produces vertigo and makes oversight an accident. So the compromise is: using the small view as a monitor for this movement, whilst the screen itself stays the same.
But we do not have to forget that these display considerations are secondary by nature, because we want to change acoustics. In this respect the »spaceship« produces interesting result. (A little side remark here: it is recommended to use a dummy sound sphere instead of a audible one, since this sound would always be at the center. Under certain circumstances this might be a strongly desired effect, but in other circumstances disturbing. So use the *silence.wav* if you want to populate your environment with such a dummy).

If you want to unlock your listener position (leave your spaceship), simply click on the path icon again - and choose the unlock option. You are on solid ground again and the monitor view will disappear

The right path

Let us shift our attention to the path panel that we have mentioned already. Circular movements are great, they exempt you to think of a beginning and an end - but they can be annoying after a while, making you simply dizzy. Therefore there is an alternative way of path management implemented in Mobile Rooms: just record the paths you are actually doing. You can record, store and load an unlimited number of paths (when you press the key I you can slowdown the effect – producing a slow motion effect thereby).

Let us have a look at the panel. If you click into the little display field, you type in the name of the path that you want to store. Now recording a path will create such a file. Recording a path is as simple as another recording processing. Just click on the record button – and it will begin to flicker. To stop recording press the stop button (or the record button again – that does not matter). To playback the path click on – guess where? I think you got it, and I will spare you the repetition of

things you already know.

If you want to load a path, click on the path button – the path data panel will popup. The only thing you have to aware of is the fact that you have to confirm your choice by clicking into the display window again. Playback will start immediately.

In the current state the path management is a somewhat clumsy affair. After you have played around with it you will soon sense the necessity of fine tuning and editing your movement. And this is admitted beforehand: this will come in the following updates.

Morphing Rooms

One of the stunning effects of *Mobile Rooms* is its capability to create morphing rooms. Why should I need that? The disadvantage of just one overall acoustic setting lies in the fact, that the specific sound characteristic does not fit to your notion. Passing from one room to another often creates an amazing, overwhelming sensation: you pass a threshold, a door or you find yourself outside of a building – and everything sounds different. In fact: this is what I was looking for with the concept of morphing rooms.

You find an extra panel for that. By this you create subspaces. Click on the CREATE button (PREPARE is meaningless in the current state) and an illuminated sphere will appear at your position. This is – like the sphere representing the sound object – a visual placeholder. Using the two slider (entitled *inner radius* and *outer radius*) changes the appearance not only of the visual object, but also for the acoustic room. With the outer radius you adapt the extension of that space. With the inner radius you define, that the this part (the inner circle so to say) is not transitional spaces but just this acoustic setting. Yes, that has to be done also. You have to define, what kind of room this shall be. Just click on the buttons beside the text field and choose the setting that fits.

When you work with morphing rooms, you might confront a problem which is not resolved in the current state. The effect is: that there may two audio streams instead of one, thereby producing some unwanted effect. This will particularly occur with looped material. So I strongly recommend using the space mrophing effect with either triggered or interval cntrolled sounds.

Data Management

There comes a time that your material is getting more and more complex, so you want to store it. In this case data management is related to different aspects of the program, so this has to be commented:

First the storage of the recorded wave files (implemented very poorly up to now), second the storage of room characteristics (we have talked about that), third all the data that relates to a session. To save a session in one big rush is the straightforward way – and you can do that via the data manager. Here is how it looks.

In a way this is self explaining. You choose the data you want to store, click on the data field, and that's it. – Playing with the may you may note that the storage of *groups* is not implemented yet. It stands here as a placeholder. Groups will be – like the storage of material characteristics - the next step of this program. To order sounds in sound families would be helpful, for data management as for aesthetic reasons as well. It would be nice if one could not the very same voice over and over again, but something out of a pool of sounds, randomly chosen.

Recording Sounds

On the main panel you find a record icon. If you click it, a recorder bar opens up at the bottom of the screen. If you click the display field you can type in the name of the soundfile you want to create. All the output wave files are stored in the wave output subdirectory.
In this trial version you may record sounds up to 30 seconds. If you register this limitation will be cancelled.

A few words of things to come

The actual state is more than a beginning, so no need to excuse. But there is still plenty of room left for fantastic new features. Although the current state of *Mobile Rooms* offers a lot there are a few desiderata on my agenda (I will do anyway, just to please myself)

Grouping
material presets
management of sound families
a two dimensional panel which allows easy positioning (to replace a sequencer)
and the creation of trajectories
refined movement avi support

Next version...

Why get a registered user

You may record unlimited time. And you keep the project going on… and there more you, faster and faster.

To register you go to:

`http://www.superfluxus.de/MobileRooms.html`

there you find a link to the registration page. Registration is handled by ShareIt - world wide and realiable.

If you have comments, question, we try to answer fast and thoroughly. Mail to

`michelet@superfluxus.de`