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T3H
Installation

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The Story

Complete silence and darkness... I'm standing alone in this place and can't see anything. I only hear my heartbeat... and the breath of something around me. I can't really figure the distance between us. I don't really know where I am and what I have to do, should I run towards or away from the sound. Suddenly, I start to see my shadow in front of me, I look behind, it is the sun rising quickly. The sun reveals my nakedness... and the thing that was breathing is a... very weird... creature?! My fear overwhelms me, I can't hold my heart beating. I recognize that the creature grows as I get more excited, it seems to nourish from my anxiety! I see a door at the other end of the room. I approach it. But with every step I take, the door changes its position... while the creature just gets bigger and bigger. I stop. I have to think about what to do. I try to calm down. I must think. Think. Think of a solution. Think of a solution. Think of a... I take a step towards the door... it stays where it was. Another step. The door is still at the same place. I get nervous again – and then I notice, that the door flickers. I look around. The creature grows. I try to calm down. The door calms down. The creature stays. I make another step. Then another. And another. I'm there.

Concept

The Tell Tale Heart (T3H) is a project run by 10 international Master students from the Digital Media programme at the Hochschule für Künste in Bremen. It is a one-year project started in March 2008 and debuted in May 2009. T3H is an interactive, ideally a movable installation to be placed at various public spaces, exhibitions, etc. The concept of T3H is related to discussions in recent media theory, furthermore it regards topics in philosophy and psychology and the group's own subjective world understanding and experiences.

The visitor of this installation indirectly finds out a constant dialogue between his actions and the installation environment. The visitor's movements and bodily signals, measured by an array of attached sensors create a reaction of

the installation on which the visitor has to respond to. This sequence is continued until the visitor reaches the goal to control his signal output or fails to do so. Afterwards the T3H group will observe and evaluate the experiences of the visitors and draw further conclusions to reflect on our prior knowledge.

Scenario

The visitor of the installation will go through different phases starting from attaching the sensors to him, then letting him face his digital "Other", which is created with/through his body signals, until one of them, the visitor or his "Other" manage to find the way out.

Start

After attaching the sensors, the visitor is led into in a dark room. The door will be closed right after the visitor is in. At the beginning the visitor can't see anything. Then a projected image starts composing itself with each of the visitor's heartbeats. Those small pieces of images crawl towards the middle of the room and gather to create the Other. This Other is able to move, grow, chase and is accompanied by sounds according to the visitor's body signals and his movement.

Orientation

Up to this point the visitor is just facing pieces of projected image "The Other" and has no idea what it is. After a while, The Other starts to crawl towards him, seemingly producing uneasy sounds, which are getting louder as it approaches the visitor. This uneasy sound will provoke the visitor to keep distance from The Other. This creates a stressful situation for the visitor whose physical reactions can be measured through the body signals. These signals are again triggers for The Other to react more aggressively, move faster and becoming a greater threat. A circuit of reactions lapses. Shortly after those mechanics might get clearer to the visitor.

End

The visitor stays in this contradiction; he tries to stop the threats and attacks from The Other, and it tries to provoke his emotion and to weaken him. The visitor has to look behind the mechanics between body signals and the movements of The Other, and is forced to control his bodily signals to break through the circuit of reactions and can approach the door. Either the visitor succeeds to control his body signals and by that finds the exit or he leaves his body signals out of control and The Other regains his territory.

Visual

By animal nature, any organism with the sense of sight usually tends to avoid seeing the image with following features: straight-staring-eyes (or eye-like patterns), enormous size, and extreme colour. As to human being, besides the features mentioned-above, the uncomfortable images are usually related to personal perception and experience, such as sticky liquid and undefined shapes. Here, we will apply these features to make the visitor avoid the light body and keep the concept of experience being executed.

Audio

In the installation T3H audio will be considered a major element of bodily signal trigger, which impellingly arouses biofeedback. Based on scientific research, sound has a direct effect to the human nervous system and further triggers the emotional reaction by the variety of frequency, phase and orientation. Sound is capable to evoke bodily function, such as pulse, respiration rates, muscle tension, chill and shiver; bodily reactions, for example: "Vertigo"; emotions includes fear, anxiety, unease and relaxation. Furthermore, during the whole experience, the visitors will hear different voices and whisperings during the whole experience in order to show the interaction between the bio-signals and the installation.

I Found Myself

Written by The Other

There is no doubt: Science cannot explain everything. Even religion, for those who believe in it, is not able to answer important questions. I wasn't aware of that until... until I found myself, so to speak. Before that, I had always heard many people saying that one of the most important things in their lives was to "find themselves", but I actually never knew what they where talking about, even though I looked at all of them into their eyes with an implicit deep understanding of their words.

In fact, I used to think that those people were out of their minds: How can you find yourself? Isn't it that easy as grabbing a mirror and look at you? Can't you find yourself with your own hands? It is until you sense that something has been missing in you when you really start to get the idea of meeting you, or meeting the person that controls the body that you find everyday in each reflection; the same person who really decides what you do, or don't do, in life.

Through centuries, there have been many researchers trying to unveil this idea. Science and philosophy have their own explanations, but there is one that might be the most accurate one, without being the most spread theory: the artistic way of understanding yourself.

Artists, contrary to scientists and philosophers, have the advantage of producing personal experiences (for the artists themselves and for the visitors to their works) that, maybe, won't be recorded and printed out in a beautiful book edition to sell it, but for sure art is one of the ways, a discreet and effective one, to take you into the underworlds where you can ask whatever you want, where you can scream if you want to... where you can be really you. Since life is personal, there must be a different answer for each one of us, and that is what art offers in this case.

Probably is in the statement of "being really you" where everything starts. People want to meet themselves to know exactly who they are and which path do they want to follow in life. In that seeking, I found a group of international artists in the German city of Bremen; they were from all over the world. It's weird how humans can combine different realities and create a common project

that, literally, involves many world's ideologies, which could imply only positive things for everyone.

"Do you want to come in?", a young woman asked me with a smile on her face. Probably, I replied, I'm just curious. The circular shape of that installation and the darkness you can barely see from the outside, though attractive, had something mysterious, like if inside was waiting for me something unexpected. Don't be afraid, good things happen there, the same woman told me.

People around this installation, that seemed to be big enough to run a bit inside, were talking about what they saw, felt and heard in it. I have never trusted artists, I said to me, they always think to be right without proving anything, and probably they claim to be artists to protect what they do from serious criticism. Some people have said that inside they got interesting and valuable ideas, the same girl explained me after questioning her about the results. And if you're looking only for fun, you can do that too, or both if you wish so, she said.

So I came in, it was only me in there. Best things usually happen when you are alone. Is a good start, I thought. There was an overwhelming environment and I felt that I changed, I can't explain how, but in some way, I was then a different being. Sounds and video projections filled the room and I started to feel a bit of excitement; suddenly a figure, a different one, appeared on the room. At the beginning I didn't know what was it, but then I noticed that it was a person, a man, to be precise. When you are in front of important situations you immediately can recognise them, and this one was one of those.

This person, if I can call it like that, was very strange to me, like from a totally different world. He approached to me very cautious, like if he was thinking the same about me, like if the weird one inside that room was me. Once he was near me, he stopped; the guy didn't seem very calm and went a few meters back. Then I felt a necessity of getting closer to him, so I, also cautiously, moved towards him.

He looked more and more nervous every second, but not in a bad way, I think he also was having joy, I could identify a smile on his face. But the increasing heartbeat I could hear by then, which I don't know whether was mine or his, made me more curious and I kept following him. As I expected, he ran around the

installation so I couldn't reach him, I could see how he behaves in situations where, for most people, is difficult to control themselves. It is interesting to presence how sometimes we want to do something, but our subconscious gives another command and there is nothing else to do against it. I'm sure that people can improve in every aspect of their lives if they know how to control themselves, I thought.

After that, it was visible that this strange individual started to dominate his emotions and body, just like I had thought some seconds before. The heartbeat also diminished, then the whole situation became, I still don't know why, less interesting for me. So I went backward, to the middle of the installation and, when the heartbeat was almost the same like at the beginning, the door opened. I supposed the journey was over and that was time to leave the darkroom. But I couldn't move anymore, I was just there, standing on the middle without strength to walk out.

In contrary, the man who was with me inside the room could move easily, he transmitted a sense of happiness, of success. He was going to the door. Wait, I'm not going to stay here, I said loudly. I asked myself whether this was part of the installation or not.

"Where are you going? I can't move, are you going to leave me here?" I asked him and got nothing back. Hey, answer me! I shouted. "Well, you want to know the truth", he said quietly standing at the door, and continued, "This is only a game to understand more about ourselves, to know how those parts that belong to us, but we can't see, affect our daily life without even notice it, like the heartbeat, like our emotions, like our thoughts, which are, all of them, who we really are and who determines our actions at home, at work, everywhere. Then is better to know who we really are, isn't it?

"Most people think that what they see is what they are, but there is nothing more incorrect. Think about it", he kept talking, "With the time humanity has become more and more superficial, and has given less importance to deeper and decisive aspects of life. I understood that on time and was able to control my subconscious, so we work together in the same direction. I can say that, in some way, I found myself. And you helped me to do so. That's why I can leave the room".

"I helped you to do so? Am I part of this installation? And if you can go, do I have to stay here for ever?" I asked him. "Apparently you haven't understood. You're part of me", the man revealed me. "What do you mean I'm part of you? Then, what am I?" I asked this person. "You're what I can't see normally, you're what no one can explain yet. You... you are the other".

The Experience

Article published in *Vier* Magazine, May 2009

The Territory. This term, the concept itself, has been an issue for humans during centuries. It seems people's nature to have, to desire and to take over others´ territory. Perhaps if persons were more aware of their nature, there wouldn't be so many conflicts based on the idea of possessing a space. What do we really own? What do we fight for in life?

"Don't be afraid, try it", that young woman told me. I wasn't afraid, I was just curious about the physical shape of that artistic installation. "Wear these sensors", asked me the girl after I accepted to go inside. "There are many hidden signals inside us and these biosensors will help you to perceive them", she added.

It was an octagon, big for an installation –about 9 meters of diameter– and it had a particular fabric covering the upper part. The single door was small and the white-clean outer aspect of the installation contrasted with what I could see while standing by the door: inside it was all dark. "Some people say it changes the way you see yourself and understand the concept of territory", the same girl told me, at the same time she was closing the door from outside. As soon as I stepped in I felt that I wasn't alone. A mixture of fear, happiness and even angry was inside me.

Some sounds were coming from different directions, also a voice was there; was it one voice? Or two? I don't know. Where are you? I shouted, who are you? Then a projection started, there were millions of small white dots on the floor. I had the sensation that they were following me. Is that what the girl at the beginning meant? Are we creating things inside us even without realizing it? The

movement of sounds and images were, I'd say, intelligent, it was like an artificial organism communicating me something.

We, people, are used to fight against other people, but what would happen if you had the opportunity to fight for a territory with yourself? Which part of you would win? It seems that life is a competition, but we believe that because we were taught that way. It is also possible, somehow, to handle the situations in a way, that both sides could interact peacefully in the same territory, but for that, we need to learn how to control ourselves, and there is no better way, than fighting against our thoughts and vital signs.

I felt that I shouldn't let this thing approach my space, its intention was to corner me, so I ran away from it, but it was insistent. This organism acts as if it was watching me, sensing me... as if it was part of me. It knows exactly where I am.

"Come closer", the voice coming from in front of me asked me kindly. I started to get closer to that organism moving on the floor. "No! Don't do it!" Another voice, clearly coming from behind ordered me. There were some whisperings as well. I was feeling anxious, and my body was also showing it. Then it was clear for me: my bodily functions were creating that other organism.

I remembered all those things I wanted to do during all my life but I wasn't able because I lost control of myself. Then I closed my eyes. "You have to calm down", my inner voice told me, "you always can solve things in a better way if you control your body". Then I opened my eyes again and it happened, something that changed the way I understand myself and the concept of territory. Just like the girl at the beginning told me.

I don't know how, but I could see myself from outside for a while: I saw how I react, how I look when I'm nervous. I found that situation so interesting that I moved towards myself, I wanted to touch me. I felt I was lighter, I could move faster. And my voice was different from time to time. No doubt, this is who I am as well.

"Wait a minute", I said. "Where is that artificial organism that was here at the beginning? The audio, the visuals... where is all that", I asked myself, I was smiling at me. Now, contrary to the beginning, I looked very calm from outside, the previous anxiety was gone. I moved away from myself, and then, all of a

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sudden, I felt that we were one again. I wasn't able to see me from outside anymore. I opened the door of that installation with a smile on my face and left that dark room.

The same girl who invited me to come in was waiting for me. She gave me a kind expression. "You have a different look", she said. I couldn't answer anything. "Did you discover something?" She insisted, but I deliberately didn´t answer. She smiled again. I wanted to tell her that, at some point, each person realises that we, humans, are not more than ideas and a body, that we are creating every day, every second, even without us noticing it. But I couldn't speak that out.

"Tell me, do you have a territory? What, or who, do you possess?" I asked the girl. She was about to answer me but I stopped her. No, don't tell me. At the end, it doesn't matter what we think we possess; at the end, the only sure thing is that we own ourselves, our ideas, our thoughts, our emotions, our vital signs. And if you fight for something in life, it is always better to confront yourself first, consciously.

How the T3H looks like

T3H – Theoretical basis

During the development of the T3H installation, we went through different theories and ideas that helped us to produce the whole installation. Among them, we find valuable concepts from Deleuze, Guattari, Latour, Stengers, Griffin and Wolfe each of whom have studied broadly the relation between mind, body and their consequences.

The following summaries are just some of the texts we researched for the purposes of the T3H installation.

How to talk about the body

Bruno Latour (1999)

In this paper Latour introduces a new way to talk about the body. He does this not by "theorizing [...] the body directly but rather 'body talk'". In order to summarize his issue I will stick to his outline and try to explain section by section what he is talking about.

Falsification

Following Vinciane Despret, to have a body "is to learn to be affected". One's body can be seen as interface that gets affected by the elements around it. It is not just a container of a mind/soul. Thus the body can only be defined relative to these elements: Talking about the body rather means talking about what elements it has registered.

Instead of discussing the body directly this paper will theorize 'body-talk' - how to talk about the body without discussions about dualism and holism. The first step is to show the difference of the talk about propositions and statements. Secondly, a definition of what it means to talk scientifically about the body is drawn from the work of Isabelle Stengers and Vinciane Despret. In a conclusion a way how to maintain "'freedom of speech' in body talk" will be argued.

Articulations and Propositions

What does 'learning to be affected mean'? An example: Students that learn to smell even slight differences between odors by training their noses with "odor kits" (collections of odors for training purposes). They acquire a nose that is able to detect even small contrasts. Equipped with that organ they inhabit a "richly differentiated odoriferous world". Thus acquiring a body is a process that at the same time reveals a world.

With the help of the odor kits a teacher has taught the students to be affected differently by different odors. They learned to be affected/effected instead of showing the same reaction on each stimulus (not being able do differentiate different odors).

In contrast in the model of primary and secondary qualities there is a body (subject), a world (objects) and an intermediary (language). The latter connects the subjects with the objects. In this model the subjects and objects are just there, interaction/learning is not essential for their existence. The intermediary ought to be as close as possible to what it describes and hence will disappear once the connection is established. The question will arise how accurate the perceptions are, which one represents the truth? To solve that one will introduce primary (objective, real, measured by scientists) and secondary (subjective, existing in our (laymen's) minds) qualities. That divide reveals two body concepts: the physiological body living in the real world and the subjective phenomenological body; "the interesting body will have disappeared". That mind-body dualism is what Whitehead (1920) called "bifurcation of nature".

With the dynamic definition of the body as 'learning to be affected' that mind-body dualism does not have to be discussed. All actors like (sticking to the odor example) pupils with their odor kits, scientists with their apparatus and all the others in the odor business can be considered "as bodies learning to be affected by hitherto unregistrable differences through the mediation of an artificially created set-up". The bodies they acquire will vary. However, none has unmediated access to primary qualities except a bodiless - and thus dead - body (nose, ...).

Latour now introduces the term articulation in order to talk about the differences the body becomes sensible to. React the same way on different stimuli (not being able to differentiate) means to be inarticulate whereas articulate subjects learned to be affected by others. This interplay with other instances is what gives meaning to a subject. In comparison to the limited accuracy of reference - that is how precise I can describe something - articulation has no end. Articulation does not strive for a final convergence into a single version (which will always leave doubts about the correctness of statements). Contrasts - controversies, cultural history, ... - question fixed, validated statements while they contribute to articulation as they add differences that one can become sensible to and thus widen the world. In order to make this more lively a nice a short dialog from Latour's text:

"Ah", sighs the traditional subject, "if only I could extract myself from this narrow minded body and roam through the cosmos, unfettered by any instrument, I would see the world as it is, without words, without models, without controversies, silent and contemplative"; "Really?" replies the articulated body with some benign surprise, "why do you wish to be dead? For myself, I want to be alive and thus I want more words, more controversies, more artificial settings, more instruments, so as to become sensitive to even more differences. My kingdom for a more embodied body!"

The question now is WHAT is articulated. Latour suggests using "proposition" to describe what is articulated - meaning it is not given by an authority but allows for debate. Coming back to the odor example, odors are not words or things (as in primary qualities) but propositions. The articulation by the pupils "does something to the odours themselves". In this model the divide between reality and artificiality vanishes, we do not distinguish between constructed and real any more. There may be several diverse propositions all valid at the same time; however in the world of primary and secondary qualities there is only one true reality and all images in the minds are misrepresentations of this reality. For the concurrent existence of propositions Latour chooses the term multiverse, a "universe freed from its premature unification".

With this new model the problem is not to have a body any more (a body that disturbs perception of the reality) but "accounting for a multiverse of articulated

propositions". Now the "difference between badly and well-articulated propositions" has to be found. Traditionally it was the question whether a statement was true or false. Now, the normative question is whether a proposition is well- or badly-articulated. Answering this question is what Latour tries to do in the next section.

The Stengers-Despret Falsification Principle

In this section Latour draws an "alternative normative political epistemology" from the work of Isabelle Stengers and Vinciane Despret serving as norm in a world where knowledge is conceived as articulation.

The Scientific is a Rare Ingredient of Science

1. Knowing is not a self-evident outcome in science
2. Crucial to distinguish between good and bad science, scientific and not-scientific
3. Cannot be said once and for all
4. Can not be predefined for a field of inquiry
5. Not easily transportable
6. Knowing always has to be started from scratch
7. In general (e.g. Popper) fields of science are split up into scientific and non-scientific
8. Stenger & Despret cut INTO sciences

Scientific means Interesting

1. Knowledge has to be interesting in order to be scientific
2. "Fecundity, productivity, richness, originality" properties of a good articulation
3. Inarticulate knowledge means to be tautological, repeat what's there
4. Articulate knowledge means engaging sth "in the fate or destiny

of many other things as well"

Scientific Means Risky

1. Popper: put the theory at risk with experiments able to do so
2. S&D: requalify the questions (tools, protocols, settings, …)
3. Be sensitive to reactions on artifacts rather than the questions

Look for Recalcitrance in Humans and Non-humans

1. S&D's touchstone applicable to natural AND social sciences, don't divide, prejudge
2. Inquiries should maximize the recalcitrance of the inspected
   - Harder with humans as they obey scientists
   - Objects obstinately object to being studied

Provide Occasions to Differ

1. The "logos" or "graphos" many sciences carry in their names indicates
   - science renders hitherto mute things talkative
   - the things/disciplines themselves talk, not scientists
2. Usually scientists try not to interact or interfere with the entities
3. However, scientists ought to provide their object of study with "as many occasions to show interest and to counter his or her questioning"
4. Three conditions:
   a. Is the scientist interested?
   b. Are the elements under study interested?
   c. Are the articulations interesting?
   - Leads to case by case decision whether a single piece of science (not a whole discipline) is valid

Neither Distance nor Empathy

1. Neither distance nor empathy defines well-articulated science
2. Both can hinder good articulation
3. The question is: do they provide occasion for the object under study to raise its own questions?
4. Even having prejudices/biases is ok as long as one puts them at risk
5. The distance that matters in science is the one between "the new repertoire of actions and the repertoire with which we started?"

Good and Bad Generalizations

1. "Scientific" to S&D means to be able to be more articulate:
   - Less redundant
   - Modifying the ingredients of the multiverse
   - Broaden the repertoire of actions, competencies, performances
   - Modify the questions
   - Science continually changes the idea of the multiverse
2. Generalizations
   - Provide general explanation → connect widely different phenomena → generate more differences
   - Eliminate alternative versions, discount all remaining differences as irrelevant
3. Example how those attitudes can be put into practice: genes
   - Engage genes in scientific disciplines, enriching them
   - Call these ("non-genetic") disciplines archaic and obsolete

   o "Generalization should be a vehicle for travelling through as many differences as possible"
   o "I accept being at once general and compatible with alternative

versions of the multiverse"

Allowing for a Common World

1. Latour says that every epistemology (theory of knowledge) is political
2. Epistemology is to divide science and politics
3. Humans tend to obey scientific authorities
4. Milgram's experiment did not show obedience to authorities in general but to scientific ones
   - That is because of the way science is handled (objective and true)
   - Thus scientists have to maximize the disputability
5. Traditional science (after Popper and Lakatos) are indisputable (insulated from politics and incompatible with discussion)
6. In Stenger and Despret's epistemology discussions - the presence of other enduring versions - may continue, their existence means the composition of a common world.

Conclusion
How Many Bodies Should We Have?

The talk about the body depends on the definition of science. That is especially obviously as it "automatically" leads to physiology and medicine. If science could define by itself what the body is and treats the body as a primary quality there would be no alternative version. When biopower prevailed there would be no democracy any more because such a system would introduce a norm for measuring men's usefulness; that norm would be given by science. Regarding the body as primary qualities forces one into spirituality (personality is disconnected from the body) or phenomenology (personality is a physical phenomenon) which connect different views/aspects/disciplines in one single "package".

"Dualism of a physiological body pitted against a phenomenological one"

When a certain aspect or view (e.g. a limb's DNA structure) is defined as primary quality other aspects and its science disciplines are rendered archaic or even obsolete. The latter would just add secondary, subjective qualities. The question is, which aspect is the primary quality (beside the DNA it could also be the atomic structure of the DNA or the measurable information content of the body). Latour here wants to make use of the touchstone provided by Stengers and Despret to measure science.

Steadily our perception is influenced by our surroundings and devices (as in the odor example by the odor industry or the odor kits). In the same way scientists use their instruments to become sensitive e.g. to the atomical electric world. Hence, there is actually no difference in objectivity between the various disciplines or "white coats" and "normal" citizens. There is not even such thing like a 'subjective side', it is just a "discounting [of] all the extrasomatic resources [...] that allow us to be affected by others in different ways".

Scientists should not try to reduce the world by eliminating other versions of the world but rather add more contrast and articulation to what it is to have a body. According to Whitehead there are not primary qualities nor can scientists be reductionists, they can almost only add to the world.

This is not saying that all science is equal. Here Stenger and Despret's epistemology as to serve as touchstone: scientists "might articulate interesting contrasts, or they might repeat redundant results". That means there is now a way to measure science, not disciplines, but every single science endeavor.

The Stengers-Despret normative argument is important...

> 1. "To abandon the distinction between subjective and objective bodies
> 2. "To deny to science the possibility of subtracting phenomena from the world"
> 3. "To revere hospital institutions that allow one th be affected"

But that does not mean: "to abandon the difference between badly and well-articulated propositions", it means: "to push the frontlines of the struggle inside the sciences themselves".

A Constructivist Reading of Process and Reality

Isabelle Stengers

The author defends the approach of "a conception of the world" in Whitehead's Process and Reality, which might be understood with confusion, especially about his vision of a creative universe because we already have the common sense notions about the world. According to Whitehead, philosophy's task is to take care of our abstractions, even comparing it to engineering.

> *"You cannot think without abstractions; accordingly it is of the utmost importance to be vigilant in critically revising your modes of abstraction… An active school of philosophy is quite as important for the locomotion of ideas, as in an active school of railways engineers for locomotion of fuel."*

Our perceptions are highly selective, getting rid of what doesn't matter, what there is no need to notice because it's always present.

> *"We habitually observe by the method of difference. Sometimes we see an elephant, and sometimes we do not. The result is that an elephant, when present, is noticed. Facility of observation depends on the fact that the object observed is important when present, and sometimes is absent."*

Whitehead abstract propositions are a variation of interest; they are those that ask for a "leap of imagination"; they act as a lure for feeling "something that matters." Therefore, the task that he assigned to philosophy is to design new abstractions that induce an explanation of our experience. It doesn't mean that

his philosophy aims at some kind of truth which would go beyond our abstractions and would give us the power to judge them.

For Whitehead we aren't the prisoners of our abstractions. In contrast, we may well become prisoners of the false problems they create. It's important not to criticize abstractions but to take care of them, and to engineer new modes of abstractions designed to lure an appreciation of our numerous modes of abstraction. Thus, abstractions are defined as lures that lead to new possibilities or adventures, which produce new modes of existence and new aspects of what they mean. This intertwined process of co-emerge and the creation of a conceptual group can't be separated from the experiential adventure of the philosopher, experimenting simple disclosure, not disclosure of a pre-existent experience, but of experience as conceptually "lured". Each concept then has to be designed and redesigned since the point isn't adequacy to any kind of pre-existent matter of fact, but two questions are always there: is the concept successful in doing what the philosopher aims it to do, and are the philosopher's aims an adequate expression of the challenge he has decided to confront.

When a philosopher constructs, there's always a "matter of concern", and Whitehead's matter of concern is the bifurcation of nature - causal, objective nature (like chemistry laws) on one side and a perceived nature full of sounds, odors, enjoyments and values on the other, which means nature will "get credit which should in truth be reserved for ourselves: the rose for its scent; the nightingale for his song; and the sun for its radiance. The poets are entirely mistaken. They should address their lyrics to themselves, and turn them into odes of self- congratulation on the excellency of human mind."

Whitehead diagnosed the bifurcation of nature as a case of incoherence which infected modern thought, being a source of problems of our own making, problems which stem from the clash between abstractions associated with the laws of nature on one side and abstractions organized around human perception, freedom, intentionality or responsibility. He wrote in Concept of Nature:

"For natural philosophy everything perceived is in nature […] In making this demand I conceive myself as adopting our immediate instinctive attitude towards perceptual knowledge which is only abandoned under the influence of theory. We

are instinctively willing to believe that by due attention, more can be found in nature than that which is observed at first sight. But we will not be content with less."

For Whitehead what we perceive may be transformed, if the way we pay attention changes, but it can't be wiped out or interpreted in terms of general conditions, which can explain what did first matter. "Due attention" means becoming able to add and learn how to get access. Adding, not deconstructing is the main point when a constructivist reading is concerned. In addition, very crucial importance of constructivism is to relate mode of existence and mode of achievement. The modes of interpretation matter. Interpretation is a serious, vital, business, never to be reduced to "mere interpretation." Whitehead remarked that if you want an experience devoid of interpretation, you can as well ask a stone to write its auto-biography.

However, you can't create "in general". A constructivist approach implies that any new, creative construction testifies not only for a matter of concern, but also for a commitment bearing on how this matter of concern obliged to think and create.

For Whitehead, his matter of concern was the bifurcation nature, and his commitment was to achieve coherence. Coherence means no simplification, no purification or selection of what would really matter. Everything we experiment must matter. Whitehead stated that the aim is to produce both a restraint upon specialists and an enlargement of their imagination.

Limitation produces nostalgia, dreams of the forbidden possibility for your abstractions to rule undisputed, while enlargement of imagination means appreciating the importance and value of abstractions as such. Thus, constructivist reading can't be separated from the efficacy of concepts because their value is to lure new feelings, to induce new ways for experience to matter. We have to learn to wonder about what we take for granted, that is to leave the settled, frictionless ground where the question of what is responsible for an eventual misunderstanding matters, while frictionless understanding is taken for granted. Sometimes we misunderstand but usually we understand. Whitehead wrote in Modes of Thought:

"Philosophy begins in wonder. And, at the end, when philosophic thought has done its best, the wonder remains."

The task of philosophy is not only to produce the concepts which will put in simple disclose the wonderful efficacy of the expressive sign as what matters for us, but also to explain those aspects of experience which do not matter the same way because they're always there, even when you stop understanding what somebody tells you.

For instance, Whitehead's "causal efficacy" is the experience of own body. We enjoy a world, including the feeling of our body, even if we aren't conscious of it, even if we have only obscure words about it. Those words must be designed in order to explain our experiences not to stop with the wonderful efficacy of the sign. Experience associated with creative self-determination about something else is what must be stated for everything that exists, otherwise incoherence will take place. As Whitehead wrote, "apart from the experience of subjects there is nothing, nothing, nothing, bare nothingness." what whitehead calls a subject is process of becoming together, rooting from elsewhere. Whatever we call a cause has no power to cause independently of the way it will be grasped into a subjective process of self-determination of an actual occasion. Actual occasions imply that discontinuity is primordial, while continuity, our usual perceptive habits, causal explanations and experience of ourselves as continuous identities have lost their claim and power to explain. They must be conceptually explained. What we call ourselves societies are complex routes of occasions that exhibit some conformity as each reproduces and confirms a way of feeling, of achieving its own identity, as proposed by the particular social environment it inherits. Each occasion is anew occasion.

What we conceptually need is the possibility of relevant novelty called by Whitehead "originality", the power to oblige thought. Originality has been generalized into a wonder about what it is rather easy to take for granted or to explain way by natural specific explanations. For example, for Whitehead, the fact that there is certain originality in the response of a cell to an external stimulus does not have to be explained in social terms but celebrated through

the distinction between living societies and "Life". "Life is a bid for freedom," he wrote, not to be confused with the enduring order of living societies. Achievement for a philosopher implies the transmission of concepts as such, as the abstractions they are, as appliances, the efficacy of which will be verified by new, original modes of thought.

"When a non-conformed proposition is admitted into feeling… a novelty has emerged into creation. The novelty may promote or destroy order; it may be good or bad. But it is new, a new type of individual, and not merely a new intensity of individual feeling."

It's important to mention the way we accept the domination of abstractions, that is accept to forget or neglect what we are aware of because it can't be formulated in a clear way. For example, writing is taking its dominating position in our intellectual life. It gave us power of thought, analysis, recollection, but it also came historically to govern, or misgovern, our understanding of our language. Speech, as old as human nature, cannot be separated from the interfusion of emotional expression and signaling, always entailing an immediate situation. "Whether it was signal or expression, above all things it was this reaction to that situation in this environment." But when we talk, we can abstract the meanings of the words we use in a particular environment. "We cannot congratulate ourselves too warmly on the fact that we are born among people who can talk about green in abstraction from springtime. But at this point we must remember the warning – Nothing too much."

To civilize abstractions means to engineer the kind of new, relevant abstractions that would have abstractions showing their specific partiality. It means to display not the contradiction but the divergence between their specific social definitions of what matters.

Each abstraction is appealing for an imaginative leap, and it is this very leap which can't be abstracted from its relevance to other abstractions also calling for an imaginative leap.

Panexperientialist Physicalism and the Mind-Body Problem

David Ray Griffin (1997)

David Ray Griffin, who was a professor of theology, develops an alternative approach to understand the mind-body problem while adapting and over viewing the opposing approaches; dualism and materialism.

As a starting point he rejects the notion of 'vacuous actuality' and instead adopts the idea that all true individuals have experience and spontaneity. He points out David Chalmers' suggestion that 'the mind-body problem' or 'problem of consciousnesses is not simply one but many problems. He undermines the fundamental distinction between scientific or empirical problems on one hand and the philosophical or conceptual problems on the other. The conceptual problem is how is it conceivable that conscious experiences arise from the brain whereas the empirical questions are about the observable behaviour of physical objects. David Chalmers divides the mind-body problem into two distinctive problems; easy one and hard one. Easy problems are dealing more with empirical side of the issue (which can be observed by senses) whereas hard problem of consciousness is interested in why physical processing within the brain gives rise to a rich inner life. Griffin affirms that no amount of empirical data can by itself solve a conceptual problem. He claims that as long as the dualists and the materialists hold the problems starting point from each other side there won't be a constructive solution to mind-body problem. Thus he adopts these two views and by enriching them develops panexperientialism.

Dualists and materialists agree against idealists that 'the physical world' is actual, and they also agree on the nature of the actualities comprising the world. According to these two views these actualities at least the most elementary ones don't include any experience. Whitehead, who is also a panexperientialist, introduces the term 'vacuous actuality' for this view. Griffin suggests seven reasons to suspect of 'vacuous actualities' which accepts the matter devoid of any experience within physical world.

1. We know from our own experience that experiencing actualities can exist but we have no experiential knowledge that a vacuous actuality is even possible. Berkeley, who is an idealist, points out that our experience only provides meaning of 'to be' as long as there is a perceiver and something to be perceived. Griffin uses his argument in order to oppose to 'vacuous actualities'. Only being a perceiver gives us a meaningful notion of what is it to be an actuality. Leibniz as a panexperientialist takes Berkeley's argument as foreground and claims on attributing small 'petite perceptions' to nature's elementary units.

2. To be able to say only a little bit about what we mean by believing that such things are actual, existing in themselves (apart from our perceptions and conceptions of them), is better than being able to say nothing at all.

3. Historians of science recently emphasized that the 'mechanical philosophy of nature', adopted in the seventeenth century, was to impose the existence of a supernatural deity. This view that the units of nature do not have any capacity for influence, lacking experience and spontaneity emphasized due to theological-sociological reasons rather than empirical ones. Motion and mathematical laws were imposed upon these elements by a divine creator was the common approach back then. However as the opposite has been proved, we can be suspicious about vacuous actualities.

4. The philosophy of science gives us a fourth reason. Physics ignores the intrinsic value of entities and cares more for their relations to other entities.

5. Our direct experience gives no evidence of vacuous actualities. Griffin refers to McGinn, a materialist, who argues that our senses 'essentially present things in space with spatially defined properties', the relevance of which is that purely spatial entities cannot intelligibly be thought to have experience. Griffin agrees about these matters but he also takes it further

and says that our sensory percepts of nature arise from an extremely complex, indirect process. So this purely spatialized nature of entities can only tell us about sensory perceptions rather than the intrinsic value or nature of these entities.

6. Science has increasingly undermined the assumption that the ultimate units of nature must be analogous to the 'solid material bodies'. However quantum physics has shown the falsity of that assumption that atoms are like billiard balls but a lot smaller.

7. Given our conscious experience and a naturalistic worldview, one task of rational thought is to describe the ultimate units of nature in such a way that the emergence of creatures such as us is intelligible.

After Griffin gives these reasons to avoid vacuous actualities, he claims that rather than being unintelligible elementary units of nature have intelligible influence and experience. Thus he explains why we have to adopt panexperientialism.

As being humans, our consciousness and freedom provides us a unique insight into understanding the essence of nature, not merely the relationships between them. Furthermore; unless there is good reason to prohibit it, then, we should generalize the results of knowledge of human-beings to all other beings that appear to be individuals. By being individuals, it is meant that, whose behaviour seems to be taken as a spontaneity, similar to our own power of self-determination. We have to also be careful though and decide to which extend we can generalize to which other beings.

Science, besides providing reasons to be suspicious of the idea of vacuous actualities, has also given positive support to thinking of all individuals as embodying spontaneity and experience. Quantum theory implies that the behaviour of the elementary units of nature can only be explained by attributing to elementary particles something analogous to our own mentality.

The physics suggests that the ultimate units of nature are momentary events which are temporal and spatial at the same time. Our most immediate

experience of nature is our experience of our bodies which is our inner experience of our body's interaction with our conscious experience. The entities comprising the body are capable of incorporating into themselves and then influence exterior objects. Griffin gives an instance of being kicked on his shin. He states 'When someone kicks my shin, my experience is partly constituted by the pain in my leg. The cellular activities in the leg, therefore, seem to have a twofold existence: an existence in themselves, there in the leg, and a subsequent existence in my experience. Likewise, when I make a decision to reach down to grab my leg, that moment of experience seems to have a twofold existence: first in and for itself and then in the nerve cells that take the decision to the appropriate muscles. If my experience is part of nature, furthermore, this mutual influence between it and my bodily cells should be generalized.'

Griffin explains why dualism and materialism fail as an approach to the mind-body problem. He claims that dualists cannot explain mind-body interaction and materialists accept mid and brain as ontologically different kinds of actualities. In the end, Griffin affirms that 'panexperientialist physicalism portrays the world as comprised of creative, experiential, physical-mental events'. According to Griffin the entire world's actual entities are momentary events and all these entities such as electrons and minds are temporal societies of these events. There is no dualism and all unit-events are spatially and temporally extensive. Each event has both physical and mental aspect and the physical aspect is always prior. An event starts with complex physical interactions and then passes the result of these interactions to other units. The mentality of each individual entity relies on its capacity to decide on how to respond to efficient causation coming from another entity. An individual's mentality is self-determining. An event's (interaction between entities) creativity is its efficient causation on subsequent events.

Griffin explicitly avoids seeing human as a machine and states that each event begins as an open window to the influences of previous events and this is its physical pole. Then the window is shut while the event exercises whatever capacity for self-determination it may have and this is its mental pole. So, Griffin actually suggests a whole total process of both mind and body rather than a separated, parallel process of these within themselves. Moreover he also

suggests explaining the behavior of the bodies of humans by how they are influenced within their specific environments. To be more explicit, he states that if an electron in a particular environment behaves differently as it is taken into another environment. So in order to explain the behavior of the bodies of humans, we should also take into account the downward casual influences from higher members. So when we make decisions, therefore, Griffin states that they can affect the 'experience' and thereby the behavior of even the simplest constituents of our bodies.

De-ontologizing the Brain

Charles T. Wolfe, 2007

Charles Wolfe initiates his essay by mentioning phantom limb syndrome as a starting point to understand the relation between mind and body. Phantom limbs are cases of abnormal impressions of the presence or absence of parts of our body. The motivation of such a start in this essay is that phantom limbs and related phenomena seem like ideal cases for the phenomenologist, of a bodily state in which the viewpoint of the subject is an irreducible part of the state, such that if it were factored out, that 'state' would no longer make any sense, indeed would no longer exist. He asks the question how science with its measurements could ever grasp the irreducibly subjective construction which my body is.

He claims that phantom limb syndrome implies the first-person perspective and this first-person perspective can be understood with materialistic approach. However, while employing materialism, he enlarges it and states that the first-person perspective is an embedded vision of the brain, not just in the body but in the network of symbolic relations. He claims, although materialists disagree with dualists that say we are in our bodies like a sailor in ship, he does not also totally agree with materialists that would accept that the mind does not use the body but fulfills it. Rather he employs the idea of subjectivity. The materialist, he suggests, owes the world an explanation of what it is about a mental/neural state that makes its proprietor think of it as subjective. Purely internal, 'private' events which only I can feel are in no way separate from the natural, causal world which science studies. Of course, while muscular or visceral motions can be studied

from a third-person perspective, in terms compatible with the scientific representation of the world, we can also claim to feel things about them which this representation cannot include.

Taking Hume and also Montaigne as a reference, he reaffirms that our self and its neural correlates is a construct, at most a "narrative center, it's a fiction. There are only states of subjects that both function in a particularly intimate way within those subjects and have the subjects themselves and their other states as inevitable referents. And that is all there is to 'subjectivity'.

Even if we were restricting ourselves to 'biological talk', we would end up with some account of our subjective relation to the world, of our sense of 'self' in the midst of our experience of the world. Further, it would equally be within the province of biological discourse to describe how we construct partial versions of the world for ourselves.

For his last point he disagrees with comforting totally with embodiment of brain and mind. He states that since 'the brain is necessarily located within the social and symbolic world'; he decides to de-ontologize the brain. 'If mind and body belong together, as do body and brain, so do brain and world.' According to Wolfe, our brains have the capability to make use of their environments so they are affected by 'complex cultural and technological environments'.

Theatre and its Double
Antonin Artaud (1931)

To Antonin Artuad, people have lost the idea of the theater and what the theater represents. The audience has been transformed to standard peeping toms and the performance does not interact or evoke any response from the audience anymore. That's why the elite has turned away from the theater and the masses go the cinemas, music halls and the circus to find satisfaction where the intentions doesn't disappoint them. Artaud, therefore, decided that the theater needed a complete overhaul and that Surrealism wasn't apt enough to do the job. To him, scripts were just stage directions and the audience was the centerpiece of the work and not the performance itself. He viewed the theater as a sensory experience, cruel bombarding and overwhelming the audience's

senses. It forces the spectators to enlarge their regular responses to the performance far beyond their normal frames of reference.

Artuad called it theatre 'The Theatre of Cruelty' for 2 main reasons. It has nothing to do with cruelty as sadism or masochism, or to do with violence, blood, massacre.

1.   It is a theatre that doesn't hide extreme emotions, it exposes them. It's a theatre that doesn't compromise itself because of social manners, proprieties, refinement, sophistication. Cruelty's therefore a refusal to conform.

2.   Cruelty's also a search for the most precise way of communicating these feelings. Artuad writes of 'drastic strictness, the extreme concentration of stage elements' ('Second Manifesto'). So cruelty's also precision, rigour, attention to detail.

This more precise way of communicating, for Artaud, could be found not just in words, but through visual and acoustic expression. The role in theatre of linguistic elements – words – must be reduced. Instead, he wanted theatre that would be more concrete, present.

He championed theatre, because it's the only art form (nowadays, performance art too) where the spectator and actor share the same physical space, the same here and now. No other art form recreates human life with more immediacy than live performance.

He claimed that the sensory overload protects society from the tendencies to be violent and aggressive by removing evil and the ugliness in human nature and engaging the audience on an instinctual level forcing them to cleanse themselves from the worst impulses.

Theatre and cruelty refers to the projected revolution in drama where physical and primitive rites intend to shock the audience into an awareness of life's cruelty and violence. The idea is that the audience undergoes a certain type of catharsis by being possessed by a plague or epidemic of irrational responses. Terror and pain were the vital parts of the concept. Every part of the play meant to strain the audience during the performance, shocking them with different

aspects such as light, details on stage, collision of images, sounds and savage acts conveyed in a non-verbal language. these aspects are tailor made to provoke terror. The audience seeks to establish limits upon what is indeterminate and to classify it. They are left in uncertainty and in terror but the horrible effects are quite concert and clear.

Without elements of cruelty in every scene, the theater is not possible. In our present state of degeneration it is through the skin that metaphysics must be made to re-enter our minds. Cruelty is not sadism or something that causes pain, but it's a violent physical determination to shatter false reality that covers our perceptions. It not cruelty in the sense of being violent, but the cruelty that takes the actor to completely strip away their masks and showing the audience a truth they don't want to see. Text, to Artuad, has been overpowering meaning all the time and he argued against it. He wanted a theater made up of a unique language, something between thought and gesture. He described the spiritual in physical terms and believed that all expression is physical expression in space.

He attempted a few things in the theatre of Cruelty. He suggested that the world with its societies and the world of theatre itself had become and empty shell. The theater of cruelty is trying to revolutionize the theater, literally burn it to the ground as to start again. He tried to connected people with something more primitive, honest and true. He urges the people to be true to themselves.

Artaud expressed his intention for a 'total transformation' of Western theatre. He didn't want to give in to conventions of bourgeois, middle-class, 'after-dinner' taste. Theatre must no longer be for entertainment or amusement. It must no longer be frivolous. He refused to submit to the dictate of commercialised and artistically uncreative theatre and cinema. Middle-class theatre was based on propriety (a sense of what's acceptable on stage, of politeness), verisimilitude (a realist imitation of life in art), coherence (a linear plot, psychologically convincing characters).

Artaud felt that the attempt in theatre to imitate reality as precisely as possible, had strangled drama because plays necessarily became confined to a tedious standardised repetitive routine of respectable drawing rooms, plush bedrooms, etc.. He also felt that the emphasis in middle-class theatre on propriety, on what's acceptable, had excluded from theatre the real desires we

have, but can't admit in polite society: 'fundamental emotions' – intimate passions, erotic obsessions, sexual desires, fantasies, ecstasies, utopian dreams. And in addition, our paroxysms of fear, anxieties, savagery, even cannibalistic tendencies. Artaud said, 'audiences are searching for a poetic state of mind, a transcendent condition by means of love, crime, drugs, war or insurrection' ('Second Manifesto'). He noticed that all these impulses and convulsive feelings are suppressed by norms and conventions imposed by proper society. He proclaimed that we're 'submissive to the law, warped by religions and precepts'. He wanted to restore to the theatre 'an impassioned convulsive concept of life'.

He introduced the idea of the 'Plague'. The plague for Artaud is a metaphor for the breakdown in social order, conventions, rules, that enables the real impulses and passions of humans to surface. In the biggest outbreak of the plague, the Black Death (1347-51), between ¼ and ½ of all Europe's population was devastated. There was a total breakdown of law and order, since governments, armies, and guards were all affected. The usual rules and conventions of society were suspended. In times of plague, morals are forgotten and society becomes more permissive. Also, in times of disaster, life and worldly pleasure must be appreciated and exploited to the full, because life and health are so precarious. People yield to the irresistible impulses of their own earthbound passions and appetites. So the plague, for Artaud, helps to release hidden desires and impulses that the order and propriety of society usually suppress.

Theatre for Artaud is no longer just entertainment. And it's no longer just a reconstructed illusion of life, it's life itself. It's the very real release of hidden human emotions. It feels and expresses the pulse of civilisation: 'there will be no distinct divisions, no gap between life and theatre'. For this reason, Artaud wanted the architectural structure of theatre to incorporate actor and audience in the same space, not to have them separated like in traditional theatre:

"By eliminating the stage, shows made up and constructed in this manner will extend over the whole auditorium and will scale the walls form the ground up along slender catwalks, physically enveloping the audience"

To sum up, on Artaud's stage, suppressed elements of human existence must be liberated.

Artaud felt that theatre based predominantly on text, dialogue and words, isn't sufficient to convey these basic emotions and impulses. He thought that theatre in Europe is too dominated by the theatrical written play-text, and by the playwright, by the 'author's autocracy' . He wanted the theatre to focus on other aspects of performance too. He felt that linguistic language is too abstract to convey these intense emotions. Language refers to something that's always abstract and absent. He was conscious of the separation between the way we feel and think, and the linguistic means provided through language to express these thoughts and emotions. He felt the radical seperation between experience and language. He wanted a language that would be more concrete, that would alleviate the divorce between the body and emotion.

A major influence on Artaud was theatre from Bali. Unlike in European theatre, in Balinese theatre, the themes and plotline and emotions of characters are expressed not through words, text and dialogue, but through a sequence of physical movements and sounds: hand gestures, steps, facial expressions, music, percussion, etc. Artaud called it a 'vocabulary of gesture and mime'. For him, this theatre represented not just mental, psychic dimensions to humans, but 'total man'. He wrote:

"The overlapping of imagery and moves must culminate in a genuine physical language, no longer based on words but on signs formed through the combination of objects, silence, shouts and rhythms."

The darkest aspects of human desires and fears are transformed into precise, stylised symbols. Artaud calls it 'anarchic poetry'. Cruelty comes from this exact precision. Unlike what some assume Artaudian theatre to be, this use of the body isn't an abandonment of all reason, it isn't frenzy. It's a rigorous mathematical precision of movements of the body in space. Artaud called it 'poetry in space'. So the play-text is only one element in theatre, not the defining, ultimate element. Artaud advocated the use in theatre of concrete elements on stage: sets made up of expressive lighting, percussion music with symbolic connotations. Most

notably, he advocated the use of the physicality of the body and voice: the body's gestures and movements; the full potential of the voice's acoustic quality – cries, screams, groans, rattles, breaths. The voice isn't just words. It's also sound – cries, groans, yelps, rhythms, pitch, intensity, alliterations. Artaud writes:

"In Europe no-one knows how to scream any more, particularly actors in a trance no longer know how to cry out, since they do nothing but talk, having forgotten they have a body on stage, they have also lost the use of their throats."

He enabled a move away from text, to the idea of spectacle or performance. Each element of the body, set, voice, properties, becomes metaphor, a poetic sign, a hieroglyph. He moved away from a realist depiction of things on stage. So inner feelings and thoughts are being expressed not just through words, but with other more physical, visual, sensory means. For Artaud, finally the body, feelings and language are united.

Artaud claimed that the language of visual and acoustic symbols becomes inseparable from feelings. He said visual and acoustic symbols are a more direct means of communication than words. Is this always the case? Can words not sometimes be as/more direct means of communication? Artaud wanted a theatre that will speak a universal message that will be understood instantly by the whole audience—a kind of communion. This assumes all spectators will react in the same way, which reduces the respect for the individuality of each spectator's reception of the performance.

T3H – The Technical Realisation

Architecture

The most apparent feature of our installation is a huge construction you can see in the back of this room. We built this modular octagonal room made of wood and fabric as enclosing structure of the installation. Its main purpose is to create an inner world which is separate from all influences of the outside. The visitor in the installation should fully immerse into the experience and be able to create their own territory, which is detached from the outer world.

There is only a tiny door leading to the inside which when closed blends into the walls giving a feeling of a closed and self-contained environment. This door can only be opened from the outside. Simply leaving the installation in order to escape is no option for the visitor.

The whole installation can be regarded an organism which seems to be turned inside out: the clean and concealing black outside is inside the room while the vulnerable wiring can be seen from outside the room.

From a technical perspective, the walls also form the frame for the devices needed in the installation. The position tracking sensors are mounted to the walls, speakers are placed on the corners and a lot of wiring is put around it.

The circle is one of the mysterious shapes that human uses. It has neither a beginning nor an end and no divisions, making it a perfect symbol of completeness and eternity. Also the circle is the only shape that does not have any vector orientation and it will help us in our concept to encourage the visitor to find the way out by following his body feedback and not the spatial orientation. Since it is very hard to build up a construction with 9 metres of diameter, the final shape of the installation is an octagon, which for the purposes of the installation, gives the appearance of a circle.

The architecture forms the obvious visual and touchable frame of the installation, which also needs a lot of consideration. It separates the world inside

from the world outside not saying which one is more real. The complete darkness inside will raise the visitor's strain and attention to what happens in the installation.

The round shape should not provide any hint for orientation relative to the world outside. All disturbing impacts from the outside like light or environmental sounds ought to be kept out as much as possible. A diameter of 9 meters should give enough room for free movement. There are also some rather formal restrictions like the fact that the whole construction should be movable and rather cheap as money is a limited resource. Therefore, the installation's space is basically a cylindrical room of 9 meters in diameter and 2 meters in height at the edge of the installation and bout 4 meters height in the centre. The space is covered with a dark colour fabric to ensure the darkness of the installation. The whole architecture needed to be built completely by us.

Panels (Walls):

Elements of 2,8 m x 2,07 m

Thickness of 0,5 mm.
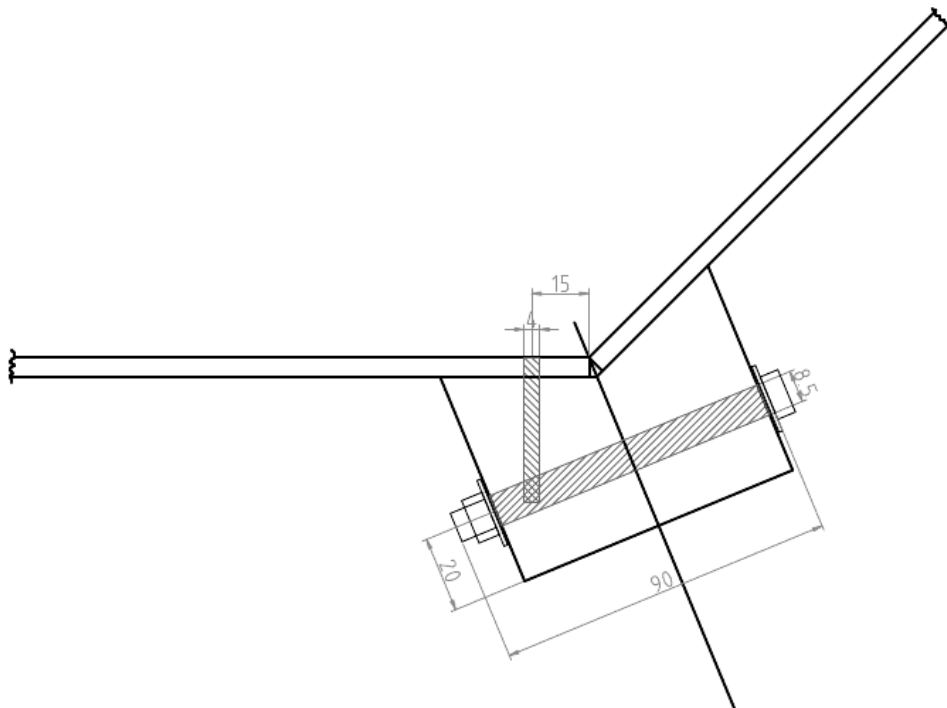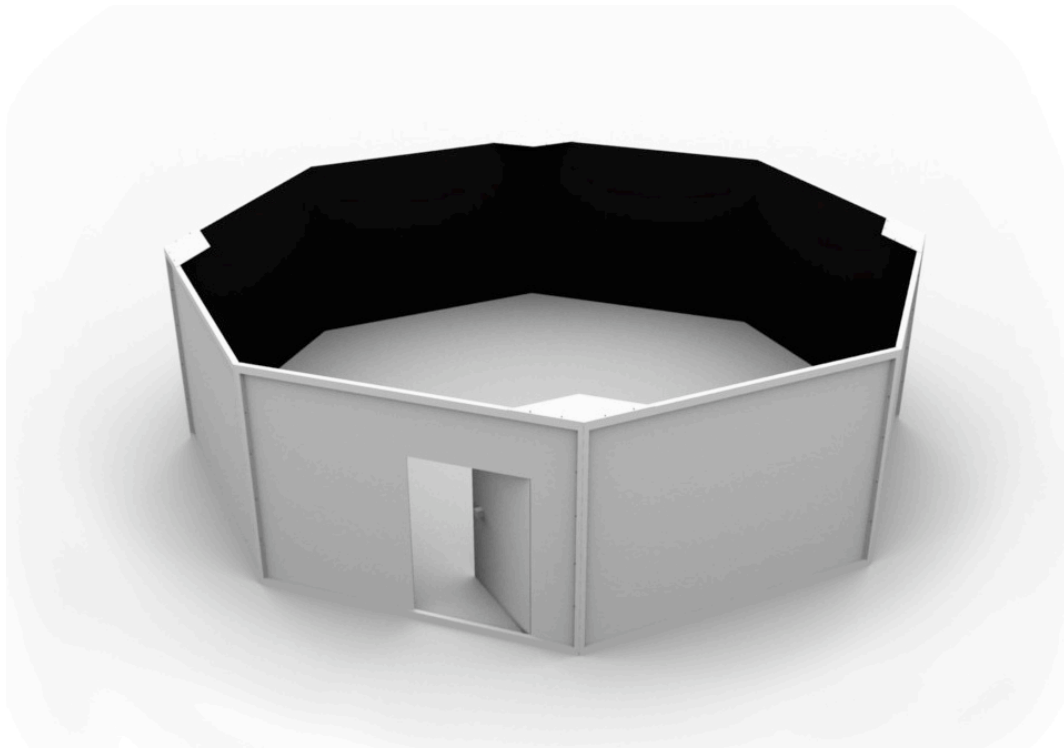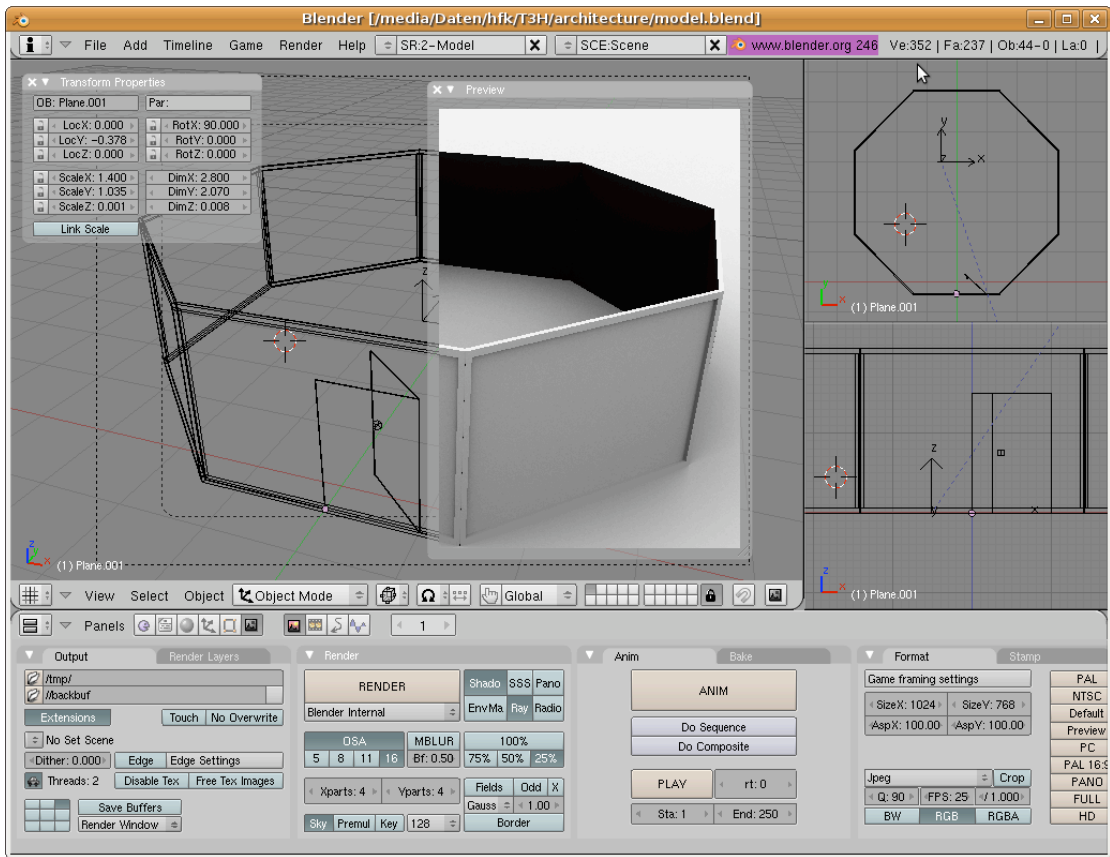
Sensors

In order for a visitor to act in this room, an interface is needed which is provided by sensors. The interaction between the visitor and an artificial organism - which is your Other - is one of the key concepts of T3H. This interaction does not consist of certain actions that evoke always the same predictable or at least obvious reactions but of the presence and being of two organisms - you and your Other. We are not using gestures or a tactile usage interface - like buttons etc - as connection between the visitor and the installation. Rather, we rely on signals that cannot be influenced directly: the heart beat. Those values are the mere result of their existence within this space.

The installation can perceive the visitor's signals through some sensors that can be regarded the senses of the installation. Through this interaction the visitor becomes integral part of the installation and the creation of an artwork. Even more, the visitor creates an artwork.

Body Signals

The electrical signals in our body are the consequence of certain functions that are vital for our lives. They represent our body's activity and state. Even emotional conditions and thoughts are reflected in the signs of bodies. However, in the installation we defunctionalize those signs and use them as an expressive medium. That means for instance that we don't regard the heart beat as mere rhythm of a pump anymore but as a means to express yourself.

We catch electrical signals from the heart's muscle contractions with electrodes on the skin. A digitizer creates discrete values and sends them via bluetooth to a computer. There a program analyzes the signal and extracts a heart beat from it. The challenge here is to distinguish between the real signal and the noise and interferences resulting mainly from the movement of the visitor.

Initially, we also intended to use brain wave sensors. After some time of investigation about how to interpret such signals it turned out that without professional signal processing it is impossible to draw reasonable results from it.

Especially the signal noise ration is very small with all the movement in the installation. Thus, we decided not to use brain waves as input.
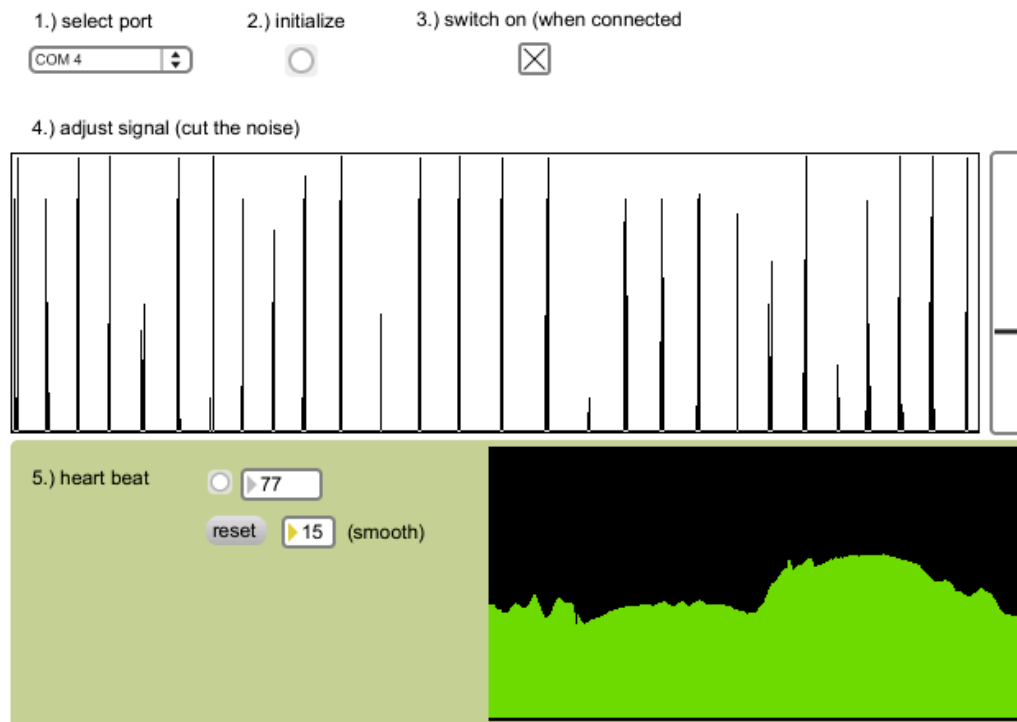

Position Tracking

The position is a component that should also not be completely obvious to the visitor. The room is dark, even and does not show any marks for orientation on the ground. The position is tracked by a grid of infra-red light barriers that is arranged around the room. 18 sensors permanently stare into the darkness of the space waiting for the visitor to cross their sight. With that number of barriers the resolution is 77cm which is enough for a reasonable localization; the concept does not rely on a high resolution tracking.

The barriers are connected to Arduino boards - little programmable controller boards that can communicate with a software.

Both, the body signals and the values from the light barriers are sent to the T3H communicator software where they are processed and translated into a position, velocity and other rather abstract and conceptual values.

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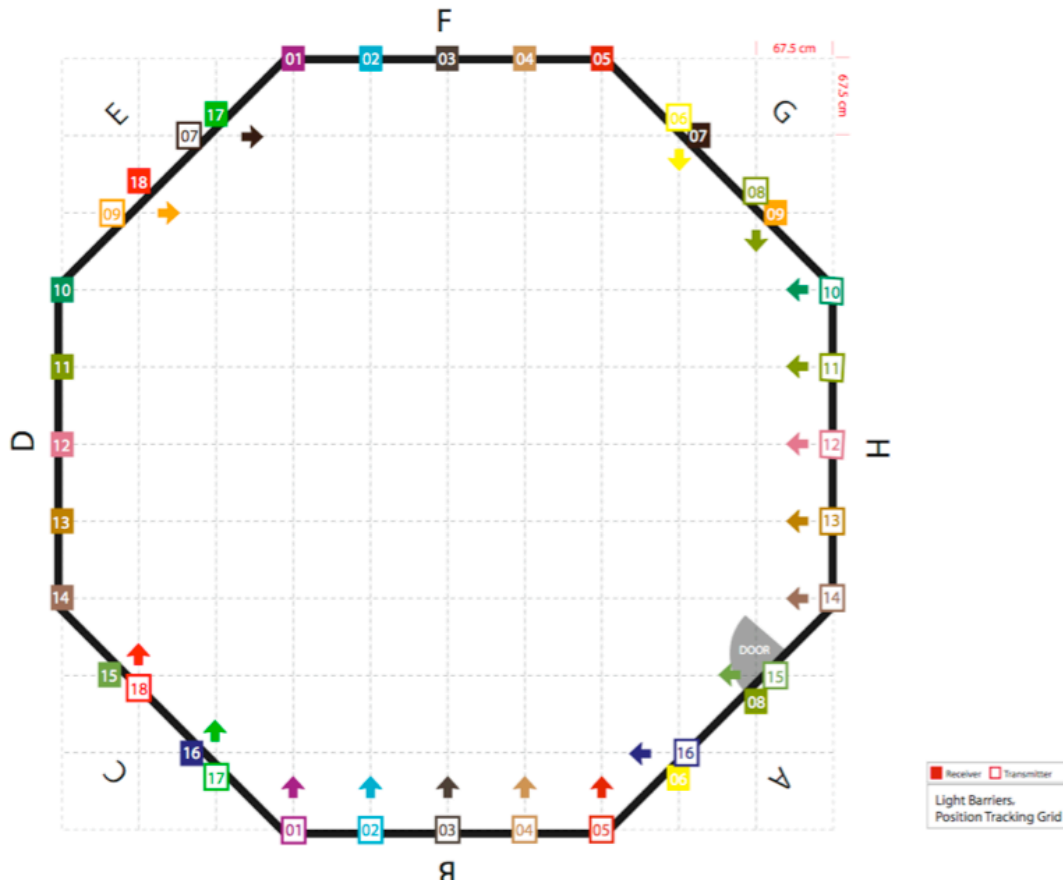
For more information about retrieving data with the heartbeat sensor we used, please refer to the appendix included at the end of this work (p.).
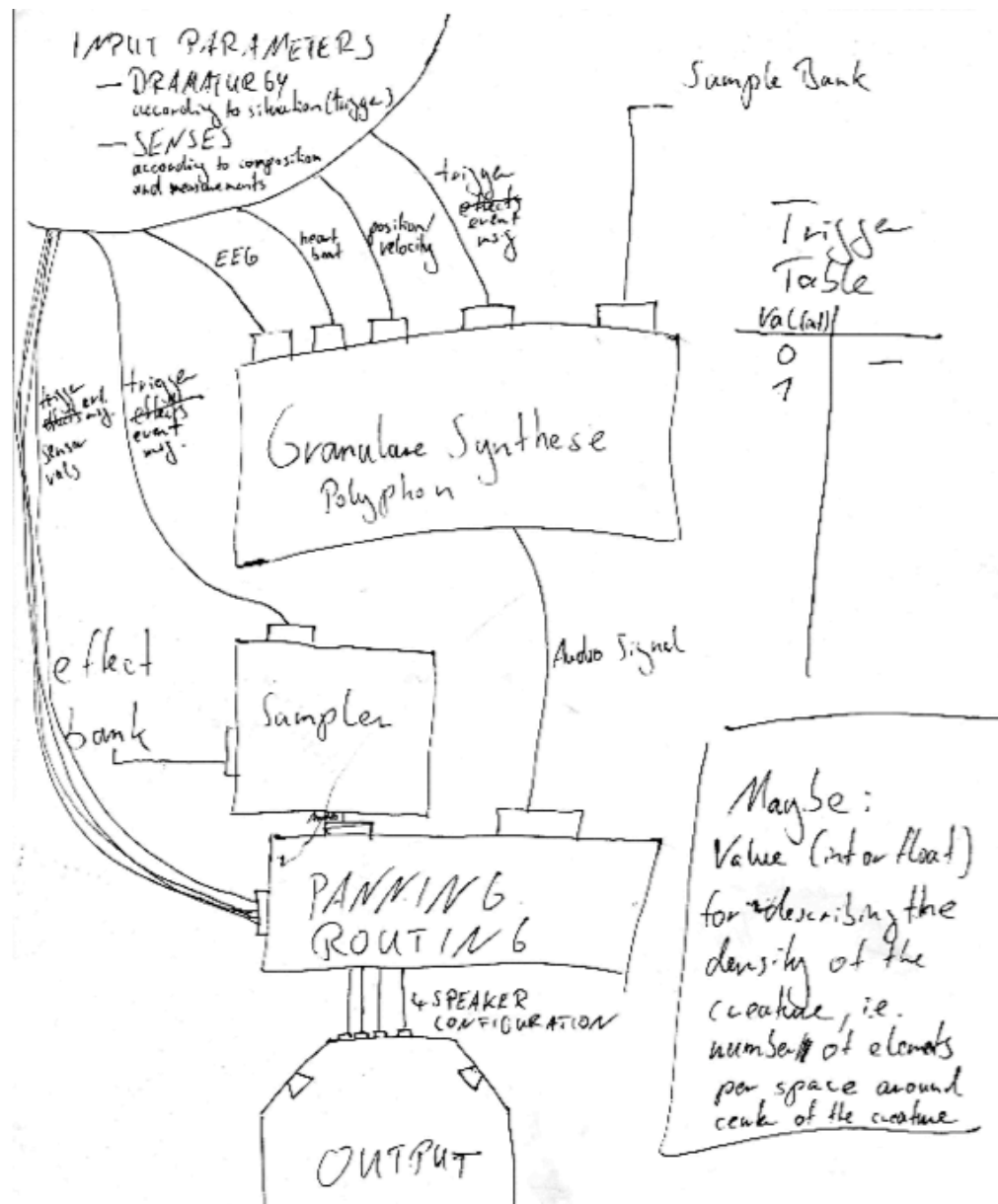
Audio

To create an immersive experience it is important to create not only a visual presentation but also an auditive one. While it is of course not possible to create a predictable effect in the visitors´ feelings, an auditive presentation can dramatically influence the mood of the visitor and lead his sentiment to a certain direction. (cp.: scores in motion pictures and especially audio track replacement experiments.) We can use the effects of beat, repetition, volume, timbre, association and atmosphere to support the overall experience and make it more immediate.

Audio Architecture

The audio setup consists of an array of speakers, the audio interface to control the speakers´ output, and a MAX/MSP patch which is processing the sensors´ data to an audio output.

The speakers are set up in a spatial fashion, meaning that to create an ambient soundscape and also the possibility to make the sound localizable to a certain degree (it is not possible, at least with this solution, to get a sound output which is focused directly on a certain point of the installation.) We have four speakers mounted on the walls of the installation.

Audio Processing

Before the visitor enters the installation a nominal value of his bio signals should be fetched. In the Installation there is a steady background noise dwelling on a low level of modulation and volume.

Depending on the sensors, the patch gets various values, which change the soundscape in the following way:

- Heartbeat: the heartbeat will affect a timed bass drum sound. Starting at an almost not distinguishable background noise with the nominal value, it goes louder and in sync while a raised beat.
- Velocity: depending on the movement of the visitor and his velocity, a background ambient sound will raise in pitch on a higher velocity or fall in pitch on a lower one.
- Relative position: depending on how far the distance between visitor and the Other is, the volume of the background ambient sound will raise (near) or fall.
- Neural activity: depending on the neural activity the ambient background tone will oscillate higher or lower.
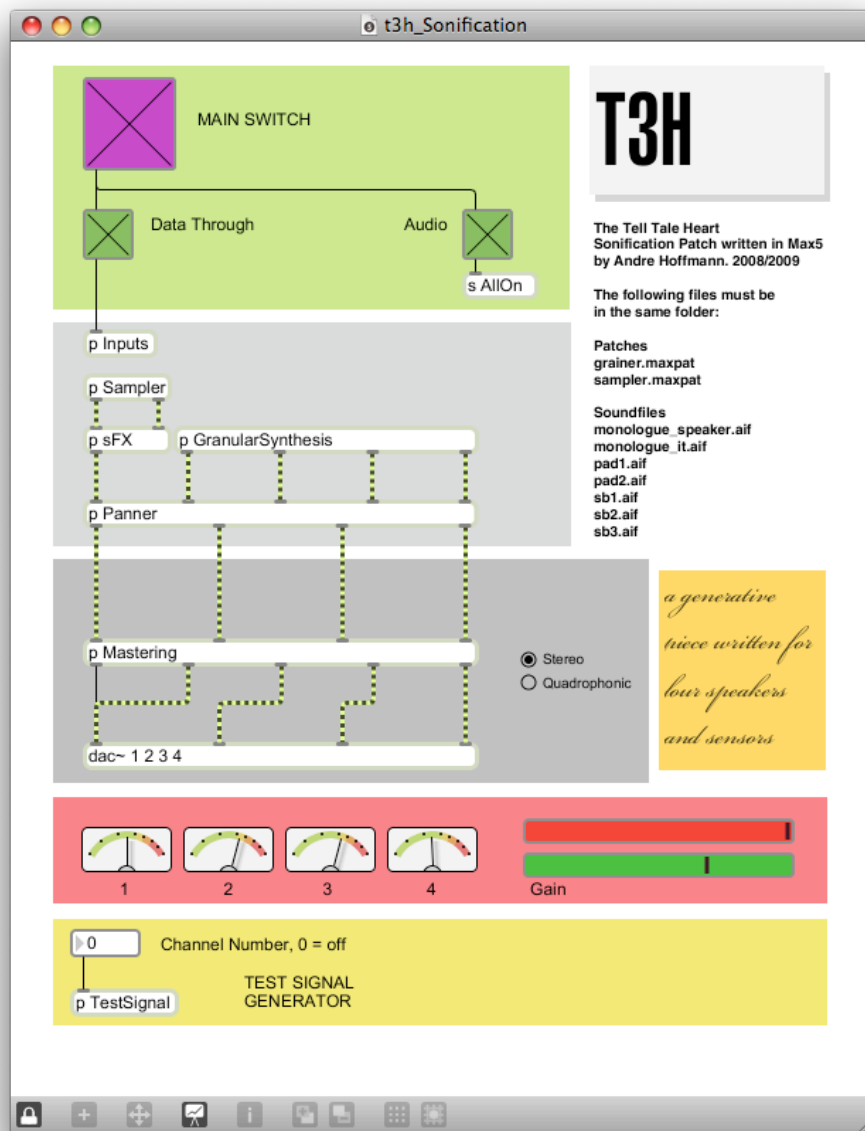
Sonification

For a complete sensual covering it was clear from the beginning to also add a part which sonificates our ideas. The completeness of the installation should allow the visitor to completely immerse into the experience. Since we have a room for this experience in which the visitors are supposed to walk around and move, we had to look for a way to distribute the audio equally within the room. For that we used four monitor speakers and attached them evenly on the installation's walls. The sonification of T3H is realised almost completely in Max/MSP 5. Max/MSP is a visual programming language specialised in multimedia applications like installations, sound generators, sound and video processing, and much more. We have chosen Max/MSP to provide us as much freedom in designing the audio part as possible. Though Max provides objects to

create very sophisticated synthesizers we only used source sounds we recorded with other programs. First, Logic Express was used to record synthesized or sampled sounds we wanted to use in the installation. We also used Pro Tools for recording our voices and Amadeus Pro to edit the recordings fast and easy.

Overview of the sonification patch

In Max we basically ended up in a relatively simple architecture, which hides the actual complexity of the realization behind a range of nested objects which are known as subpatches. Based on the main patch (see image) it becomes more clear how the applications parts are communicating with each other.

The first subpatch "inputs" is responsible for receiving the signals sent by the communicator. It also transforms the received signals in a way that all the other subpatches in the sonification can work with it.

The next patch is a very simple sampler which basically replays certain ranges within an audio file. To achieve polyphony, we had to create an external patch which is instantiated from inside the sampler for each single sample which is going to be played. The samples are then led into an effects subpatch, sFX, to create more interesting effects than just a replayed record of a sound.

The Granular synthesis subpatch is the most complex part of the application. Granular synthesis is a method to create new sounds out of very short audio information which are called "grains". Those 5 to 300 ms long grains are played in a group to create the effect of a sound cloud. With this you are able to create a soft fabric or a chaotic field of sound depending on the way the grains are taken and on the source material the grains come from. You can also increase the length of a sound without affecting the pitch. This is an effect we make use of for our sonifictation. The GranularSynthesis subpatch has four tracks to nourish from four different sound files. Each of the four tracks itself is a granular synthesizer with polyphonic abilities.

The signals from the sFX and GranularSynthesis subpatches are led into another subpatch. The Panner subpatch is doing the distribution to the four speakers. Since we have an octagon, we were able to use circular functions to evenly distribute the sound by just giving the patch an angle in degrees. The Panner is the last instance for the effects and sound creation within the sonification patch. From here it goes directly to the speakers, only with a mastering control in between, which mainly acts as a volume control and limiter to smooth the sound output.

Patch control

But how is the whole patch controlled? As you might have guessed by the values measured with the sensors. We integrated the signals into the patch that it does not need to be controlled by a user at all (though you can switch off the receiver and do all control manually). The values somehow reflects but also

increases or decreases the tension of the auditive part. On the one side that means, that the audio is in a way synchronous to the measured values and supplies an answer to the visitors state. On the other side, it also means that the tension has to be raised actively. That happens by playing certain samples which are supposed to provoke the visitor. We also try to to create slight disorientation and general stress at a certain point by making use of panoramic effects and chopped and spliced speech samples.

The sounds

As mentioned above, all the sounds are coming from pre-recorded sources. First of all, there are four tracks from the granular synthesis. Two tracks are recorded sequences of voices, raising in intensity over time. Those voices sublimate the visitor by letting him be part of an intimate monologue, whereas one monologue can be seen as the voice of the installation or the creature, the other as an imposed voice of conscience or also as a hidden and caught observer, a memory of former interactions within the installation. The drone-like sounds are synthetic and mechanic, also raising in intensity over time. They represent states of activeness and reflect the tension and stress which is measured in the installation. Those pads are supported by sampled sounds which accompany the dramaturgy and its scripted events. To inflict more tension to the visitor, different voice samples are played. While they are easily graspable by the visitor first, they become distorted with a raise of intensity over time as well. Those voices might represent what is outside the installation, a glimpse of a third party, seeming to comment the action inside. This party is actually formed by the creators of the installation, us. Every participant contributed a small piece in their mothers tongue to also add a very personal expression for the execution of the installation.

The result

Depending on the measured values, the visitor will hear pad-like sounds, floating in the room, panning around and increasing in musical tension. He will

hear voices from which he hardly can grab the message, it's drama and volume increasing. He will also hear discrete sounds which are more and more scrambled and destructed – everything according to the measurements and automatically generated by the patch.
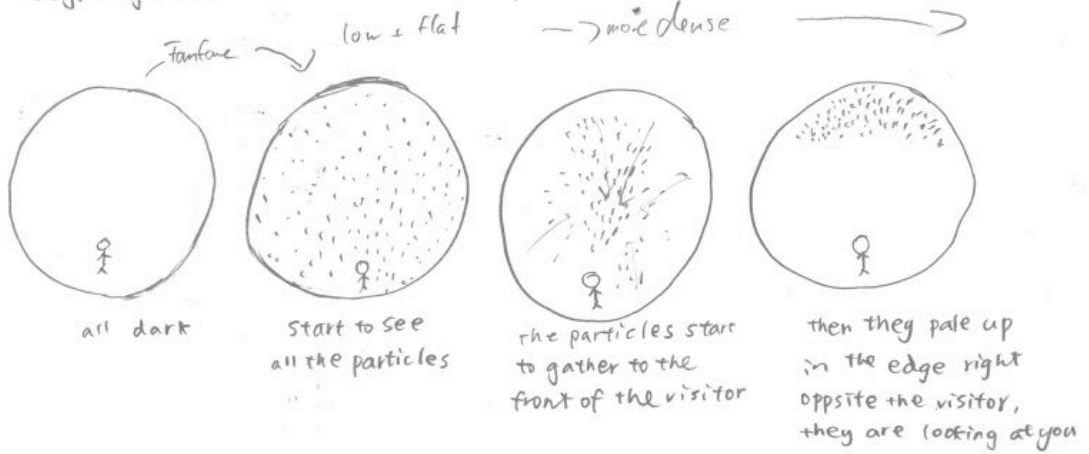
Visualization

The T3H visualization part is written with Processing and mainly based on swarm algorithm. To make it look more organic, we applied "soft body" on each particle, every particle is a pentagon and every angle of the pentagon is moving all the time randomly. As to the movements, the velocity and chaotic of the swarm changes according to the excitement level of the visitor, and within every excitement level, a certain shape or activity of the swarm is triggered accordingly.
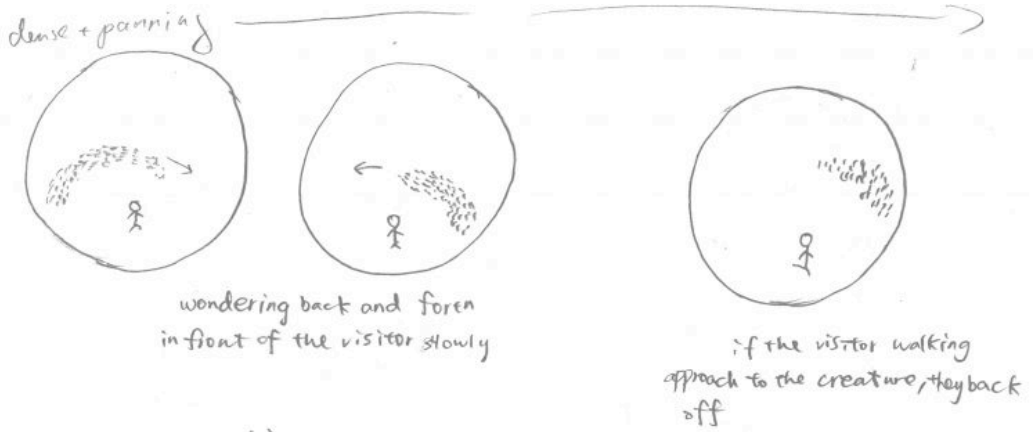
Concept & Realisation

We divide the whole duration of visual experience into three part: Intro, Fighting and Ending. In the intro part, the movements of swarm symbolizes the testing process before our artificial creature starts to hunt, it observes the visitor from the edge of the space, it wonders around and it avoids when the visitor tries to approach. Here, each position and each activity of the particles is assigned through the communicator, and the particles here always go against the direction of the visitor when the visitor goes into a certain range around the swarm. In the concentrative interaction part, various effects will occur in order to trigger more aggressive bio-feedback, to give more dramatic experience, and to show the "expression" of our artificial creature.

In the end, the swarm is no longer moving in a group, the particles do not attract to the center of the swarm or the visitor anymore, to symbolize the fight is over, they stop attacking, and then they gather in front of the visitor again, fading out slowly.
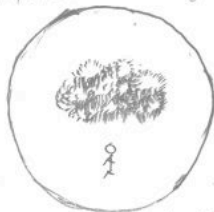
Beginning intro

more dense

Fanfare   low + flat

all dark

Start to see
all the particles

The particles start
to gather to the
front of the visitor

then they pale up
in the edge right
oppsite the visitor,
they are looking at you

testing the visitor

dense + panning

wondering back and foren
in front of the visitor slowly

if the visitor walking
approach to the creature, they back
off

attack (fast heartbeat)
(loud, dense + back panning)

low + dense

loud, extreme panning

1) peparing, like it's
boiling from inside
louder!

2) ready, minimize
its size and higher
the density

3) more ready
going circle around the visitor
and gain the brightness

4) go!
phase one

phase
two

open

like swallow

close

one lone
in the
end

49

calm
low panning, dense + flat

2 circle spanning slowly
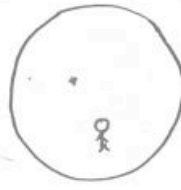with different direction
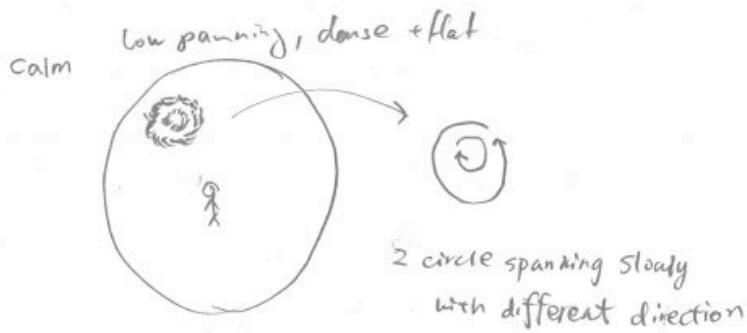
basic movement : every particle is always moving, accroding to the rate of heartbeat, the chaotic lever changes

diving and appear

go into a dot
get smaller and dissapear
and appear in somewhere else!

panning speed is influenced by heartbeat
density of sound is influenced by EEG

Programming

T3H Basic Swarm Movement Programming Code

The programming for the visualization and its convergence with the sensors to receive the information related to the position of the visitor and her/his heartbeat was done with Processing.

Here is just the beginning of the code that gives life to the swarm visualization:

```
class Vector
{
  float x, y;

  public Vector()
  {
    x = 0;
    y = 0;
  }

  public Vector(float initX, float initY)
  {
    x = initX;
    y = initY;
  }

  public void setXY(float x, float y) {
    this.x = x;
    this.y = y;
  }
} // end class Vector

class Boid
{
  final int TRAIL_SCALE = 5;

  Vector v1 = new Vector();
  Vector v2 = new Vector();
  Vector v3 = new Vector();
  Vector v4 = new Vector();
  Vector v5 = new Vector();

  color myColor = color(255, 255,255);
  int mySize = 4;

  float xpos, ypos;
  float vx, vy;

  void drawMe()
  {
    noStroke();
    fill(myColor);
    //float bling = mySize*sqrt(vx*vx+vy*vy);
    rect(xpos,ypos, mySize, mySize);
    stroke(5);
    //strokeWeight(mySize*0.6*sqrt(vx*vx+vy*vy));
    strokeWeight(4);
    line(xpos, ypos, xpos-TRAIL_SCALE*vx, ypos-TRAIL_SCALE*vy);
  }
}
```

```
void updateBoid()
{

  rule1();
  rule2();
  rule3();
  rule4();
  rule5();

  // add vectors to velocities
  vx += r1Damping*v1.x + r2Damping*v2.x + r3Damping*v3.x + r4Damping*v4.x + r5Damping*v5.x;
  vy += r1Damping*v1.y + r2Damping*v2.y + r3Damping*v3.y + r4Damping*v4.y+ r5Damping*v5.y;

  limitVelocity();

  if (xpos + vx < 0 || xpos + vx > WINDOW_WIDTH)
   vx = -vx*BOUNCE_ABSORPTION;

  if (ypos + vy < 0 || ypos + vy > WINDOW_HEIGHT)
   vy = -vy*BOUNCE_ABSORPTION;

  // update new position with previously calculated velocities
  xpos += vx;
  ypos += vy;

}

void limitVelocity()
{
  float vlim = VELOCITY_LIMITER;

  float velocity = sqrt(sq(vx) + sq(vy));

  if (velocity > vlim)
  {
   vx = (vx/velocity)*vlim;
   vy = (vy/velocity)*vlim;
  }

} // end limitVelocity()


 // pull to the center
void rule1()

 {

  //v1.setXY(0,0);

  for (int i=0; i < NUM_BOIDS; ++i)

  {

   if (this != flock[i])

   {

     v1.x += flock[i].xpos;
```

The Communicator

Collecting sensor data

- A max/msp patch captures the heartbeat data from the bluetooth transmitter and sends the heartbeat rate out as an OSC signal
- A c-osc-server collects the data from the arduino boards and also creates OSC signals out of it
- A java program (the communicator) receives both OSC signals

Processing sensor data

- The position sensor data is converted to an x/y-position and a velocity value
- The communicator transfers the heartbeat rate and the velocity into an excitement level (0 to 1)

Controlling the scenario

- The communicator keeps track of all the triggers, events and random parameters (control parameters) within the scenario including start/stop

Sending out data

- The excitement level, the position and the control parameters are converted into different OSC signals
- These signals are received by the sonification and visualisation parts

General Structure
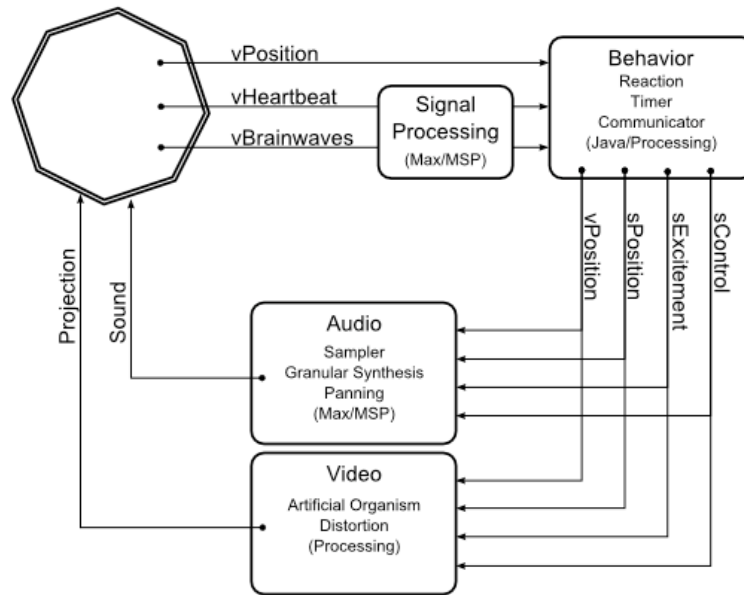
Communication Protocol

vPosition	serial input	t3h_vPosition	
vHeartbeat	serial input	t3h_heart	
vBrainwaves	serial input		
sExcitement		t3h_excitement	
sPosition		t3h_sPosition	
sControl		t3h_control	
Projection			VGA signal
Sound			analog signal

T3H – Presentations

First Presentation

16th May, 2008. At Hochschule Bremen.
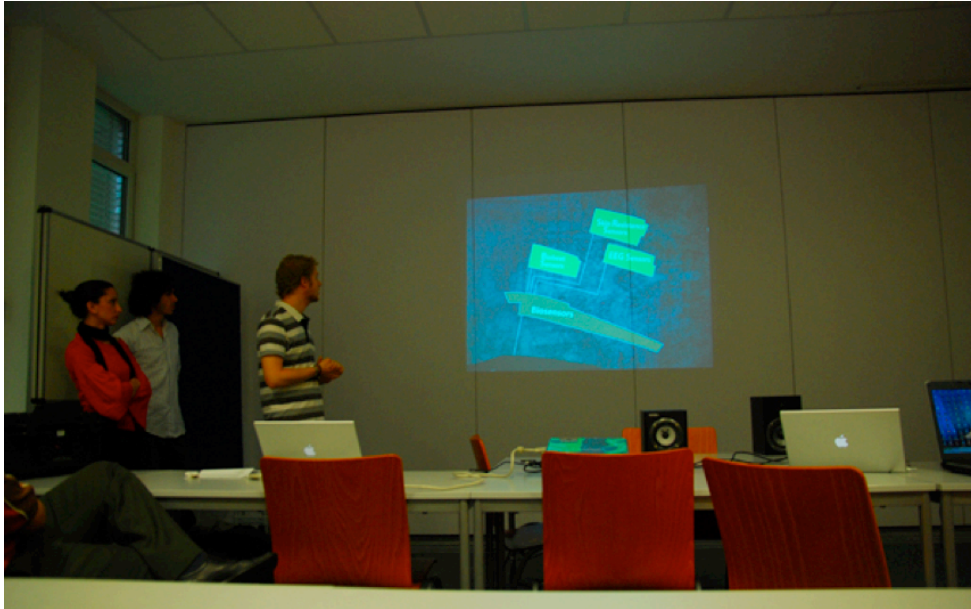
Second Presentation

T3H is an interactive artistic installation. Our main focus is to get the visitor to create his/her own artistic experience. Digital media proves to be a very good medium that enable us to do so. It provides us with the ability to have the visitor create his own artwork and experience it as well. You are no longer a spectator anymore for readymade art, spectator becomes part of the artwork in interactive installations; you are involved in the process of creating the artwork and experiencing it at the same time. We are here to point out that its not a regular interactive installation because it has different degrees of controllability. The coupling between the visitor and the environment becomes loose… meaning the visitor cannot necessarily control his environment very easily or directly.

Let me describe a constructed scenario for the installation, so you can have a better idea of it. Imagine yourself in a black, dark, silent room, where you cannot see literally anything. Nothing in front of you, behind you, or on your sides. In this darkness, your other senses, especially your hearing, becomes sharper and more alert to its surrounding. Then, you hear a faint sound and try to notice where it is coming from. A spot of light appears out of nowhere right at your feet. It suddenly moves and stops opposite of you. Still in complete darkness, you are focused on this spot of light. You notice when u try to approach it and come closer to it, the sound becomes louder and louder and higher pitched. It reaches to a point where the sound is very piercing and it hurts your ears. You have to drawback since you have realized that the closer you approach the light, the sharper the sound is, and the more piercing it is. After that, you notice from a distance that the light is not just a regular spot of light, it is moving, breathing, and living just like an artificial organism. In reality, this artificial organism (with the light and sound) is a manifestation of your body signals. It shares your heartbeats, detects your breath, tracks your movements, and reads your brain. It is actually you. So, all in all, we have now two organisms in the space, one of them is you and the other is the artificial organism sharing biological body functions and a common space. You use each other to orient yourselves and create your own space.

Since we are dealing with bodily functions related to the biological nature of human beings, we referring to different disciplines such as biology, in particular ethology, and philosophy. According to these disciplines, living beings are viewed as not only being mechanical objects, which are controlled by simple cause and effect forces, but living things are seen as subjects inhabiting worlds of meaning. This meaning is reached by expressiveness. This brings us to the topic of milieus and territories. Milieu, what is a milieu? Every organism has a milieu (or an *umwelt*, if u want to call it that). A milieu is basically this organism's own world and nothing exist beyond that world. So u have an organism, and it has its own world and nothing beyond it. This is what is known with the milieu. When this organism starts to express itself in its milieu, in its environment, whether it was for attracting mates, or for competition or for food, then its turns into territory. These expressive characteristics are just regular biological functions of the organism when it is in its milieu.. but when these biological functions are used to express something, then this organism is starting to define its territory by expressive qualities.

So to put this idea into our installation, You enter the dark round-shaped room with sound, light, body signals, and position tracking signals, and you start interacting and creating your own artistic experience with these element in this environment. we have 2 organisms, the first one is You (the natural organism), the 2nd is your projected manifestation (the artificial organism). Via body signals, these 2 organisms share a common milieu. Scientific measuring devices exhibit the body processes of the human visitor. These body signals, in this case, are a medium turned into expressive qualities of the human in the installation, thus creating a territory. When your body signals are processed digitally, then they become part of the outer milieu of the artificial organism. The body signals are used as the digital inputs for the visualization and the sound of the artificial organism as I previously stated. Body signals are a technical means for you to interact with the outer milieu making them a part of the loose controls to get the artificial organism to act, react, and perceive accordingly. Thus, forming a perception-action cycle.

You are creating a territory with visual and auditory qualities, if you fail to do so, the common milieu is overtaken as territory by the artificial organism. So,

there will result a fight between 2 organisms, where only one will win. the milieu of each of the organism gained expressive qualities with the body signals and formed into a territory. So the 2 organisms are competing for the same territory. the unique things is that its not like any normal competition because you are competing with yourself. YOU will be fighting against yourself while trying to create your own territory. in this case, with every visitor the artistic experience is different and unique because every person has a different body signals, different movements, different expressive characteristics. This kind of artwork is only performed once and never again. Therefore, each artistic experience and artwork is unique and new.

3 strong sentences that resume the project.

Practical Part

Conceptual Issues

While the conceptual part is the fundamental part of our project it also needs practical considerations and work to actually realize the installation. What's important is that we don't focus on creating cutting edge technology but a thrilling experience. Thus, the practical part - technical realization as well as project management - is the means to realize our idea rather than standing for itself.

Two main tasks arise from the concept that has just been presented:

We want to create an immersive environment in which the visitor is not distracted by implementation issues. That requires on the one hand a strong concept, ideas and restrictions that form the frame for the artwork, and on the other hand as much freedom as possible for the visitor to create, to interact, to be.

The central challenge is the creation of an artificial organism opposed to the natural organism which is the visitor. Creating an organism for instance means creating a complex of behaviors characterizing and determining its actions. As described before both organisms are strongly coupled which should be made obvious to the visitor with all means - visual, auditive and behavioral.

Interaction

Let me give you some insights in how we planned to meet those challenges. For the interaction we have some sensors measuring bodily processes: heart beat, breath and neuro-activity. Those measurements yield electronic signals which can be received and interpreted by the other parts of the installation. What's more the visitors position is tracked by a grid of light barriers. Due to the size of the installation tracking via camera would require very high rooms which we can not assume available for the installation. Also the audio signals generated by the visitor - deliberately or unintentionally - are recorded and used as input. These four sensors can be considered the senses of the artificial organism, its interface to its natural opponent.

The theoretical and philosophical concept mentioned by Maya forms the foundation for a central part of the programming: how the body signals are processed. The signals shall be de-functionalized, meaning they are not treated accordingly to their biological functions but as a means of expression as mentioned before. The programmed behavior is not static but changes over time since a processes happens in the installation starting with the emergence of the artificial organism ending in a fight with ever increasing intensity.

Visuals

Visually the organism is represented by a multitude of single but interrelated elements. It is a concept similar to a swarm in which the single birds are independent beings but still they act as a whole. One of the key properties of such multitudes is the specific behavior emerging from the interaction of the single elements which might be totally unpredictable. This correlates with the multitude of behaviors that exist in an organism. The technology we are using for the visuals is Processing, a Java based multi-media environment.

Sound

The sound in the installation is to support the immersiveness by involving another sense. It is dynamically generated and like the visuals reacts on the inputs from the visitor. Why sound is really important for the installation is its power to evoke strong emotions in natural organisms like humans. Here the technical basis is Max/MSP, a visual live sound processing environment.

Architecture

The architecture forms the obvious visual and touchable frame of the installation which also needs a lot of consideration. It separates the world inside from the world outside. The complete darkness inside will raise the visitor's strain and attention to what happens in the installation. The round shape should not provide any hint for orientation. Moreover, all disturbing impacts from the outside like light or environmental sounds ought to be kept out as much as possible. A diameter of 10 meters should give enough room for free movement.

There are also some rather formal restrictions like the fact that the whole construction should be movable and economic.

Implementation Issues

During the implementation or its planning some issues came up. One of them is the projection of an image big enough to cover the floor of an installation with 10m diameter. The height of the installation is rather limited as it will be placed in buildings. Thus the projector cannot be mounted arbitrarily high. Instead we opted for a spherical mirror acting similar to a lens - however much cheaper. A mirror in turn brings the problem of distortion which we have to cope with.

The other main issue is performance and integration. Although using techniques like OpenGL the processing performed is very CPU intensive. For this reason and because the single parts - signal processing, audio generation and visuals - are based on different technologies we placed them on separate systems. In order to work together they are connected via network.

Art Project Management

Let me say some words about the management of an art project. As mentioned before, an important part of our project is the creation of a concept. In opposite to the implementation of well-defined tasks it involves a lot of spontaneity and creative freedom to think outside the box. Spontaneity, different views and ideas within the project group are desired and nourished in an environment of mutual trust and respect. Still this process has to be organized in order to direct the effort and have progress. While there are a lot of project management methods for IT projects there is no general scheme for art projects. The management process is rather dynamic and has to adjust to the creative nature of the project and its current state. In the beginning we tried using a ready methodology for managing our group. Tough it seemed to work initially we needed to change it as we entered new phases in the project.

One special challenge we faced concerning management efforts is the funding. We are creating a material installation and thus need material for it which costs money we did not have. Hence, we spent a lot of time raising funds for the implementation of our ideas.

To get it done anyways we used the summer break. While alternately some of us were abroad we still managed to keep the work up. It needs some effort and time to get accustomed to work within a distributed team, but still we had a lot of fun and found it beneficial to have a steady continuation of our project.

Conclusion

To finalize, it´s important to remark that you´ll be part of the artwork that in our installation. The technical devices we´re implementing and the concept we´ve developed will allow us to create an artistic experience for each visitor and you´ll be able to try it in a few months. Then, a hidden part of you will get a physical shape. This way you´ll fight against yourself, you´ll hear and see what your body signals are constantly creating without even noticing it in daily life; that's the best part, you are going to confront yourself. But at the end, only one of your sides will abandon the place, that´s the deal.

Hochschultage – "The Other" Installation
13, 14 and 15th of February, 2009.
### At Hochschule für Künste Bremen.

Presentation

What is The Other? Have you really felt empathy for other people? What would you do if you had the opportunity to help someone you have not seen to the eyes? In a world where everyone is just worried about himself, we open the door to a world where you can think about real issues. Your vital signs, your thoughts, affect the real world. It is up to you in which way you want to affect it. The calmer you are, the clearer you can think. Then you can keep yourself relaxed and, therefore, take control of the situation.

"The Other" Installation

1. The visitor comes in.

2. We welcome and explain that our installation is interactive and works with a heartbeat sensor.

3. The visitor puts on the sensor in the changing room.

4. We lead the visitor to a chair close to the computer and confirm with the operator whether he is receiving the data or not.

5. Lead the visitor to the waiting room and explain that there is someone else in the installation room, he or she has to wait a bit until the other person comes out.

6. We close the door and let The Other interact with the heartbeat of the visitor.

7. After registering the interaction with The Other we let the visitor go out.

8. Explain the way the heartbeat interacted with the installation.

1.

2.

3.

4.

5.

6.

7.

8.
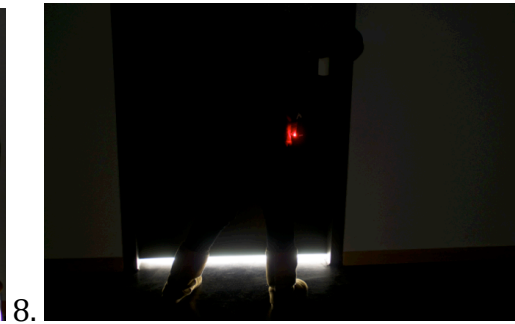
Experiences - Difficulties and positive points

Ahmad: no one came, during the first shift.

Tim and Javier: Didn´t expect that much people, were busy all the time. A woman, 45 or 50 years old, was walking around, came out and was pissed off. An

example that we triggered feelings.

Nagehan: Joachim Hoffman, was confused he didńt know what was going on.

Maya: Joachim Hoffman brought the kids the next day, he was talking about the installation during breakfast at home, he said.

Andre: Most cases the signal was not good enough.

Christian: The sensor got worst with the time.

Héctor: By Sunday night the sensor was not working anymore.

Maya and Chi: There was a girl that didn´t want to test it. I don´t like it, she said. Peter von Maydell came, he knew what was it about but he wanted to help the person. His wife said "Peter we are worried, what are you doing". Another man was inside for three or four minutes and started laughing.

Ahmad: A geek told him that he have seen installations like this before.

Tim: Nobody was shy to put the sensors.

Héctor: The sensor was a problem sometimes to put it on.

Chi: A fat guy said the sensor was too tight.

Andre: Very good signal when the people were in front, but inside the room it was bad.

Héctor: it was a problem when people were moving with the sensor on. Make an email list of persons interested in our full installation was a good idea, but we didn´t do it since the beginning.

Christian: the dramaturgy was good.

Nagehan: We can improve the dramaturgy, and think about the shape of the visuals. Put screenshots of the visuals on the wiki.

Ahmad: the only way to get the actual visuals is testing them.

Tim: Would have been good to have a camera inside the installation.

Chi: a guy was using a key card, trying to open the door. Petra Klusmeyer said that the interaction wasn´t enough, more lines would have been good.

General Reflection

The Hochschultage was good to test ourselves, how we really work together. Some of us worked a lot to get this installation done and some others did not help that much. How to get everyone in the project more involved for the future? Some of us have the feeling that from time to time we meet in the HFK and there is not that much activity.

It would have been good to have better organisation. Although, probably the issue is not about organisation, but about personal commitment to the project in general. It is clear that the group should not wait for someone to say what to do. In this process we found out that everyone should find a way to be motivated.

We also believe that the level of our work should be higher, because we are ten persons and the capacity is higher, the installation should have been impressive, it was fine, but could have been better.

For the full installation, it would be good if we finish one month before the final presentation (mid May). Although we have to keep in mind that it is not possible to finish a one-year project in two or three months, therefore the effort should be visible. Once we have built the full installation we can start testing it with some visitors.

During the last day of the Hochschultage we collected some e-mails from people interested in testing and visit our final Master Project. This would have been helpful to do it since the first day.

Conclusion

The feedback received from the visitors during the Hochschultage was better than the expected. There are some points to be worked out –better organisation and self-commitment to the project–. The heartbeat sensor does not work as we thought, we need to sort this problem out.

Final presentation

15th of May, 2009.

At Hochschule für Künste Bremen, Music Department.

Opening

Play video of the installation construction.

Performance

During this part of the presentation, we showed how the interaction with the other looks like. Ahmad was the actor and he went through curiosity to anxiety. We demonstrated explicitly one of the possible endings of the installation, the other one was showed at the end of this presentation.

Concept

For us, the artistic experience is our main goal. An experience where each person finds a way to interact with himself/herself within a digital environment. There is a question many times evaded or seen as trivial, that question is: Do I really know myself? It is important to answer this question because there are

other circumstances that affect our decisions and psychological condition without us noticing it. And in that category we find our body functions, which are necessary to maintain life, of course, but also have a certain impact in how things turn out.

We are supposed to be rational beings, but how many times have we seen people losing control of themselves? Or ourselves, how many times have you lost your mind and let your irrational side dominate you? We all have been in that place, whoever says the contrary, is lying.

In the T3H installation you will create your own artistic experience. As we informed you during the other two presentations, here, you are no longer a spectator anymore for readymade art, you and some of your vital signs will become part of the artwork.

To clarify our concept, just in case you do not remember, our installation represents the fight for territory we all are involved every single day of our lives. But, to understand other persons´ behaviour, we first need to understand ourselves. What we have inside, what makes us humans -that is our bodily signals- represent a part of us that is affecting our daily life decisions. And there is no better way to know how we react in specific situations than fighting, precisely, against ourselves.

The technical, conceptual and physical implementations we´ve made, are intended to provide you an experience where you can go through this idea in an interactive fashion.

Your body signals, with the help of our technical elements, create an artificial organism that shares your heartbeats and tracks your movements. It is actually you. The two organisms use each other to orient themselves and create their own space.

In our installation you have the opportunity to see, hear and interact, in a subjective way, with what your natural functions are creating. This is the T3H experience.

T3H – The Group

Who we are

We are a 10 guys who came from all over the world to Bremen, Germany, to develop this project during our Master studies at the University of the Arts Bremen:

Chi-chun Chang

Taiwanese, 25 years old. She studied Computer Science and Information Engineering, but she did not like it at all. Then she switched to the artistic approach of computers.

Javier Daza

Colombian, 30. He studied Advertising in Bogotá. His personal goal is to acquire both theoretical and technical skills to develop digital art projects.

Andre Hoffmann

German, 26. He studied Media Informatics, when he was studying his Diploma he knew that he wanted to study a Master like the one involving this project.

Ran Hu

Chinese, 25. She has a bachelor degree in Management. She ended up in this project because she wanted to combine design and technique.

Maya Itani

Lebanese, 25. She studied Graphic Design. She wanted something to link design to technology.

Christian Jaentsch

German, 25. He did his bachelor in Digital Media at the University Bremen. He is especially interested in working creatively with computers.

Nagehan Kurali
Turkish, 25. She studied Visual Arts and Visual Communication Design in Istanbul. She joined the T3H project to focus her work on interaction design and interface design.

Tim-Christian Mundt
German, 25. He also did his bachelor in Digital Media at the University Bremen. He chose this project because he likes to mix up art and technical stuff.

Héctor Rendón
Mexican, 27. He has a bachelor in Journalism, he chose this Master project to work side by side with designers and programmers.

Ahmad Saleh
Palestinian, 28. He studied Electronics Engineering, but he did not like it at all and switched to start working in the advertisement industry. He wanted to do a Master in an Art School, then he joined the T3H project.

Christoph Lischka
T3H Supervisor.

Team management

Sprints

In general, we divided the different stages of our project into sprints. A "sprint" is a fixed period of time in which a defined set of tasks ought to be done. In each sprint a number of groups are set up to work together during the respective sprint. In the end of each sprint there were final presentations showing the outcome and backlogs.

Communication and Collaboration

We used several tools that make effective communication and collaboration possible:

Wiki

• Spread news

• Collaboratively work on texts

• Collect knowledge (summaries, ...)

• Organize the group(s) (meeting notes, sprint backlogs, ...)

Forum

• Discuss any kind of topic

• Common calendar

• Talk crap

File Sharing

• A common file system on our server

• SVN version control for code installed as soon as needed

T3H – Sources

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Appendix

BioBeat User Guide

Warning

The BioBeat sensor is to be used only with extreme caution according to the following instructions. It is intended for research purposes only and not intended for any medical purposes whatsoever.

1. The BioBeat sensor must only be plugged into a battery powered, wireless I-CubeX digitizer (eg. the Wi-microDig or Wi-miniDig) manufactured by Infusion Systems and not any other digitizer.
2. The BioBeat sensor must only be connected as shown in the diagram on the wireless digitizer.
3. The wireless digitizer used with the BioBeat sensor must only be powered by a common 9V battery as used in consumer goods or an I-CubeX BatteryPack.
4. Only I-CubeX sensors may be connected to the wireless digitizer that is used for interfacing the BioBeat.
5. When using the BioBeat sensor, I-CubeX products may not be connected in any way to the electrical power grid or any other high voltage source.

Any violation of these instructions nullifies any warranty (express or implied) and nullifies any liability or culpability (express or implied) of Infusion Systems Ltd.. Any violation of these instructions can result in electrocution, severe injury, or even death.

Using the sensor with the Wi-microSystem not only ensures electrically safe operation but also enables you to use the sensor without being tethered to your computer or MIDI device.

Introduction

The BioBeat is a sophisticated bioelectric signal acquisition device that is designed to capture the heart ECG (electrocardiogram) signal and convert this signal into a form usable by a computer for interactive applications. The ECG is an AC (alternating current) wave complex that is generated as a result of the heart muscle contractions. The figure below shows the actual ECG raw data generated when you put the BioBeat module on your chest.
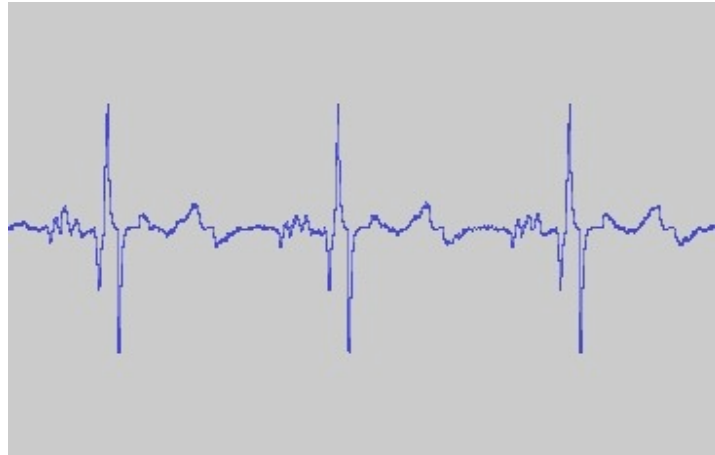
Almost everyone knows what a basic ECG tracing looks like. But what does it mean?
The heart contracts on average 70 – 80 times per minute. Each contraction represents one heartbeat. The atria contract a fraction of a second before the ventricles so their blood empties into the ventricles before the ventricles contract.
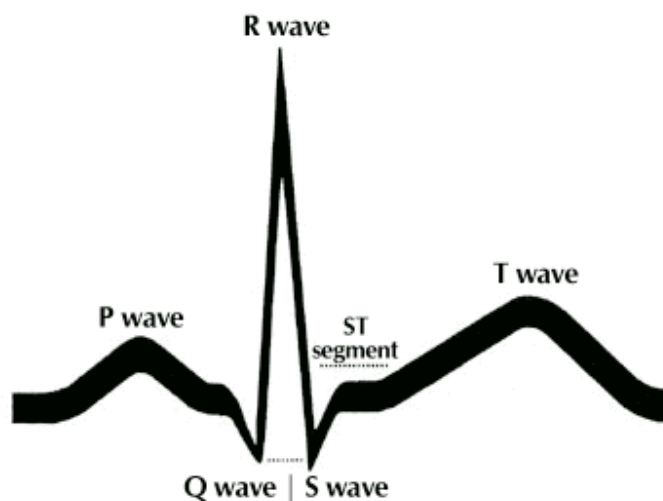
The first little upward notch of the ECG tracing is called the "P wave." The P wave indicates that the atria (the two upper chambers of the heart) are contracting to pump out blood. The next part is called the "QRS complex." This part indicates that the ventricles (the two lower chambers of the heart) are contracting to pump out blood. The next short upward segment is called the "ST segment." The ST segment indicates the amount of time from the end of the contraction of the ventricles to the beginning of the rest period before the ventricles begin to contract for the next beat. The next upward curve is called the "T wave." The T wave indicates the resting period of the ventricles. Variations in size and length of the different parts of the tracing may be significant.

BioBeat set-up

The BioBeat band is configured with a 1 meter elastic band designed to hold the sensor module in place on the torso. The sensor module has 3 gold sensor contacts that are designed to contact the skin and capture the electrical signals from the heart.

<u>Sensor contact adjustment</u>
The gold sensor contacts work for most people with simple skin contact. Your skin should be clean and free of oily substances such as suntan lotion. Some users have very dry skin and this can make it difficult for the sensor contacts to capture a good signal. Users with very dry skin will get better BioBeat operation by putting a little tap water on the skin where you will wear the unit, dry off the excess water and then apply the sensor band.

The band includes a 1 meter cable with a connector that plugs into the Wi-microDig unit. This allows the Wi-microDig unit to be worn at a distance from the band (e.g. on the belt) and allows freedom of motion.

BioBeat use

The band has a cambuckle that allows for adjusting the fit of the band around the chest. The easiest way to put on the band is to hold the BioBeat module on the chest to the left of the sternum and then slip the tongue of the elastic into the open cambuckle. Then tighten the elastic when the band is in the desired position, and latch the cambuckle closed.

By the way, you can wear the BioBeat module anywhere on your upper body. For instance, you can wear it on your back and it will still capture a good ECG signal. You can experiment with wearing the module in different places and observe how location affects the relative size of the P-QRS-T wave components.

<u>BioBeat Max patch</u>
To start enjoying your BioBeat – you can *hold* the module on your chest just left of your sternum with the elastic band folded up out of the way - as shown in the photo. Be sure that all 3 sensor contacts are touching the skin.

Assuming that you have already verified that your Wi-microDig is functioning with an input device using the I-CubeX Editor, now:

- launch the Biobeat Max patch
- plug your BioBeat into the Wi-microDig
- connect the Wi-microDig battery
- note that the red pilot light is lit

With the Biobeat Max patch in view, first select your input com port in the top center box. Allow a few seconds for the Bluetooth connection to be established – and the blue light should appear on your Wi-microDig.
Next, verify that the "min" and "max" sliders on the left of the screen are set to 0 and 511 respectively.
To activate the patch, click on the "On/off" box at the upper left. Sometimes it is necessary to toggle between Reset and On/off in order to start the program.

Once the program is running, you will see the data trace scrolling across the "ECG data" window. If your BioBeat is making good contact with the skin the trace will look like the figure below with low baseline activity.
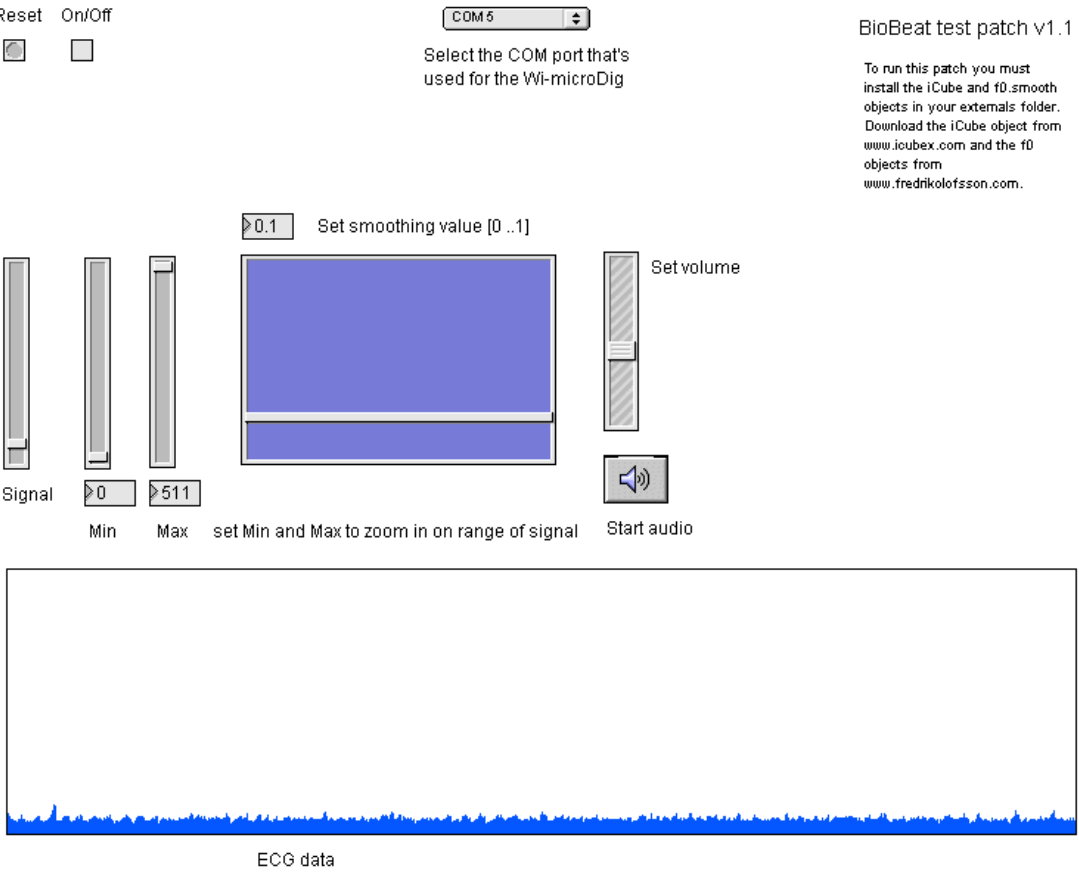
Reset   On/Off

COM 5

Select the COM port that's
used for the Wi-microDig
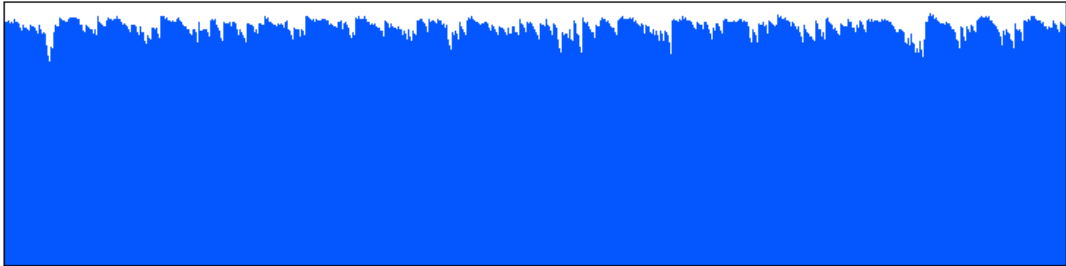
BioBeat test patch v1.1

To run this patch you must
install the iCube and f0.smooth
objects in your externals folder.
Download the iCube object from
www.icubex.com and the f0
objects from
www.fredrikolofsson.com.

0.1   Set smoothing value [0 ..1]

Set volume

Signal   0   511

Min   Max   set Min and Max to zoom in on range of signal   Start audio

ECG data

If your BioBeat is not fitted properly and one of the sensor contacts is not touching the skin, you will see high baseline activity scrolling across the window as shown below. If this happens, you need to reposition the unit to make sure that all sensor contacts touch the skin.

Reset   On/Off

COM 5

Select the COM port that's
used for the Wi-microDig

BioBeat test patch v1.1

To run this patch you must
install the iCube and f0.smooth
objects in your externals folder.
Download the iCube object from
www.icubex.com and the f0
objects from
www.fredrikolofsson.com.

0.1   Set smoothing value [0 ..1]

Set volume

Signal

0   511

Min   Max   set Min and Max to zoom in on range of signal

Start audio

ECG data

Now that you are running with a good low noise baseline with the BioBeat on your chest, you'll notice the ECG signals start scrolling across the screen. Since the display is an envelope or signal summation display you do not see the P-QRS-T complex shown at the beginning of this document. Rather, the envelope display shows the total energy of the ECG wave complex. To optimize the envelope display in the data window, you can adjust the min and max sliders.

Note that your heart rate changes with your breathing rate.
Try activating the MIDI audio by clicking on the "Start audio" button. Since the MIDI algorithm is mapping note number to signal amplitude, each (big) ventricular contraction will hit a high note. So now you have your own version of a hospital heart monitor that beeps with every heart beat.

Enjoy.

Reset   On/Off

COM 5

Select the COM port that's
used for the Wi-microDig

BioBeat test patch v1.1

To run this patch you must
install the iCube and f0.smooth
objects in your externals folder.
Download the iCube object from
www.icubex.com and the f0
objects from
www.fredrikolofsson.com.

0.1   Set smoothing value [0 ..1]

Set volume

Signal   20   400   set Min and Max to zoom in on range of signal   Start audio

Min   Max

ECG data