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Arts-based …What?

Tracing Practitioners´ Narratives on Knowing and Living in an Arts-based Research Project

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1. Introduction

"Art often carries out artistic research in what it does – and not just in what is said and written about it. (...) Art is not just a tolerant subject for the sciences like a patient waiting naked chest to be examined, inspected, tapped and sounded. It therefore has no need to become its own doctor either, and to start diagnosing itself. Instead art must be seen as an ally for the sciences. It is engaged on the same side, at the same task, in the same struggle" (Pfaller in Bast 2011: 185)

This statement of the philosopher Robert Pfaller was quoted by Gerald Bast, the director of the Academy of Applied Arts Vienna, at a conference organised by the Austrian Science Board in 2008. This conference brought together artists, policy makers, people from science funding organisations, rectors of art institutions as well as theoreticians. The topic of the conference was `arts-based research´, and what got debated was art as a field of research.

Taking a closer look at Pfaller´s quote shows that this research field is not imagined as a field of investigation for academics like art-historians or sociologists, but that it is understood as an *"ally"* of science and not a *"subject"* of observation, and as something that is *"on the same side"* of science and *"in the same struggle"*. Taking furthermore into account that this conference was organised by the Austrian Science Board, this quote shows that doing science and doing art are related close to each other, and more than that, they are actually understood as similar activities.

But what does that mean? Are artists to be considered scientists and the other way round? Is drawing a painting now research and using a micro injector art? Or is it more complex than that?

The context of this statement, the conference on arts-based research, shows that it is more complex. Instead of simple equations as articulated in my questions, the background of this quote is a whole discourse on producing knowledge in art and through art practices[1] . This discourse is rooted in the changing relation of higher art education institutions to the academic world and a following transformation of Austria´s higher art education institutions, from art high schools to art universities.

Being aware of this context, this statement is more than a product of a philosopher´s mind, it is part of a transformation in which art and science become related close to each other, in which actors from academia, politics and the arts are involved, and in which new concepts of doing research are introduced.

Leaving now this conference room and considering the various university programmes dedicated to research in the arts in Europe and beyond, the manifold initiatives fostering exchanges of artists and

1 For an overview see chapter 2.2 of this thesis

scientists, and the art and research laboratories dedicated to the development of new technologies, all set up within the last decades, shows that art and research relations are currently a hot topic, that they take various forms and are rooted in all different kind of contexts[2]. In that sense the statement of Pfaller can be understood as an outcome of a local discussion, but also as part of a bigger development in which not just art and science, but in more general art and research are close to each other.

Entangled with these initiatives are high hopes and expectations and a variety of outcomes are associated with this new closeness, for example the production of new knowledge, creative exchanges between artists and scientists, a better public communication of scientific knowledge through artists, and the development of technological prototypes. And as various as the expected outcomes are the actors providing resources for these activities, spanning the whole scale of public and private funding possibilities, and everything in-between.

This closeness of art and research is also accompanied by a growing body of literature in which potential relations of artists and scientists are described, concepts theorising art practice as research practice are introduced, or art and research laboratories are labelled as transdisciplinary research and innovation spaces. This literature raises a lot of questions: How should the relation of art and science look like? Should they be understood as equal partners, both involved in the production of knowledge, as claimed by Pfaller? Should artists be seen as servants of science, as creative input givers and/or as communicators of scientific knowledge? If art is understood as an actor of knowledge production, how is that done? Do the arts need a specific set of theories and methods? Should research in the arts be structured as in science, along disciplines and sub-disciplines? If so, how can then the academic quality of the research outputs be assessed, and how does all of that work in contexts in which the goal is to come up with new technologies and do research in a transdisciplinary way? Finally, who are actually the people participating in art and research activities; should they be called artists, scientists, translators between art and science, arts-based researchers, laboratory members or do they have already different identities?

Taking these questions into account, art and research is not just a phenomenon raising hopes and expectations, it is also producing a lot of tension and uncertainty. Therefore, art and research is lively debated on a theoretical level by policy makers, funders, scholars and official representatives of related institutions. Yet, what has remained rather unclear and under-researched so far is how the practitioners in art and research actually live and work in these new spaces.

This is the point where my research interest comes in, and which this thesis is dedicated to. Being a student of Science and Technology Studies (STS), a field investigating the relations of science, technology and society, for me the perspectives and activities of the people doing art and research are of high interest. STS scholars have conceptualised knowledge production in science as social

2 For examples see chapter 2 of this thesis

endeavour. In this regard they have pointed out that the different cultures, dynamics and changing science - society relations as well as the involved people, their motivations, imaginations, practices and relations to local contexts, are the central elements in the production of knowledge. Furthermore, a lot of empirical research has been done on science and knowledge production. Investigating these complex and multi-layered science-society relations, the various practices, meanings, narratives and actors, they have drawn complex and heterogeneous pictures of how knowledge is produced and how that is changing over time and space.

The outcomes of these studies have also shown in multiple ways how theories about science cannot account for the complex dynamics and lived realities of the researchers. Moreover, the studies have pointed out that policy initiatives and discourses, many times related to a formalised understanding of doing research, affect the conduct of practising research in various (often unintended) ways (for an overview see Sismondo 2010).

Therefore, what the practitioners say and do is at least as interesting as the generated theories about art and research or the perspectives of the policy makers. Thus, this thesis aims at relating some STS approaches to art and research, in order to build an analytical frame and to understand this new phenomenon from the perspective of the people doing it. In particular I am interested in how the people who are living in art and research find orientation in this complex world, how they understand their involvement and their position in it, how they deal with the different expectations and discourses, how knowledge is produced by them, and how they understand all of that in relation to other actors and the actual context(s) they are acting in. Approaching art and research from this perspective should give some first impressions of what Felt (2009) has called the *"epistemic living spaces"* inhabited by the practitioners, and of *"(...) the multi-dimensional structures (...) which mould, guide and delimit in more or less subtle ways researchers' (inter)actions, what they aim to know, the degrees of agency they have and how they can produce knowledge."* (op.cit.: 19)

But as it would be simply not doable to answer these questions for all of the different contexts and realisations of art and research (especially not in the context of a master thesis), I have decided to narrow the focus of my research down on one project. Concretely, what I have investigated in this thesis is the (St)Age of Participation project (stageofparticipation.org). Financed by the Austrian Science Fund´s programme dedicated to arts-based research and conducted by an art and research lab and an independent media artist, this project is dedicated to research on interactive stage performances and finding new ways how such performances can be opened up, in order to involve the audience members as active participants and co-creators.

Thus this thesis is for me about two things. First, about translating some STS approaches into the context of art and research, and using them as analytical tools in order to build a lens through which art and research can be understood as cultural and practical activity. Second, the thesis is about actually doing empirical research, about analysing what the different members of the arts-based

research project (St)Age of Participation have to say, and about relating that back to the discourses on arts-based research as well as STS.

1.1 Structure of the Thesis

In **chapter 2** more information will be given about art and research, about the relevant contexts of art-science, arts-based research and art and research laboratories and some of the discourses that are part of these contexts.

In **chapter 3** I will discuss several STS theories and concepts that will serve as analytical background to the case study. Furthermore, I will compare these theories with what I have written about art and research and with the already existing case studies on art and research. This is necessary as the STS concepts got developed in close relation to changing science-society relations, established scientific laboratories and disciplines. Thus, in chapter 3 I will not just outline the STS approaches, but also try to find out how they can be related to art and research, and what kind of perspectives and questions that opens up.

In **chapter 4** I will describe on the one hand the (St)Age of Participation project as the case I have investigated and the contexts of the art and research lab, the so called Ars Electronica Futurelab, and the arts-based research funding program it is financed by. On the other hand, I will give an overview of the conceptual tools that guided my analysis and allowed me to narrow my focus down on one main research question and several sub-questions. Related to that also the methods and materials are outlined in this chapter.

In **chapter 5** I will outline the analysis of my materials, which is divided into three sub-chapters. In the first one I discuss parts of the (St)Age of Participation funding application, show how the approach of the project is described in this official document, and what kind of concepts of doing research are present in this document. In the second sub-chapter I will describe how differently the people in (St)Age of Participation position themselves to the project in terms of their identities, motivations, practices and understanding of what it means to do arts-based research. In the third sub-chapter I will try to show how the different perspectives and approaches are related to each other, how the project members managed to coordinate their activities in this project, and how they have created elements that are not reducible to either of the individual positions.

Chapter 6 relates these findings to the bigger analytical background I have built, and to draws some final conclusions.

2. Art and Research

Discussions evolving around the relations between art and research have a long history. In an analysis of the social origins of modern science, Edgar Zilsel goes back to the Renaissance, and points the existence a social group out he labelled *"engineer – artists"* (1985: 57). Compared to other groups who were involved in intellectual activities and knowledge production at that time, the humanists and the scholastic theologians, the engineer – artists were less involved in reading and writing work, but their activities ranged from painting and architecture to the construction of canals and figuring machines. Through these activities the engineer-artists developed the foundations of the empirical observation, experimentation and the quantitative ascertainment of physical laws, now common to science. But Zilsel also highlights that the methods genuine to the engineer – artists got not just developed by this social group, they got also absorbed into the field of modern science. This leads Zilsel to the conclusion that the modern institutional differentiation of science and art drew the once not separable activities of making art and of doing research apart (Zilsel 1985: 49ff).

Having that background in mind, it is interesting to see that currently there are again a lot of discourses and various manifestations which are relating art and research activities close to each other. According the art historian Robert Shanken (2006) the current projects and discussions addressing artists as knowledge producers and/or collaborators of scientists and technicians started in the 1960s, and range from issues emerging around the topic of art and technological innovation (for example Harris [ed.] 1999), to artistic research in the context of academia (for an overview see Biggs and Karlsson [ed.] 2012 [2010]).

Drawing attention to these developments, STS scholar Helga Nowotny writes about a change that takes up the vision of the Renaissance, claiming in the foreword of the "Routledge Companion to Research in the Arts" (Biggs and Karlsson [ed.] 2012) [2010]), that *"[T]o put research (back) into the arts, to (again) make visible and explicit the function of research in the arts and in the act of ´creating knowledge´(Seggern et al. 2008) is a truly ambitious undertaking, because it takes up a vision and a project that originated in the Renaissance. After centuries of separation, it promises to close a loop."* (Nowotny 2012 [2010]): xix)

According to Nowotny these new relations between art and research are routed in current societal transformations, which are based on the blurring borders of fields like economy, politics, science or art. In regard to art and research she identifies several elements merging these activities again, like an ongoing state driven expansion of the tertiary sector, which increases the scientific literacy of more and more people in western societies, the demand for knowledge production in the arts, as well as the commercialisation of art in form of the creative industries and the related demand for research activities. Furthermore Nowotny writes about merging elements coming from within the arts world, like the expansion of art throughout society, the active attempts of artists to define their place in

institutions of higher education, and the incorporation of new media into artistic practices, leading to new ways of knowledge expression. Other authors identify additional elements merging art and research, like the debate on an increased public distrust in science and the related idea that art could serve as a public communicator of science (Born and Barry 2010: 106ff), or promises associated with the innovative potential of transdisciplinary research (Shanken 2010).

These relations between art and research have become visible in festivals which serve as exhibition-, discussion- and meeting-points for artist and scientists, new art forms addressing scientific fields like biology and physics, middle sized enterprises, such as Media Labs, conducting research in the field of digital technology and employing artistic and scientific approaches, design offices and architectural studios doing research and development work for private clients and public institutions, as well as university programmes and funding institutions, fostering and supporting research activities based on art practices. Accompanied are these developments by an ever growing amount of literature theorising art, research and science relations from different perspectives.

Taking this heterogeneity into account, the following sub-chapters will give an impression of three different contexts and ways of describing art and research: art–science, arts-based research and, as I have termed them, art and research laboratories.

The reason why I have chosen these three topics is for the latter two pretty simple. The project I have investigated is funded by a program dedicated explicitly to arts-based research and conducted by an art and research laboratory. Thus it makes sense to get a more detailed understanding of the context this project is related to and some parts of the discussions around it. Art–Science became part of this thesis for two reasons. Firstly, because during the time I have done the literature research for this thesis the topic of art-science got raised several times and got positioned opposite to the concept of arts-based research, and so I think that it is interesting to compare these two approaches, in order to get an impression of differences and similarities. Secondly, there is already social scientific literature available addressing art-science. That allows me to generate a first impression of how art and research projects can be conceptualised and investigated from the perspective of the social sciences and what the outcomes of these studies are.

The structure of this chapter is organised in three sub-chapters. The first one gives a brief introduction of art-science. The second one is dedicated to arts-based research and discusses its context as well as two theoretical positions conceptualising knowledge production. The third part sketches briefly how art and research laboratories become discussed in the literature and how knowledge production is imagined in this context.

2.1. Art–Science

Under the art-science label activities can be summarised relating artists, scientists and technicians to each other. As Manila (2006) shows, the aims of art-science projects are heterogeneous and range from a desire to look for common ground that artists, scientists and technicians share in their activities, in order to generate new perspectives that make the different professions to re-think their positions, to activities focusing on an improved public communication of science through artists, as well as projects aiming at the generation of hybrid ideas and knowledge at the intersection of art, science and engineering.

The art historian Robert Shanken (2006) traces this way of relating art and research back to the 1960s, and describes it as initially based on the intention to cross the borders of the fields of art and engineering. Organising collaborations between artists and engineers, was expected to generate new perspectives for the involved people, leading to the production of new knowledge and hybrid institutional settings. Shanken mentions the so called "Experiments in Art and Technology" (E.A.T), initiated by the artist Robert Rauschenberg and the engineer Billy Küver, as one of the earliest examples of these kind of collaborations. The aim of the E.A.T initiative was to create a space, that should support collaboration and communication between artists and engineers, in order to overcome the institutionalised separation between art and engineering, to furthermore enable engineers through the collaboration with artists to break out of their restrictive way of looking at the world, and to use their knowledge and *"(...) their brains to change the environment, to make a more human environment, as they should."* (Klüver in an interview with Shanken 2006: 8). In the aftermath of E.A.T, Shanken highlights that events and initiatives were conducted in the same spirit, leading to an ever growing amount of institutions supporting and realising projects in which scholars from art, science and technology were encouraged to collaborate with each other.

Currently the label "art-science" refers to such activities, and is used as a category by policy makers, funders of such projects as well as the practitioners (Born and Barry 2010: 104). One example in this regard is the "artists-in-labs" project, which started in 2006 at the Zürich University of the Arts. In this programme artists set up projects with scientists or spend some months, as artist/s in residence, in a science laboratory, observing what the scientists do, reflecting with them about their practice and organising joint activities. (for a summery of the project see Scott [ed.] 2006 and artistsinlabs.ch).

An overview how knowledge production is imagined in art-science is provided by the cultural studies scholar Jill Scott (2006). Scott identifies different imaginations and discourses which are related to knowledge transfer as well as knowledge production in art–science projects. The first imagination is based on the assumption that artists can contribute to the creation of metaphors which lead scientists to a better and/or different understanding of their own interpretations of the world, their research, and thus lead to new forms of knowledge production.

The second imagination is related to an improved public communication of science and the promise

that artists could help scientists to communicate their knowledge in a understandable way for people who are not involved in science. According to Scot, the desire to do so is related especially to fields in which there is public concern about research results, such as genetically modified food. Whereas art is seen as an agent convincing the public of the utility of scientific research, but also as a critical voice triggering public attention.

A third imagination is based on the idea of the artist as part of the social context of scientists. In this imagination artists who usually do not belong to the scientific environment of, for example a laboratory, are seen as a new input giver and reflector, who could develop together with the scientist new ideas and support the generation of new knowledge. Related to that is the idea of artists as creative agents in science, which can potentially change the processes how knowledge is produced in science, open up procedures and make science available and attractive for social groups which have not beforehand been involved in the conduct of scientific research.

Lastly, Scott highlights that the role of artists in fields, such as computing, engineering and artificial intelligence, is related to the discourse of innovation. This means that artists, and here she especially mentions artists working with new media technologies, have experience in thinking about the application of technologies and thus can help researchers to create innovative products.

Summarizing these descriptions, in art-science new relations between the institutionalised spheres of art, science and technology are discussed, in which through encounters of the different actors of these spheres new perspectives should be opened up especially for the scientists and technicians, and new ways of communication as well as practising scientific research should be developed.

2.2. Arts-based Research

Compared to art-science, the discourse on arts-based research is not related to a realisation of projects in which artists and scientists collaborate, but is more focused on the issue of knowledge production in and through art practices and the position of art institutions in the academic context (Biggs and Karlsson [eds.] 2012 [2010], Bippus [ed.] 2009, Borgdorff 2006, Lesage 2009, Schwab 2013).

One statement which makes that difference clear is from arts-based research scholar Henk Borgdorff, who wrote in an article defining the role of arts-based research in academia: *"In the debates of research in the arts (...) art-and-science collaboration are often wrongly classed together with artistic research (...). Although the term art-and-science may imply convergence at first glance, if anything it represents a reinstatement of the partition between the domain of art and the domain of science, between the artistic and the academic, between what artists do and what scientists do. (...) Whilst artistic research is not entirely at odds with these types of art-science collaboration, it should be regarded as an academic research form of its own."* (Borgdorff 2012 [2010]: 53)

Describing art not only as the producer of artworks, but also as producer of academic knowledge a variety of different discussions about chances and dangers of this transformation of art have emerged, and various names have been introduced to label this phenomenon, ranging from practice based research and artistic research to arts-based research[3]. (Borgdorff 2011)

In order to understand arts-based research and the associated debates, Kälvemark (2012 [2010]) traces the beginning of it back to the late 1970s, and shows that the discussion on arts-based research is strongly related to institutional transformations on a national as well as an European level. The most important focus points in these debates are the artistic higher education institutions, their status, and how research in an art school can look like.

According to Kälvemark an early example for these transformations on a national level is Sweden, that integrated the former Swedish art schools in the 1970s into the wider national system of higher education. As a consequence the question got discussed: *"If research in the classical sense is the basis for teaching and training in universities, what then is the equivalence for the teaching and training in art schools?"* (op.cit.: 4)

Similar transformations happened on a national level all over Europe, but each nation institutionalised the role of art schools in a different way, ranging from in-between solutions to the transformation of art schools into universities.

On an Europe-wide level Kälvemark identifies the `Bologna Reform´ as one of the most important elements shaping the institutional transformation. In this regard he especially highlights that the implementation of the three-tier structure of Bachelor, Master and PhD education leads to questions addressing the research education in art schools, and how this structure can be implemented into these institutions. Furthermore he points out that the adaption of standardised quality assurance instruments as part of the `Bologna Reform´ raises numerous new challenges for the way how the quality of research can be assured and evaluated. And as Lesage (2009) argues, this development also leads to questions where the resources and funds for arts-based research come from, and who can have access to what kind of resources.

2.2.1 Theorising Knowledge Production in Arts-based Research

Apart from these open questions and uncertainties, concepts got developed that theorise knowledge production in arts-based research, and come up with possibilities how that can be imagined. In order to give a better impression of these concepts, I will introduce the approaches of two important scholars in this field, targeting explicitly the issue of research and knowledge in arts-based research.

The first one is Christopher Frayling, who has introduced probably the most important

3 In the context of this thesis I have decided to stay with the term arts-based research, as it is the one which is also used by the institution funding the investigated project and by the members of the project to characterise it.

conceptualisation of research and knowledge production in the arts (Belcher 2013), in his paper "Research in Art and Design" (1993). The second one is the already quoted Henk Borgdorff, who further developed Frayling´s approach (2006, 2012 [2010]) and discusses it explicitly in the context of knowledge production in arts-based research. Apart from this theoretical meaningfulness, it is also important to have a look at Borgdorff´s work because his definitions have already been cited in a lot of publications about arts-based research in the European context (Biggs and Karlsson (ed.) 2012 [2010]; Tröndle und Warmers [eds.] 2012) and specifically in Austria (Ritterman [ed.] et al. 2011). Thus it can serve as an interesting and important example how epistemic considerations in arts-based research are articulated.

Research Practices in Art and Design

In his essay "Research in Art and Design", Frayling (1993), who was a professor of cultural history, the rector of the Royal College of Art and the chairman of the Arts Council England, first of all starts with a reflection on the rather stereotypical representation of the artist, the designer, and the scientist in public mass media.

Published as a Royal College of Art research paper, Frayling´s text outlines how in several representations of popular culture, artists are presented as chaotic and expressive personalities, designers as hands on and style oriented, and scientists as hyper rational researchers, who persuade the scientific community through their wisdom and furthermore tend to say: Eureka!, at the end of the day. Opposite to these images, Frayling discusses the work of scholars who are entangled in the philosophy and sociology of science, like Feyerabend and Collins, and points out that from such a perspective it becomes apparent that doing science involves a lot of irrationality, tacit knowledge and craftsmanship and thus is irreducible to the image created by popular culture. Turned the other way round, the same appears to artists. Artists are not always expressive and irrational, but they can be described as working in a rational way and sometimes even in close relation to science. Frayling identifies also an orientation of design towards research, since this field has already an established tradition of research, and methods related to design practices.

Thinking all of these re–configurations of the stereotypes together, Frayling condenses his approach and relates practice and research on a general level to each other, claiming that: *"Research is practice, writing is practice, doing design is practice, doing science is practice, making art is practice. The brain controls the hand which informs the brain"* (Frayling 1993: 4)

Related to this diagnosis, he asks the question what kind of consequences this new understanding has for an art and design institution such as the Royal College of Art. As art and science are actually very close to each other, does now every art product count as research? Should consequently every artist get a honorary PhD in absentia? Answering all of these questions with no, he writes: *"There must be an institutional, or pedagogical, or academic, or technical, or some reason for wanting to do research.*

Not just status, promotion and fund–raising." (op.cit.: 4)

In the final section of his paper, Frayling develops the three categories of "Research into art and design", "Research through art and design" and "Research for art and design", in order to provide a first conceptualisation of research, understood as practice, in the fields of art and design.

The categories are as follows (Frayling 1993: 5):

1. "Research **into** art and design" does not actually belong directly to art and design production but is related to historic, sociological, etc. research into art.

2. "Research **through** art and design": This category represents knowledge that is created on the one hand through research activities like material research, in which activities such as *"(...) the titanium sputtering or colourization of metals projects"* (op.cit.: 5) are completed in places like the metalwork and jewellery department of the Royal college of Art. On the other hand the category represents practices and reflections, that Frayling calls development research and action research. Describing action research as an activity *"(...) where a research diary tells, in a step – by – step way, of practical experiment in the studios, and the resulting report aims to contextualise it."* (op.cit.: 5), and development research as: "(...*) for example, customising a piece of technology to do something no one had considered before, and communicating the results"* (op.cit.: 5).

3. "Research **for** art and design" is defined as: *"Research where the end product is an artefact – where the thinking is, so to speak, embodied in the artefact, where the goal is not primarily communicatable knowledge in the sense of verbal communication, but in the sense of visual or iconic or imagistic communication"* (op.cit.: 5).

This categorisation and especially the relation to the world of art and academia is then further pursued by the next scholar I want to have a look at, Henk Borgdorff.

Arts-based Research as Academic Discipline

Henk Borgdorff defined his categorisation of arts-based research in relation to Frayling, but with some twists. First of all he focuses his conceptualisation solely on art and excludes design. Secondly he changed Frayling´s categories of "research into, through and for art and design" into "research on, for and in the arts" (Borgdorff 2006). The first change has from my point of view the reason that Frayling published his approach as a Royal college of Art research paper, addressing this art and design institution with his classification, whereas Borgdorff relates his approach to the debate on arts-based research. The second change is related to the first, but also shows that Borgdorff has re-formulated

Frayling´s concept on a deeper theoretical level. Describing arts-based research as an academic discipline, he uses Frayling´s categories in order to form a specific disciplinary identity for arts-based research, and to position it as a distinguishable part of academia, which produces its own kind of knowledge.
How he has done that is the objective of this sub-chapter. In order to make the connection but also the differences to Frayling visible, I will start with comparison of the two sets of categories.

In his paper "The Debate of Research in the Arts" (2006) Borgdorff defines his categorisation as follows:

1. *"**Research on the arts** is research that has art practice in the broadest sense of the word as its object. It refers to investigations aimed at drawing valid conclusions about art practice from a theoretical distance."* (op.cit.: 6)
   Similar to Frayling´s category "Research into art and design", Borgdorff understands "Research on the arts" relates to fields like sociology, history or anthropology, which all treat art as their object and hence do research on the arts from a distanced perspective.

2. *"**Research for the arts** can be described as applied research in a narrow sense. In this type, art is not so much the object of investigation, but its objective. The research provides insights and instruments that may find their way into concrete practices in some way or other. (...) In every case these are studies in the service of art practice."* (op.cit.: 6)
   What is interesting about this definition is that it introduces the category of applied research. In my reading this notion was not present in Frayling´s categorisation at all. Although what Frayling termed "Research through art and design" could be interpreted in such a way, it does not necessarily lead towards applied research but more towards research that actively tries to make art practices as research practices communicatable through verbalisation.

3. *"**Research in the arts** is the most controversial of the three ideal types. (...) It concerns research that does not assume the separation of subject and object, and does not observe a distance between the researcher and the practice of art. Instead, the artistic practice itself is an essential component of both the research process and the research results. This approach is based on the understanding that no fundamental separation exists between theory and practice in the arts."*(op.cit.: 6f.)
   Although this category sounds in the beginning again like Frayling´s "Research for art and design", there is an important difference: Art practice and arts-based research are defined as one set of practices which are distinguishable from other forms of doing research. Frayling has a much broader definition of research as practice, because he suggests to understand practice

in general as research, and not to distinguish form the beginning onwards between different types of research practices.

The differences between Frayling and Borgdorff become even deeper when one has a closer look how Borgdorff contextualises arts-based research in the academic world.
In another paper called "The Production of Knowledge in Artistic Research" (2012 [2010]) Borgdorff understands arts-based research as *"academic research form of its own"* (op.cit.: 53), and attributes to the third category of "Research in the arts" a central position. According to Borgdorff: *"We can speak of artistic research (`research in the arts´) when that artistic practice is not only the result of research, but also its methodological vehicle, when the research unfolds in and through the acts of creating and performing. This is a distinguishing feature of this research type within the whole of academic research."* (op.cit.: 46)
Analytically speaking, what he achieves through this re-labelling of Frayling´s categories is that
a.) he describes the second category as applied research and *"sub-ordinated"* (Barry et al. 2008: 28f.) to art practice as research; which leads to
b.) that he is able to focus the conceptualisation of what arts-based research is on the category of "Research in the arts" and a distinguishable form of practising research.

Based on this definition of arts-based research he develops in the same publication some of the features distinguishing arts-based research and artistic practices form other ways of doing academic research.
Theorising the nature of the knowledge produced in art practices, Borgdorff claims that through art and art creation we get a sense of the world that is "(…) *more real and nearer to us, than the reality we try to approach with our epistemological projects"* (op.cit.: 60).
This leads to a general argument about the way we generate pre-reflective or non–conceptual knowledge through our being in and engaging with the world, and reversely that this kind of knowledge influences our understanding of the world. Based on that, Borgdorff describes art and arts-based research as the field targeting these non–conceptual forms of knowledge, which are embodied and generated in art practices and art works: *"Artistic research articulates the fact that our natural relationship with things we encounter is more intimate than we can know. At the same time, it also familiarizes us with the fact that those things are in some way foreign to us. In art, we sense something of our pre – reflective intimacy with the world, while realizing simultaneously that we will never explicitly understand what lies there in such plain view."* (op.cit.: 60)
But Borgdorff also asks the question how it is possible to distinguish artistic practice as research from artistic practice per se, and argues similar to Frayling that some preconditions have to be fulfilled, in order to speak of arts-based research. Unlike Frayling he however builds the preconditions in a way so

that arts-based research is understood as a distinguishable academic discipline.

The first precondition Borgdorff identifies is that there has to be the intend to contribute to the art world and to expand the understanding of the artistic discipline in question, but also to contribute to what we know and understand on a general level.

The second precondition for arts-based research is, it must be an original contribution and therefore add some new knowledge and understanding to the world of art and academia.

Thirdly, arts-based research is not so much driven by hypothesis–led research as other research forms in academia but follows more a discovery–led logic *"(...) whereby the artist undertakes a search on the basis of intuition, guesses and hunches, and possibly stumbles across some unexpected issues or surprising questions on the way"* (op.cit.: 56)

Fourthly, arts-based research is like an academic discipline embedded in a context in which peers define the state of the art and hence partly determine the urgency and relevance of research questions and topics.

Fifthly, similar to other academic disciplines, arts-based research employs methods such as experimentation or interpretation with the difference to other fields that art practices occupy the centre of the research process as well as the outcome.

Sixthly, the research process and the findings have to be documented in a way satisfying the world of art as well as academia. How this documentation can be done is for Borgdorff an open question. Therefore arts-based research is for him the field in which art works, art practices as well as publications, understood in a broad sense, count for him as valid outputs.

Summarising this approach, he condenses his definition of arts-based research to the sentence: *"Artistic research – embedded in artistic and academic contexts – is the articulation of the unreflexive, non–conceptual content enclosed in aesthetic experiences, enacted in creative practices and embodied in artistic products."* (op.cit.: 47)

2.3 Art and Research Laboratories

Called sometimes as *"Media Labs"* (Tanaka 2011), sometimes *"research labs with and interest in art"* (Naimark 2003: 12) and sometimes *"experimental labs dedicated to broad transdisciplinary collaboration at the intersections of art, science and technology"* (Shanken 2010: 19), the institutions I labelled art and research laboratories share the aim of doing research and development work related to new technologies, an orientation towards transdisciplinarity, and outputs that often take the form of products, technical prototypes and/or artworks. These laboratories involve for example the MIT Media Lab, the Bell Laboratories, the IBM TJ Watson Laboratory, the ZKM Centre for Art and Technology or the Ars Electronica Futurelab.

This heterogeneous mass of institutions are at some parts related to the discourses of arts-based research and art-science, as they understand art practice as a form of research and relate people like artists and scientists to each other, but they are at the same time not reducible to the categories arts-based research or art–science. In that sense I try to summarise under the term "art and research laboratories" a variety of organisations which do not fit the descriptions of artists visiting scientific laboratories, or research through art practice. The reason why I have dedicated this sub-chapter to them is because, as already said above, one institution that I am classifying as art and research laboratory is part of my empirical research. Thus this description should open up some context and allow me to tailor my research approach to it. Secondly this sub-chapter should also give the reader a first idea of the complexity and heterogeneity related to the world of art and research beyond the two categories of arts-based research and art-science. Because although I have written about it so far as if it would be possible to draw clear boundaries between different spheres, switching the perspective from discourses and its contexts to institutions shows that the world of art and research is messy and chaotic, always on the move and subject to constant change.

According to, Shanken (2010) the roots of art and research laboratories are, similar to art-science, in engineering and art collaborations. But other than initiatives trying to bring artists and engineers together in order to collaborate and exchange different viewpoints, he understands these art and research laboratories as organisations going beyond that approach. For Shanken they actively pursue *"(...) the creation of hybrid forms that transcend the disciplinary limits of any single field, that push conventional structures of knowledge and yield breakthrough innovations."* (Shanken 2010: 19) The MIT Media Lab can serve as an early example for art and research laboratories, which´s mission and members are described by Nicholas Negroponte, the first head of the Media Lab, as: *"....new ideas in computer science would come from the applications, not from basic science. New ideas would emerge from creative uses and users, from a heterogeneous collection of edgy, unorthodox people. In the case of the Media Lab, those people came from various parts of MIT, from architecture to physics, from music to maths. In some cases those same faculties were no longer welcome in their home departments. In that sense, the founding faculty was a veritable Salon des Refusés. Misfits."* (Negroponte 2012: 1)

But the outlaws have started to become popular. The number of art and research labs grew throughout the late 1980s, 1990s and the first decade of the 21st century and they spread throughout the USA and Europe. Propelled was the growing amount of these labs, as Naimark (2003: 12ff) highlights, because of all different kind of initiatives, ranging from state driven funding to industry based activities. With this increase also the various different understandings of what such a laboratory is and what it does started to grow (for an overview of the current situation in Europe see the magazine "mcd" Vol. 62 (2011) and Plohman and Butcher [eds.] 2010).

Tanaka (2011: 14ff) for example distinguishes between four different types of art and research laboratories: **industry labs such** as Bell Labs, IBM TJ Watson laboratory or Microsoft research; **media art labs** like The Ars Electronica Futurelab or the ZKM Centre for Art and Technology; **university labs** like the already mentioned MIT Media Lab and the Culture Lab at Newcastle University; and **citizen labs**, which are currently growing in the context of the Do-It-Yourself scene. These distinct types of art and research labs are according to Tanaka all oriented towards different directions, ranging from the production of innovative products and the development of new ways of artistic expression, to scientific research outputs or tools and strategies for public engagement.

Although Tanaka´s categorisation is a first valuable tool to get an overview of various different types of art and research laboratories, it is from my point of view problematic at the same time as it suggest clear demarcations. Having a closer look at an institution like the Ars Electronica Futurelab shows that such a lab is dedicated to art production, but at the same time related to fields in which economic innovation is of high importance as well as university driven research projects (Hörtner 2009). The same is true for many of these labs (for an overview see Naimark 2003: 12ff).

Another specificity of these art and research labs is that, at least to my knowledge, there are no comprehensible publications available on what doing research and knowledge production means in that context. There are only books available summarising examples of projects that got realised in these labs (for examples see Plohman [ed.] 2011, or Brouwer et al. [eds.] 2005). Thus unlike in the cases of art-science or arts-based research, I can not come up with a summary of discussions on knowledge production in art and research laboratories. All I can offer is this quote from Brouwer et al. (2005: 6), who writes: *"Exploration, research and experimentation into new technological opportunities for artists, as well as research into the social and cultural implications of new technologies and development of technologically innovative applications, are the lowest common denominators among the contributions artists, technician and scientists are making in the field"*

3. Theories and Concepts

This part of my thesis is dedicated to the elements that form the analytical perspectives of my research, the theories and concepts. The aim of this chapter is to present approaches that serve as analytical instruments to guide what will be further written about art and research. In that sense I understand the theories and concepts of this part as a background, that opens up questions about my field of interest and shapes the analytic interpretations of it.

Intellectually located are the chosen approaches in the so called Science and Technology Studies (STS). That is an interdisciplinary field which emerged in the 1970s, and is related to various approaches such as philosophy, anthropology, sociology, history, economy, etc.. STS scholars have investigated and theorised the multiple relations and complex interactions of science, technology and society. In doing so they have introduced new perspectives on science and technology and influenced related policy making activities on a national and international level. Due to its interdisciplinarity, the perspectives as well as the produced outcomes are various, and range from investigations and identifications of different scientific paradigms, various ways how interests of different social groups shape research activities, to ethnographic research, describing laboratories as places of practice and culture, as well as changing science and society relations (Sismondo 2008: 13ff).

Despite this heterogeneity typical for STS are its "anti-essentialist positions". As the STS scholar Sergio Sismondo (2010) summarizes, opposite to a popular picture of science in which science is understood as a clearly structured activity, STS scholars are more interested in the heterogeneous and messy elements of knowledge production. While science in the first regard is understood to be driven by elements which philosophers identified to be essential to science, such as its logical nature (for example Carnap 1952 [1928]) or the possibility to falsify theories (Popper 1963), in the case of STS science is understood as constituted through social activities which are subject to constant ordering work and change. Is science in its "essentialist" version furthermore described as a space distinct from the rest of society and as a homogenous system structured along basic principles genuine to science, in which scientists as the ones that follow a logical method are reaching an agreement on the laws of nature, and nature is understood to be the force having the power to evaluate theories, STS scholars draw attention to the production of facts as well as the production of boundaries between science and non-science.

Based is this anti-essentialist position in the belief that, as Sismondo highlights *"(...) science and technology are thoroughly social activities"* (2010: 10). Instead of asking for the essentialist constitution of science, STS scholars understand science in an anti-essentialist way, highlighting that *"(...) scientists and engineers are always members of communities, trained into the practices of those communities and necessarily working within them. These communities set standards for inquiry and evaluate knowledge claims. There is no abstract and logical scientific method apart from evolving*

community norms. In addition, science and technology are arenas in which rhetorical work is crucial, because scientists and engineers are always in the position of having to convince their peers and others of the value of their favourite ideas and plans (...). The actors in science and technology are also not mere logical operators, but instead have investments in skills, prestige, knowledge, and specific theories and practices. Even conflicts in a wider society may be mirrored by and connected to conflicts within science and technology" (op. cit.:11).

Thus comparing this STS approach with essentialist conceptualisations of science, the question of interest is not anymore what science is but how science is done by its practitioners and how knowledge is produced. Instead of understanding science in terms of true or false knowledge, the production of knowledge as well as the involved actors, values, imaginaries and institutions are important (Knorr Cetina 2012: XIf.). Consequently, entertaining such an anti-essentialist perspective makes it impossible to use concepts like a general scientific method, the observation of nature and facts as an expression of this nature as final reasons explaining scientific activity. Opposite to that STS opens up a perspective in which knowledge production is understood as a culture of research and not as culture of science, which is characterised by Latour like that: *"Science is certainty, research is uncertainty. Science is supposed to be cold, straight, and detached; research is warm, involving and risky. Science puts an end to the vagaries of human disputes; research creates controversies. Science produces objectivity by escaping as much as possible form the shackles of ideology, passion, and emotions; research feeds on all of those to render objects of inquiry familiar."* (Latour 1998: 208)

Translating this anti-essentialist position in the context of art and research is fruitful because it allows studying the various different activities going on in these emerging spaces, to understand art and research from the perspective of the ones who are doing it, and how it is related to bigger societal transformations. Therefore I am able to go beyond conceptualisations of collaboration, knowing and doing research as they are outlined in the descriptions of art and research in the previous chapter, and can open up new questions and perspectives on these activities.

Taking this anti-essentialist position as analytical point of departure, in this chapter I will discuss how STS scholars have formulated this position in different contexts and how that can be translated into an analytical background guiding my research.

In this regard I have included theories which can be ordered in two main blocks:

In the first block I will draw attention to a macro perspective, and one approach theorising changing science and society relations, called Mode 2. The aim is to give an impression how the role of science has been changing from a closed system to a more open space, since the late 20th century, and how that affects knowledge production activities.

The second part is related to approaches that investigated the natural sciences and describe knowledge production in laboratories, different scientific sub-fields and disciplines as cultural activity. By

introducing this second group of theories, I will build an analytical frame that makes it possible to understand knowledge production as practical and cultural endeavour, and to focus on (inter-)actions, processes, patterns and contexts on a small scale level.

But although the macro as well as the micro approaches are helpful, there comes also a special challenge with them: they are all focusing on science, laboratories or established scientific sub-fields and disciplines. As I understand current art and research relations and activities as a new phenomenon, I have to adapt the existing theories to my research topic.

Thus this chapter tells actually two stories. The first is related to STS theories, how they are built and what kind of statements they make about science and knowledge production in science. The second is related my research interest, how I translate the theoretical approaches and make them usable for this thesis. Therefore I will on the one hand outline the theories and concepts, but on the other hand also comment them, compare them with what I have written in the previous chapter on art and research, and outline what kind of questions the chosen STS approaches open up. In the case of the Mode 2 approach, I will also discuss the already conducted case studies on art and research relations, in order to ask in how far it makes sense to take claims on a macro level for granted and to translate them into an analytical frame.

3.1 Mode 2. A new Mode of Knowledge Production

Theorising new modes of knowledge production Gibbons, Limoges, Nowotny, Schwartzman, Scott and Trow (1994) and building on this work, Nowotny, Scott and Gibbons (2001), have identified the emergence of a now Mode of knowledge production, a so called "Mode 2". The difference to Mode 1 is that instead of a science that is producing knowledge in a closed manner, structured through disciplinary organisation, and guided by questions, approaches and criteria of respective scientific communities, in Mode 2 the borders between science and society start to blur and extra scientific rationales start to co-structure knowledge produced.

This approach can be seen as belonging to theories and diagnosis that emerged on the turn to the 21st century, which identify the emergence of new forms of knowledge production form various perspectives. According to Weingart (1997: 1ff) common to these theories is the belief that science is entering a new phase, after being seen solely as the provider of reliable and new knowledge in the 19th and 20th century. In this new phase the clear cut boundaries of science and other societal spheres, like economy or politics, start to blur and/or new relations with societal actors outside of science occur. As consequence, the way how knowledge is produced and the nature of this knowledge change.

In this regard scholars such as Etzkowitz and Leydesdorff (2000) for example identify closer interactions between industry, government and science and an increased coordination of their different

institutional logics, which they call the “Triple-Helix of industry, government and science”. Funtowicz and Ravetz (1993) take a different point of view and claim that in times in which we have to face more and more complex problems, like climate change, a new form of knowledge production is needed. This so called “post-normal science” should not be driven by disciplinary considerations, but orient its problem solving capacity towards these hypercomplex problems, be open for the contribution of societal actors who are related to these problems, and use what is needed in order to solve today´s pressing issues.
Compared to Triple Helix and Post-normal science “Mode 2” (Gibbons et al. 1994; Nowotny et al. 2001) takes the broadest point of view, and theorises new modes of knowledge production in regard to changing relations of different societal sub-systems as well as what that means for institutions and actors. The reason why I have chosen to focus mainly on this approach in the following chapter is because it allows to understand new institutional dynamics and related to that new forms of knowledge production on different levels, and is thus a rich source for this thesis.

To understand Mode 2 we need to first of all understand the `old´ form of knowledge production; Mode 1. According to Helga Nowotny, Peter Scott and Michael Gibbons, one characteristic element of the modern society of the 19th and 20th century was, and partly still is, its functional differentiation (2001: 29). As described by the German sociologist Niklas Luhman (1998), the central element of this differentiation is that a society consists out of various different sub-systems, such as science, politics, economy and art. Each of these systems fulfils a specific function for society and works according to its own logic. These systems are guided by genuine mechanisms, like a system specific rational as well as by different norms and values.
In such a functional differentiated society science is the central producer of knowledge, and as claimed by Luhmann (1990), the code true/untrue knowledge was the main guiding principle, which made it possible for the system to order the world around it. According to Fochler (2007: 23), the norms and values of science are described in their most elaborated way by Robert K. Merton (1972 [1942]), who identified four different norms and values, which form together the ethos of science and can be summarized as follows:
Firstly universalism, which means that the truth of scientific results is independent of its observer. Thus neither race, social status nor any other kind of socio-political element has to influence the outcomes of science. Second communism, which highlights that science is an undertaking that depends on freely available knowledge and thus scientific results are not a property of a single scientists but of the whole community. Thirdly, Merton identified disinterestedness, highlighting that scientists should not just be interested in the advancement of their careers, but in the general advancement of science. And fourthly, organised scepticism, drawing attention to the importance of the institutionalised form of criticism within science.

The organisation of this sub-system can best be described as a differentiation along disciplines, in which specific theories and methods are developed and the respective scientific community is the central mechanism organising and also sanctioning the conduct of research and thus the production of knowledge. (Nowotny et al. 2001: 112)

Science´s central position as producer of knowledge can be related to efforts of treating other forms of knowledge as folk knowledge and superstition (Schaffer 1997: 28ff) and as Nowotny et al. (2001: 50f.) highlight: *"In its historical contest with religion, a triumphant science acquired a monopoly of describing and explaining `reality´, which both resisted and also validated human wishes, fancies and follies."*

Altogether this led to a highly differentiated science which was established in modern western societies as the most important knowledge production institution and authority (Krige and Pestre 1997: xxxiii), working according to its own principles and guided by a specific ethos. The relation of science to the rest of society was structured in form of one way communication, in which science is a distinct entity, *"speaking to society"* (Nowotny et al. 50). The beliefs associated with scientific knowledge were, as described in Sismondo´s (2010) common picture of science, those of a science which can observe and dig out the fundamental laws of nature and partly also that of society. In order to keep that observation as pure and true as possible it was seen as a necessity for science to be independent of political influence or any other kind of `social disturbances´.

Nevertheless, according to Nowotny and her co-authors (2001) this Mode 1 diagnosis is not valid any longer. Nowotny et al. state that the closed systems are de-differentiating, writing that *"(...) it has become increasingly difficult to establish clear demarcation and differentiation between science and society.",* and that *"the fundamental categories of the modern world – state, society, economy, culture (and science) – have become porous and even problematic."* (Nowotny et al. 2001: 47)

There are many reasons behind these changes (Nowotny et al.2001). One of them is that the political realm has changed. Compared to strong nation states and encompassing welfare state policies of the post World War II era, the nation state and political sub-system is loosening power and influence in an ever globalised world. States become also pushed into new arenas. Especially the advance of science and technology has created the need for an array of new regulations. At the same time, the private sector has become more influential. From material goods, to symbolic representations and former state obligations, like public health or the funding of science, economical logics of supply and demand become enmeshed with more and more areas of the current society. In addition western economies need to produce new products and create new knowledge in order to compete with raising economies in South America or Asia.

Apart from these developments the success of science itself is identified as an important part of the transformation form Mode 1 to Mode 2. In that regard Gibbons et al. (1994: 70ff) draw attention to the

increasing numbers of people participating in higher education. As a consequence of this increase more and more scientifically educated people, who can do research and understand research outputs, are not absorbed any longer by science itself but find their place outside of the world of universities. Thus the scientific institutions are not anymore the only places where this kind of knowledge can be produced and processed, and the potential sites of knowledge production start to spread. At the same time the demand for scientific knowledge and collaborations with scientists increases, as it can be used by people working outside of science.

Beyond this `success story´ of science Nowotny et al. (2001) identify also a growing ambiguity towards science. Catastrophes such as Chernobyl or the BSE scandal, but also new technologies and products like genetically modified food, have triggered public scepticism and resistance. Therefore a growing amount of public actors do not passively accept scientific interpretations of reality anymore and question and/or refuse developments they are not agreeing with.

Thinking these dynamics together, Nowotny and her co-authors (2001) highlight a transformation from Mode 1 to Mode 2 knowledge production. The characteristic element of this transformation is that the beforehand clearly distinguishable borders of science and other societal sub-fields start to blur and a *"co-evolution"* (op.cit.: 30) takes place in which the different, once separated and self-organised systems, become ever more intertwined with each other.

Consequently, in Mode 2 science is not anymore producing knowledge in a closed manner, organised around disciplines solely guided by the scientific ethos, genuine theories and methods, and the belief in the fundamental laws of nature. Instead a variety of heterogeneous considerations and demands, which are articulated and performed by different societal actors, start to play an important role. Nowotny et al. (2001) summarise these changes with the phrase *"society speaks back to science"* (op.cit.: 50) and claim that knowledge is produced more and more in the context of its application. Thus, in terms of knowledge production, a hybridisation occurs in which different demands, value systems and beliefs meet. Through these new contextualisations of science and the transgression of boundaries, also the *"epistemological core"* (op.cit.: 179) of science changes. Instead of a self-organised Mode 1 science, a more integrated mode occurs. In that mode people enter the process of knowledge creation, which means that scientists become increasingly aware of the influence and effects of scientific knowledge on society, and as a consequence reflexive about the needs and demands articulated outside of the formerly closed system.

That leads to an increase in transdisciplinary collaborations and forms of knowledge production, characterised by Gibbons et al. (1994: 29) as: *"A transdiciplinary mode consists in a continuous linking and relinking, in specific clusterings and configurations of knowledge which is brought together on a temporary basis in specific contexts of application. Thus, it is strongly oriented towards and driven by problem-solving. Its theoretical-methodological core, while cross-cutting through well-established disciplinary cores, is often locally driven and locally constituted, thus, any such core is*

highly sensitive to further local mutations depending on the context of application."

Understanding transdisciplinarity like that, the knowledge produced in such contexts can be taken as a genuine contribution, which can develop its own and distinct theoretical structures, methods and modes of practice. (op.cit.: 5)

In this context not just reliability is the central important criterion of science, but *"social robustness"* (Nowotny et al. 2001: 166) becomes established as a new mark to judge the quality of the produced knowledge. This means that good knowledge is not only judged according to the criteria of a respective scientific community, but according to the criteria of the various different stakeholders involved in the production of this knowledge and/or affected by it.

But co-evolution means also that not just the processes of scientific knowledge production are transformed, but that society is transformed by science. As already described above that has happened through increasing numbers of higher education graduates spreading throughout society and increased authority of science, which encouraged *"... the widespread belief that scientific knowledge is a reliable source of solutions for all kinds of problems."* (Nowotny et al. 2001: 105)

The consequence is that in Mode 2, as Fochler (2007: 25) points out referring to Stehr (2003), *"...scientific knowledge has become a central structuring criterion of contemporary society"*. This means that society becomes increasingly related to scientific logics and interpretations of the world. Furthermore, the sites of knowledge production are spreading and new knowledge institutions occur outside of science as well as on the hybrid spaces on the borderland of different sub-systems. Examples of these developments are think tanks, consultancy firms, political research centres and new research fields such as synthetic biology or social ecology. These Mode 2 developments multiply the potential places of knowledge production and increase the heterogeneity of the knowledge produced, as well as the places where scientific knowledge can become contextualised in form of new collaborations. On the level of individuals this means that the professional identity of researchers is changing. Instead of attributing one to science and the scientific ethos, research work and the individual identity can be linked to new norms, outlooks and practices, which are not exclusively to be found in science anymore. (Nowotny et al. 2001)

3.1.1 Art and Research as a new Mode of Knowledge Production?

Considering what I have so far written about Mode 2, I want to ask the question; how is my understanding of art and research relations framed by this theory?

Although Nowotny et al. (2001) put a lot of emphasis on relations between science, politics and economy, there is not much written about the role of art in the Mode 2 society. This raises the question if art-science, arts-based research and art and research laboratories are all to be understood as part of the new mode of knowledge production?

The sociologist of science Peter Weingart (1997) states in his summary paper on Mode 2 and related diagnoses that it is difficult to answer to such questions because the general assumption of a new mode of knowledge production is lacking an empirical basis. For Weingart, it is by no means clear how the knowledge production processes are realised in practice: Are only policy makers or theoreticians talking about the new forms of knowledge production, which cannot actually be found on the level of the daily activities of researchers?

Is it according to Weingart in areas like ecological research or reproduction medicine possible to observe an involvement of various stakeholders and their interests into knowledge production processes, that does not mean that the same is true for other areas. In this regard Weingart has also pointed out that it is not clear yet if many of the the assumptions behind Mode 2, such as the notion of "socially robust knowledge", are normative and suggestive statements or based on empirical observations.

In order to give an impression of how problematic Mode 2 assumptions can be in the context of art and research, it is helpful to consider the available social scientific literature about empirical research on art and research projects.

Case Studies

James Leach (2011) has done an anthropological study on British art – science projects which were financed by the Arts and Humanities Research Council and the Arts Council England. In this study he scrutinized the practices of artists who worked as artists in residence in science laboratories. He showed how distinctions between art and science were continually remade and re-articulated by the scientists and the artists, although both questioned the differences between art and science and agreed that artists as well as scientists are producing knowledge. What happened in the observed projects was that scientists got understood as detached from the objects they investigate and as producing objective knowledge with general utility for society, and artists as articulating their subjective viewpoints and thereby producing expressions with a particular utility by reshaping culture. According to Leach, the consequence of this differentiation is that science and art are understood as distinct activities. This led to a situation in which scientists could say something about the physical and the cultural reality, because they were conceptualised as investigating the physical world and as members of the society also as part of the culture sphere, whereas artists were understood to make statements about the cultural reality but not about the "objective" results of the scientists. The reason for these different conceptualisations of artists and scientists was that these differences were present in the self-image and sense making processes of the artists and scientists, and as Leach concludes: *"If sense is achieved by scientists because of regularities in the reality upon which they work that are external to themselves or their ability to make connections, as it were, the meaning of artwork is in the connections that artists are able to make internally within themselves, as perceiving and thinking subjects, and then*

express in their works of art. For the artists in the Scheme, sense was an expression of internal creativity—not external reality—and thus was not of the same type as that which the scientists attained." (Leach 2011: 151)

What can be taken out of Leach's study is that art and science are treated in the observed collaborations as separated spheres and that the separation is drawn on the level of identities and of who can say what about a certain part of the world. This shows that distinctions between art and science become drawn and re-drawn by the participants of such projects and that identities and sense making processes play an important role in the separation of art and science.

The practical consequences of such a separation are outlined by Gisler (2006). When studying art-science projects, which got conducted in the context of the artists in labs project, Gisler found that artists often got excluded from the actual scientific practice. Moreover, it proved to be challenging for artists to introduce new ideas and approaches in established settings like laboratories.

However, other studies show that the separation between art and science is not always so clearly and strongly. For example Megan Halpern (2012) has made different experiences in mediating an art-science project at the Cornell university. As described by Halpern, the aim of the project was to bring artists and scientists together in order to produce a collaborative performance in which topics of concern to the artists as well as the scientists become reflected and communicated to the public. Halpern supported the production of these performances and worked throughout the rehearsal phase with four different artist-scientist pairs. In her reflective article she noted that after first difficulties the scientists as well as the artists started to communicate about the topic of the other and also about ideas how a collaborative performance can be realised. According to Halpern, the crucial aspect for this exchange was active reflection of the assumed boundaries between art and science and also the creation of a so called "boundary objects" (Star and Griesemer 1989)[4]. In practice this meant that Halpern asked the artists and the scientists to take objects, which are meaningful in their daily professional activities to the performance meetings and to discuss with each other about the objects. As soon as an object was found that was interesting enough for both the artists and the scientists, it was used as an object which was integrated into the performance. In addition, after the artists and the scientists found one boundary object about which they could start to discuss, it became also possible to start to exchange, and to invent a common language that could be used to create a performance.

Another study highlighting the more dynamic relations between art and science and new forms of knowledge production in art–science projects was conducted by Born and Barry (2010). Being part of a bigger study on interdisciplinarity (Barry et al. 2008), Born and Barry focus in their investigation of British and American art-science funding programmes and art-science projects on different ways how interdisciplinarity is understood and lived, and how different approaches are related to each other.

4 That is objects which are on the one hand robust enough to maintain a distinct identity, but on the other hand weak enough to be adaptable to different contexts (Star and Griesemer 1989).

Because this study is a valuable source for my own research, as it details the different discourses on art-science as well as comes up with an empirical investigation of an art-science project, I will give the summary of this article here more space.

In the British context, Born and Barry focus on the funding activities of institutions such as the Welcome Trust or the Arts Council England, and how their funding activities are framed. The authors found that in Britain the influence of C.P. Snow's (1959) "two cultures" approach has been remarkable. Expounding the `problem´ of art and science relations, Snow highlighted the importance of natural and technical sciences for the progress of the British society and the necessity of an increased scientific education for the British elite, which had mostly an educational background in the arts in the early 1960s. According to Born and Barry this way of thinking got translated in the 1980s and 1990s into the need to educate the British public in order to generate an increased public understanding of science and secure public support for scientific activities. In that context, the art–science funding programmes got established in order to organise collaboration between artists and scientists and to render scientific activities and knowledge more accountable to the public. The common element of these programmes is according to Born and Barry that art plays always a subordinated role and is seen in service of science, as a means to communicate scientific knowledge in an understandable and interesting way for the public that is assumed to be a rather passive mass of people.

Compared to Britain, U.S. based funding activities are different because art is not only seen in service of science but art-science is acknowledged as a field of activity in its own right. Despite a more equal understanding of art and science relations and the belief that art-science could produce genuine knowledge as an emergent endeavour, these activities get reduced in funding programmes to a logic of innovation, in the context of the knowledge economy and in regard to technology development.

Taking into account the different understandings of art-science, a first outcome of Born and Barry's research is that in funding programmes artistic and scientific approaches are related to each other in different ways in different cultures. Furthermore, the definition of art-science used by the funding institutions is rather narrow compared to the actual activities carried out by the funded projects. According to Born and Barry, the activities in this field cannot be reduced to notions of rendering science accountable through art, or innovation and competition.

In order to work out the complexity of these projects, the various trajectories that meet in the conduct of art-science and the different logics that get fused, the authors use a novel Masters programme in "Arts, Computation and Engineering" (ACE) at the University of California as an example. They argue that in the context of this Masters programme, different approaches to art, as well as cybernetics, phenomenology, science and technology studies, and feminist studies are related to each other, leading to a variety of teaching activities and creation of projects that cannot be reduced to the descriptions of the funding institutions.

Taking the so called "Pigeon Blog"[5] project from Beatrize da Costa as an example, they show how this art-science project transforms knowledge production on an ontological level and works at the same time as a public experiment.

As summarized by Born and Barry the artist da Costa together with scientific collaborators equipped homing pigeons with sensors measuring air pollution in the city of Los Angeles. As a result, the air quality became measured in a new way, not just related to the outcomes of the standard and static measuring stations but as something dynamic that is moving in space and time. This information was then made available in real time at an online blog and published together with stories and information around the issue of air pollution. The topic that got raised by the project was that the most polluted areas were also the poorest in the city. Thus pollution became described as something not static and absolute, but dynamic and understood in relation to those who breath the polluted air.

Summarizing these complex activities, Born and Barry argue that this project transforms knowledge production on a very fundamental level as it introduces new ways to measure and describe pollution. Furthermore, it works as a public experiment as the gathered data are not presented in standardised and universal form to an abstract public but as an ongoing unfinished achievement related to the local context, in which also the affected people are invited to participate and engage in the project in a dialogical and reflexive way. Finally this project also transformed art by including practices from scientific and social research.

Relating these outcomes back to the descriptions of art-science funding institutions, the authors suggest that art-science cannot be reduced to logics of innovation or imperatives to render scientific knowledge more accessible or accountable. Because "(...) *art-science poses definitional and conceptual challenges since, while it exists as a practical, intentional category for artists and scientists, cultural institutions and funding bodies, it forms part of a larger, heterogeneous space of overlapping interdisciplinary practices at the intersection of the arts, sciences and technologies"* and furthermore, that *"there is thus a great deal of activity but little codification;`art-science' amounts to a pool of shifting practices and categories that are themselves relational and in formation."* (Born and Barry 2010: 104)

As the case studies show, it is problematic to describe art–science as a realisation of "Mode 2" (Nowotny et al. 2001; Gibbons et al. 1994), in which the borders of art and science start to blur, artists begin to contextualise the activities of scientists, and socially robust knowledge is produced. If in some of the projects a strict separation between art and science is present, in others complex relations start to emerge, which all have their specific trajectories. While some projects aim at producing new knowledge the others aim at creating a performance. Altogether this heterogeneity makes it impossible to reduce these activities to a standardised way of transformation or one big epochal shift from Mode 1

5 For a more detailed impression of the project see: http://nideffer.net/shaniweb/pigeonblog.php

to Mode 2. Apparent in these studies (especially Born and Barry 2010) is also the importance to distinguish between the way how art-science is discussed on a rather theoretical level, by funding institutions, policy makers or theoreticians, and how these relations are actually realised, as the theoretical descriptions do not cover the complexity of the actual projects. Thus the case studies showed that concepts like Mode 2 offer rather limited tools to understand art-science relations. But they also showed that it needs empirical on site research to get an impression of the different structures, dynamics, viewpoints and contexts in which such projects take place, as well as of the positions of the involve people, and the way how art-science is realised.

Although to my knowledge there are no comparable empirical studies on outspoken arts-based research projects or art and research laboratories, it can be assumed that Mode 2 offers a limited tool to understand these as well. Therefore it is not reasonable to develop a picture from scratch in which for example arts-based research is due to its disciplinary conception labelled Mode 1 and art and research labs Mode 2 because they are described as transdisciplinary and oriented towards application on a theoretical level. Thus, in order to understand the complex dynamics, relations of different actors and research activities in art and research a more detailed account is needed of the actual conduct of the projects, and of how art and research is realised by the practitioners in different contexts. As Felt et al. (2013) have pointed out, from this perspective it is also interesting to investigate how the sometimes rather normative discussions on transdisciplinarity, innovation and application, as in my case articulated in the art and research laboratories, or the disciplinary approaches, as present in the context of arts-based research, structure the life and work realities of the people who are practising art and research.

That said I have to use Mode 2 in a cautious way. On the one hand, it makes general claims that are contestable as soon as one has a more detailed look on lived realities but on the other hand, it draws the attention of my analytical background to a world in which different dynamics and structures are related to each other, and in which processes of mutual change are going on. Taking into account the heterogeneity of art and research and that from disciplinary considerations to ideas about new fields of transdisciplinary research and innovation a lot of different “worlds” are related to each other, Mode 2 opens up a perspective in which it is interesting to ask how they are related to each other.

Taking all these considerations and questions into account, what is needed are concepts that allow me to grasp how research work is done, that are sensitive for contexts and heterogeneities, and allow me to understand various dynamics and processes of doing research. In this regard, I discuss in the next sub-chapter STS approaches that draw attention to practices and cultures of knowledge production, and analyse interactions and processes on a more small scale level.

3.2 Scientific Research as Practice(s) and Culture(s)

Writing about such general terms as practice and culture and about how they are discussed and used in STS is quite a tricky task. There are various different approaches and interpretations of what it means to produce knowledge, to understand research as cultural endeavour and how practices and cultures are related to each other. In order to generate an useful analytical understanding, it is necessary to limit the scope of possible concepts and to be aware of the differences and similarities of these concepts. Therefore, I have decided to focus on three distinct approaches, called: "laboratory studies" (especially Latour and Woolgar 1986 [1979]; Knorr Cetina 1981), "epistemic cultures" (Knorr Cetina 1999) and "trading zones" (Galison 1997: 781ff).

In order to highlight the similarities and differences, I have decided to orient my theoretical discussion along two conceptional guidelines; drawing attention to what the approaches have in common and what makes them distinct to each other.

What the three concepts have in common according to Epstein (2008) is that they understand culture as plural.

In a review article on the concept of culture in STS, he has argued that there are two different ways of understanding culture. Using Sewell´s (1999) distinction of culture and cultures, Epstein classifies the different STS concepts into approaches understanding culture as singular or cultures as plural. The first understanding is characterised through a description of culture as a separate sphere, which can be understood as opposed to other spheres like economy and politics. The second definition refers to *"(...) concrete and bounded worlds of beliefs and practices"* (Sewell 1999: 39). Here culture is understood as incremental part of every aspect of life, be it economical, scientific or ethnic. Thus culture in that second sense is interested in different cultures and what distinguishes them from each other as well as in what they have in common. From that perspective the three approaches are according to Epstein giving an impression of how doing research and producing knowledge in science can be understood as practical and cultural activity.

What however makes these approaches different is their understanding of cultures. The laboratory studies describe scientific activities as cultural practice per se, whereas epistemic cultures draw attention to different cultures within science, and the trading zones focus attention on how different cultures can establish a common ground and start to interact with each other. As will be shown now, all of those approaches open different perspectives, and provide a fruitful analytical background, when they are adopted to the context of art and research.

3.2.1 Science as Practice and Culture: Laboratory Studies

In the late 1970s, a certain way of investigating and describing scientific activity and knowledge production emerged, the so called "laboratory studies". This style of investigation seeks to directly go

into the core places of scientific knowledge production and observe research practices in natural science laboratories (Doing 2008: 279).
Inspired is this appraoch by the work of ethnographers studying foreign cultures, as can be illustrated by a quote from Latour and Woolgar:

"*Since the turn of the century, scores of men and women have penetrated deep forests, lived in hostile climates, and weathered hostility, boredom, and disease in order to gather the remnants of so-called primitive societies. By contrast to the frequency of these anthropological excursions, relatively few attempts have been made to penetrate the intimacy of life among tribes which are much nearer at hand. This is perhaps surprising in view of the reception and importance attached to their product in modern civilised societies: we refer, of course, to tribes of scientists and to their production of science. Whereas we now have fairly detailed knowledge of the myths and circumcision rituals of exotic tribes, we remain relatively ignorant of the details of equivalent activity among tribes of scientists, whose work is commonly heralded as having startling or, at least, extremely significant effects on our civilisation*." (Latour and Woolgar 1986 [1979]: 17)

The outcomes of these kinds of studies have shown that a whole lot of complex and heterogeneous considerations and knowledge production practices are taking place in laboratories. In this regard laboratories are characterised as places in which scientists are constantly engaged with constructing and conducting experiments, classifying and describing substances and materials, producing visual representations, interpreting and negotiating research results, and writing and re-writing papers (Latour and Woolgar 1986 [1979]; Knorr Cetina 1981).
According to Latour and Woolgar (Latour and Woolgar 1986 [1979]), the main task of the scientists in these laboratories is to produce order out of disorder and make stable objects out of the often ambiguous first observations and vague data. In order to do so, scientists use research results from others, relate their own work to specific approaches, generate data through the employment of technical devices, which quantify certain properties of a substance under scrutiny, and produce visual outputs. By these activities, the scientists aim at convincing other scientists that their results can be accepted as a solid fact. Altogether this means that every accepted or rejected research result, and thus every ordered account in a laboratory, has its own history and develops its meaning and significance out of the network of researchers, devices, assumptions, etc. it is produced or contested in.
In this regard the laboratory studies draw also attention to the local context of the laboratory in which decisions about research are made. Karin Knorr Cetina (1981) for example describes doing science as a selective process and conceptualises knowledge production in a laboratory as selections which are related to each other and form a scientific product. Hence a scientific product can be understood *"as structured in terms of several orders or levels of selection"* (op.cit.: 6). Taking a single scientist in a laboratory as an example, the problem a scientist has to face is that there are constantly decisions to be

made of what to do next. On the one hand that provides the scientist with freedom to decide about a certain way of doing research but on the other hand, the scientist is never totally free, simply because several selections have already been made before. So is for example the laboratory the scientist is working in dedicated to a specific research topic, the work of the scientist has to be related to the research of the other scientists of the laboratory, or certain tools that got purchased for the laboratory have to be used or cannot be used as they are not available. Therefore, a broad variety of different factors, ranging from group dynamics and the availability of certain devices to the history, financial situation and socio-political context of the laboratory, shape the way how decisions are made and hence, how research is conducted. In this context Knorr Cetina (1981) describes the individual researcher as a practitioner and tinkerer who has to deal with these local circumstances and form a workable research setting out of the available tools, techniques and materials at a given time and place, which produces results which can in the best case be published. This situation opens a space for local idiosyncrasies in which standardised methods and procedures become re-configured locally and adapted to the respective context, and research outputs and their meanings become negotiated and interpreted by the members of a particular laboratory. From a theoretical perspective this means that the local context of the laboratory comes into the foreground, highlighting the context specific nature of scientific knowledge or as Knorr Cetina summarises, having a look at laboratories shows that: *"(...) the products of science are contextually specific constructions which bear the mark of the situational contingency and interest structure of the process by which they are generated, and which cannot be adequately understood without an analysis of their construction. This means that what happens in the process of construction is not irrelevant to the products we obtain. It also means that the products of science have to be seen as highly internally structured through the process of production, independent of the question of their external structuring through some match or mismatch with reality"* (op.cit.: 1981: 5).

Therefore rather than understanding laboratories as venues where nature is passively observed and knowledge as something just representing the objects under scrutiny, the laboratory studies highlight the processes of knowledge production and describe laboratories as the places where facts are actively constructed (Knorr Cetina 2012: XIIf.).

Comparing the heterogeneous practices in the scrutinized laboratories with, what Sismondo (2010: 4) calls a *"common understanding of science"*, which is based on its logical structure, a single method and the observation of a nature which is simply `out there´, laboratory studies have shown that this is not an adequate understanding of science and knowledge production in science.

This opens up a question: Why does such a common understanding of science actually still exist, why is this picture also articulated by scientists (Latour and Woolgar 1986 [1979]) , and why there is not a much more dynamic and heterogeneous image present?

In order to answer this question it is helpful to have a look at Latour's and Woolgar's (1986 [1979]) description of the process of fact making in one particular laboratory. First of all, it is important to understand that a laboratory does not only consist out of its researchers. An important contribution comes from the devices, such as a bioassy in biology, which are part of the research process and the knowledge production. The significance of these *"inscription devices"* in the knowledge production processes is that they *"(...) transform pieces of matter into written documents"* (op.cit.: 51). The consequence of these inscriptions is that the outputs produced by the devices, most of the time graphs or statistical representations, are then regarded as *"(...) having a direct relationship to `the original substance´"* (op.cit.: 51) and thus can become the focus point of discussions about an object `out there´ in nature. These discussions are described by the authors heterogeneous and complex activities in which scientists position different kinds of statements, try to convince others and negotiate about an interpretation of the representations. In its final stage, after the disputes have settled and a certain interpretation is stabilised, the research results become `true facts´ and the object is seen as the reason why the fact exists. Consequently, the whole production process and context is glossed and left out in the final explanation and as Knorr Cetina (1981) has shown, the heterogeneous and context related nature of the fact production process is not visible anymore in the papers published as end products of the research. What remains as reasons why a certain fact became accepted as such, are explanations highlighting the logical and technical `nature´ of scientific research.

Perceived from that perspective, Latour and Woolgar (1986 [1979]) claim that the challenge laboratory scientists have to face is to stabilise the outcomes of their knowledge production practices and position their research in relation to the research of the others, in order to produce a fact that becomes published, accepted and re-produced by a scientific community.
This work of stabilising knowledge as an accepted fact can take according to Latour and Woolgar two forms. Firstly, research results from others can be used without questioning them, as fundament and support of one's own research, and secondly, they can be used in a more critical way, as a target that becomes contested. In the first case, the whole production process behind the used research is not reflected, the results are taken for granted, and used as *"black box"* (op.cit.: 242) to interpret, support and justify the own research outcomes. In the second case, the results of others can be contested through their active re-interpretation, for example through the establishment of new standards of measurement, and as a consequence be given the status of an artefact.
As the authors explain, in practical terms contesting and stabilising are not separated activities but rather related to each other. Scientists have to embed their own research into a network of already taken-for-granted-assumptions as that increases the probability to produce results that get accepted by other researchers. At the same time being embedded in such a network makes it harder for others to contest the research results because a lot of work is needed to question all the facts the research is

related to. In that sense to use theories, methods and inscription devices that others have already used, and which got already accepted and taken for granted in a respective scientific community, makes it more likely that one's own results become also accepted.

In order to be successful as a scientist, to contest the research of others, to give a particular fact an artefact-like status, it is necessary to build a bigger and stronger network than the others, and to relate one's own work to more accepted facts. However, it is not just the size of a network that matters. Is one's own work densely related to the black boxes of prestigious and credible scientists and/or laboratories, or is someone already a credible scientist having a central position as part of a specific research field, it becomes even harder to contest this research, as that would mean to contest the status of the credible scientists and/or laboratories, their work and the work of others related to them. Furthermore, time, money and resources invested into a certain research result also matter. Using for example an expensive and hard to build inscription device, which sets new standards in classifying an object, means for others who want to re-interpret the object produced by this device that a similar setting would be needed that could change the standards again.

In that sense the culture of the laboratory is according to Latour and Woolgar also based on rather political activities and categories, such as prestige and credibility, relations and networks, as well as the time, money and resources scientists have available for conducting their research. Thus the decision to use an accepted fact in an unquestioned way or re-interpret it, is on an individual level a decision related to questions of power, career perspectives, and money.

Related to the statement that laboratories are the producers of facts, the authors conclude that the activities of individual scientists are actually not oriented towards nature. To gain credibility, scientists need to address an agonistic field, which Latour and Woolgar describe as: *"An agonistic field is in many ways similar to any other political field of contention. (...) [T]he many positions which already make up the field influence the likelihood that a given argument will have an effect. An operation might or might not be successful depending on the number of people in the field, the unexpectedness of the point, the personality and institutional attachment of the authors, the stakes, and the style of the paper."* (Latour and Woolgar 1986 [1979]: 237)

Based on these studies, in a later publication Latour (1987) described laboratories as heterogeneous networks, the so called "Actor-Networks", producing representations and constructing facts about the world we live in. These networks are built out of different elements, ranging from papers and devices to researchers and objects of study and it needs lot of work to relate these different elements to each other and furthermore, to defend them against contestation from other laboratories. In that sense laboratories are the central places where the networks are built, in which the production, distribution and stabilisation of facts takes place. Following this line of argumentation, Latour further developed a position in which he highlights, that it is misleading to understand scientific knowledge production in terms of a nature - culture divide, positioning on the one side scientists as detached and hyper rational

subjects, observing a nature which is `out there´ and on the other side social factors, like political issues or cultural patterns, which are in no relation to science (Latour 1993). For Latour doing science is rather a social activity in which local contexts, practices, networks and career perspectives play important roles.

3.2.1.1 Art and Research as Practice and Culture?

Relating the laboratory studies now to my own research interest about art and research, the question still remains what I can take out of them, and how I can build an analytical background based on these studies of natural science laboratories?

First of all, I think that compared to the arguments made in the context of "Mode 2" (Nowotny et al. 2001, Gibbons et al. 1994), these studies make it possible to understand doing research and knowledge production in a much more detailed way. Scrutinising the complexities of the daily business of conducting research in laboratories, they allow not only to stay with rather generalising statements about knowledge production but to have an eye on the local complexities, the motivations of the involved people as well as their practices. Although this is already quite useful, the laboratory studies cannot be applied directly to my topic of interest. Having the heterogeneity of art and research in mind and that in my case potentially a variety of different dynamics are related to each other, it would make no sense to raise questions addressing fact production in art and research projects or how scientists in art and research gain academic credibility. Consequently I cannot take it for granted that all of the people in art and research are into knowledge production and that ordered accounts which could get accepted by other researchers on the level of facts are of the same importance for people working in art and research as they are for the laboratory scientists. Thus, I cannot assume that practitioners in art and research are concerned with constant ordering work, the production of facts or that they would describe themselves as scientists. Therefore, my specific interest requires `taking a step back´ and using the general claims to make the laboratory studies a useful theoretical frame.

From that distanced perspective, I think that the laboratory studies inform my research in different ways. Firstly they have shown that knowledge is actively produced and entangled with a local context. That opens up an analytical frame which allows asking questions like: How is work done in art and research projects? What are the practices present in art and research and what is produced in these practices? Facts? Artworks? Technological prototypes? Something else, or maybe different things at the same time? If there are in more heterogeneous contexts different trajectories present, how are they realised in practices and how are they related to each other? And what kind of outputs are these activities related to? Papers? Exhibitions or maybe money because products got sold? How are the practices related to the local context and do the discourses present in art and research shape the local practices? If so, how?

Secondly, the lab studies draw attention to the involved people. If the scientists are described as oriented towards an agnostic field, it can be asked what the people in art and research are oriented towards and what motivates them to be part of art and research. Is there also one (or maybe more) agonistic field(s), in which they can position themselves in order to make a career? Are there related specific professional identities, as arts-based researcher for example?
Thirdly, how do practitioners in art and research make sense out of their practices in terms of content? Do they like the laboratory scientists also use other literature and inscription devices to produce ordered accounts? If so, where does the literature come from? Is it the case that in transdisciplinary fields the literature comes from different sources and in arts-based research, the literature is based on one discipline? And do the practitioners in art and research produce ordered accounts like the laboratory scientists, or is that done differently?

3.2.2 Science as Practices and Cultures: Epistemic Cultures

The next approach I want to introduce stems from second period of STS concepts that go beyond the laboratory and an analysis of its local practices and processes (Epstein 2008: 171). The advantage of doing so is to understand practices not just related to single actors, a specific place and local networks, but to account for patterns and processes, guiding and shaping knowledge production in different scientific fields and sub-fields (Knorr Cetina 2007: 363f.). In particular, I will now outline what Karin Knorr Cetina wrote about "epistemic cultures" (1999) and try to generate an understanding on how different research cultures can be conceptualised as *"(...) the composite of practices that organise knowing in a given domain"* (Epstein 2008: 175).
Epistemic cultures aim at drawing a more fine-grained picture of science, which is positioned against the concept of science based on a single unifying method. In contrast to this essentialist definition, epistemic cultures highlight the disunity of science by drawing attention to different cultural patterns that *"(...) create and warrant knowledge"* (Knorr Cetina 1999: 1). In this regard, Knorr Cetina´s approach is taking up discussions related to different concepts of the knowledge society. By arguing that contemporary Western societies are increasingly ruled by knowledge and expertise, Knorr Cetina criticises these approaches for an undifferentiated understanding of the various cultural patterns structuring knowledge production and tries to generate a more detailed impression of the distinct knowledge cultures permeating the Western societies. In that sense she also goes beyond the way how science is understood in the context of "Mode 2", as Nowotny et al. (2001) do not take into account the various different cultures currently involved in the knowledge production. Knorr Cetina understands epistemic cultures positioned opposite to these concepts, as *"(...) those amalgams of arrangements and mechanisms – bonded through affinity, necessity, and historical coincidence – which, in a given field, make up how we know what we know."* (Knorr Cetina 1999: 1). Interested in

"(...)the construction of the machineries of knowledge construction" (op.cit.: 3) she draws attention to *"(...) aggregate patterns and dynamics that are on display in expert practice and that vary in different settings of expertise."* (op.cit: 8). Writing that, Knorr Cetina does not doubt that there are single practices and actions taking place, but shifts the focus away from interests or intentions of individual actors and hence, also from a rather 'Machiavellian' understanding of scientists as permanent competitors and political actors (Law 1992: 6f.) "(...) *toward the reordered conditions and dynamics of the chains of action of collective life."* (Knorr Cetina 1999: 10).
In that sense, she describes epistemic cultures as densely ordered, distinguishable sequences of action encompassing a variety of elements, ranging from instruments to linguistic or theoretical frameworks. Furthermore, based on the work of the cultural anthropologist Clifford Geertz (1973), she includes a symbolic understanding of culture in her concept in order to account for the different symbols and meanings guiding human actions and research work. Compared to already established terms and concepts accounting for a differentiated science, such as `discipline´ or `scientific speciality´, epistemic cultures go beyond the formal descriptions, as this approach aims to capture the *"(...) strategies and policies of knowing, that are not codified in textbooks but do inform expert practices"* (Knorr Cetina 1999: 2).

Equipped with this theoretical frame, Knorr Cetina shows how different epistemic cultures can look like and by analytically comparing molecular biology and high energy physics, she provides ethnographic accounts of two distinct scientific expert cultures.
Before I summarise these ethnographic accounts of the two epistemic cultures, I introduce the special position of the laboratory within them. Understanding the laboratory as a central element and as the place where natural and social orders meet, Knorr Cetina characterises it as making a difference between the world of everyday social interaction and the realm in which objects are recast into different temporal and territorial regimes. Perceived from the author´s process oriented perspective, the specificity of the laboratory is that *"[L]aboratory processes align natural orders with social orders by creating reconfigured, workable objects in relation to agents of a given time and place. But laboratories also install reconfigured scientists who become workable (feasible) in relation to these objects."* (op.cit.: 29). Thus laboratories are the places where new configurations of objects are created, matching with an altered social order. Her approach is that these reconfigurations are done differently along the different epistemic cultures of high energy physics and molecular biology. In that sense the different *"machineries of knowledge construction"* (op.cit.: 3) pattern and organise these detachments, what it means to know and the social organisation of research. How that can look like, will be outlined now:

High Energy Physics

Knorr Cetina showed that research in high energy physics is conducted in highly complex and large scale laboratories, in which massive machines, like detectors and colliders, are involved, and up to 2000 scientists can be part of one collaborative experiment. The objects under scrutiny are particles, their behaviour, and especially the traces they leave. Structurally speaking, the laboratories are the providers of particles and what is needed to study their behaviour. The experiments are happening in close relation with the machines and are rather loosely coupled with the laboratories as the events where science is actually conducted. The way how research is organised can be described as *"post-traditional communitarian structures"* (op.cit: 165), in which the individual researcher is downgraded and the role of collective mechanisms is highlighted. Thus in the epistemic culture of high energy physics, knowledge production activities are attributed variously to different actors, the so called *"collective epistemic subjects"* (op.cit: 168), ranging from `experiments´ to `human collaboration´ and a detector. For the scientist, doing research in high energy physics means therefore to be a part of a much larger project and to be just one element a larger unit. The same structure is also expressed on the level of publications, as all the researchers participating in an experiment are mentioned in a scientific paper. Furthermore, in conferences, scientists do not speak about their individual activities, but are spokespersons of an experiment.

In addition to that, Knorr Cetina argues that a second organisational mechanism, *"Management by Content"* (op.cit.: 171), is structuring research. Drawing attention to the formal structures of research organisation, `management by content´ means that vertical lines of command are replaced by horizontal structures in which scientists are grouped together according to the relations they have to the studied objects. Knowledge circulation between the different groups in an experiment is achieved through various channels of discourse, ranging from computer printouts to internal notes, formal meetings and informal communication during coffee breaks.

In addition to these descriptions of different epistemic subjects and the social organisation, Knorr Cetina describes the epistemic dimension in a detailed way. She highlights that the studied particles in high energy physics cannot be seen with naked eye or directly handled in any other way because it would be too dangerous. Instead, experimental work is built around detectors, producing visual representations, like figures, numbers or graphs, of the complex physical events. Therefore, research is done on a highly symbolic level, based on the interpretation of signs. Furthermore, there is a specific *"object relations regime"* (Knorr Cetina 2007: 366) present in this epistemic culture, meaning that there is a presupposed way of relating to objects of knowledge and to approach them. In the case of high energy physics, this regime is based on *"negative knowledge"* (Knorr Cetina 1999: 63ff), which is knowledge of what cannot be known, about errors and misleading sings and signals, in short: about the limits of positive knowledge. Thus in high energy physics, measurements are defined rather by their imperfections and shortcomings than by what they can do. As a consequence, this epistemic

culture operates within a *"closed circuitry"* (op.cit.: 47). This means that self-analysis is crucial in order to generate knowledge about the own limits of knowing. This leads to a situation in which high energy physicists are constantly engaged in reconsidering and re-defining the elements of the knowledge production process, such as the employed machineries, their functionality, possible errors, backgrounds against which results can be compared, as well as theories and predictions from.

Molecular Biology

Compared to the epistemic culture of high energy physics, the world of molecular biology looks different. Instead of huge laboratories and experiments, de-individualised epistemic subjects and intangible objects, the work in molecular biology is more individualistic, the relation to research objects is more direct and based more on positive statements about what can be known.

The first characteristic element of the epistemic culture of molecular biology is that the laboratories are organised in workbench style. This means that the laboratory is the space in which various experiments are conducted by individual scientists at their work bench, and which furthermore provides the materials and technologies needed to do so.

The epistemic subjects of molecular biology are the individual researchers and not collective mechanisms like a large scale experiment. The lab leader holds a special position as the person who can represent a whole laboratory and can stand for the research that is conducted in one lab. For Knorr Cetina (1999), the specific organisational element of this culture is a two level structure, in which the individual scientists do on the one hand work for the laboratory and the lab leader, and on the other hand, for themselves in order to gain reputation and pursue a career in the wider field of molecular biology by publishing papers and producing presentations about their own research. Compared to high energy physics, there can be found more tensions in molecular biology as in the context of an individualised working culture it is more difficult to arrange collaboration between single scientists. The main problem faced in this regard is that although it would be beneficial for scientists to share materials or information, numerous tensions may arise regarding how to organise exchange in a fair and equally beneficial way for the sharing parties.

On an epistemic level, molecular biology is based on the interference and active manipulation of objects by scientist working on single experiments. Taking the substances and materials prepared and maintained in a laboratory as objects, molecular biologists understand them as technical working materials and thus transform them through experimental activities, ranging from evaporation and mixing of substances, to growing cells and operating animals. Compared to high energy physics, what is apparent is that knowing does not mean interpreting signs, but that there is a direct relation to the objects maintained and that these objects are treated as processing materials and means to generate effects. The procedures and sub-procedures of these interferences and preparations are recorded in lab books, which can also guide the research of other scientists. If an unexpected problem occurs, the

strategy to deal with this situation is not like in high energy physics based on the detailed scrutiny of the own processes but rather follows the logic of *"`blind´ variation"* (op.cit.: 88ff), in which the problem is modified as long as a successful procedure is found.

3.2.2.1 Art and Research as Practices and Cultures?

Now, after outlining the characteristic elements of these two epistemic cultures of science, the question remains, how that informs my own research. As in the case of the "laboratory studies" (Latour and Woolgar 1986 [1979]; Knorr Cetina 1981), I think I have to `take a step back´ again and translate some of the general assumptions into the context of art and research. In this regard, Knorr Cetina herself opens already a door, as she has conceptualises epistemic cultures not only as the cultures characterising science but more generally as a way for understanding knowledge cultures in the knowledge society (Knorr Cetina 1999: 5f.). In doing so, she provides an analytical frame that allows understanding structures and patterns of knowledge production as composed out of practices. Taking that into account, the questions can be raised: Are in art and research distinguishable epistemic cultures present? Is for example arts-based research an epistemic culture on its own right? If so, what are the characteristic elements, and are there similarities and differences to other epistemic cultures? Is there for example a specific way of knowing and a distinguishable *"object relations regime"* (Knorr Cetina 2007: 366)? Are their epistemic subjects present, in the sense that involved people perceive themselves as arts-based researchers? Or are there typical research procedures which could be accounted for as collective epistemic subjects? The same questions could be asked for art and research labs, as they potentially could be also part of their own epistemic culture.

In addition, from my point of view the epistemic cultures can also be used in another way. Instead of articulating the questions in an almost evaluative way, they can be posed with a more exploratory intent: Are the work practices of people doing research patterned? Is there something specific to the work that practitioners in art and research do, distinguishing their work from practising art and/or science? How is that expressed and what makes it distinct to other ways of doing research or producing art? How is all of that expressed on the level of epistemic considerations, the constitution of subjects as well as the social organisation?

From my point of view, both sets of questions are interesting. The first set because the questions can be used to focus on the stark contrasts, and thus to get an impression of the possible dense structures present in the context of art and research. The second set is interesting because these questions can give an impression of patterns apart from the question if there is an epistemic culture or not. The advantage of framing it like that is to be open for more loosely structured phenomena and to still keep an analytical eye on practices and patterns.

3.2.3 Interaction between Cultures: Material Cultures and Trading Zones

The last theoretical approach I want to introduce is based on the work of the historian Peter Galison (1997, 1997a) and the way he describes the socio-historic development of physics as heterogeneous discipline, driven by a variety of different sub-cultures and materials. Whereas Knorr Cetina (1999) has put a lot of emphasis on the structures distinguishing one epistemic culture from the other, Galison draws attention to differences within one particular discipline, how the differences can be bridged, and how actors working in different sub-cultures of physics, establish so called trading zones, allowing them to collaborate. Having the heterogeneity of art and research in mind, especially the transdisciplinary conceptualisation of art and research laboratories, and what Born and Barry (2010) have written about the different trajectories in art-science, Galison´s work provides a theoretical frame to understand how different cultures can work together.

Focusing on the history of the 20th century physics, Galison describes the changing relations between material devices, used and developed in the contexts of physics and beyond, and the different sub-cultures of theorisation, experimentation, and instrumentation in physics. Compared to a perspective focusing on the historical development of one field of physics, for example high energy physics, Galison's perspective is not one of stable development of one discipline or sub-discipline, in which certain devices come and go, but one of "material cultures". Material cultures mean that through a focus on different instruments, the various languages, values, practices and the changing epistemic and ontological structures attached to these instruments get visible.

According to Galison, the introduction of a new instrument, and related new experimental practices, does not automatically mean similar changes in theory making, but that the different sub-cultures react differently. The background of this analysis is that theory-, experiment- and instrument-making in physics have established a genuine set of beliefs, practices, values and languages, and thus deal differently with changes. Consequently, each of the sub-cultures has specific conditions and demands which have to be fulfilled in order to transform them and introduce something new. As these sub-cultures change over time, according to Galison, it makes no sense to assume that *"(...) theory, instruments, and experiments change of a piece in one great rupture of `conceptual scheme´, `program´, or `paradigm´"*. Instead, he suggests that "*(...) we would do better to see how the various practice domains change, piece by piece."* (Galison 1997a: 671).

Taking that into account, according to Galison (1997), it is astonishing to recognize that there are two material cultures which have shown a high degree of stability throughout the history of the 20th century physics, namely the culture of "image" and the culture of "logic". While the first one is based on production of images and a culture of scientific inquiry generating evidence out of dense and concrete representations of the physical world, the second is based on mathematical calculations and statistical accounts. What is remarkable about these two cultures is them having existed for a long time separately within modern physics as different ways of knowledge production. Consequently, they also

have developed different ways to educate young physicists, and relate and structure experimental, theoretical and instrumental practices to each other. As in the case of the sub-cultures of theory-, experiment-, and instrument-making, this does not mean that image and logic are static material cultures. Rather the technical devices as well as the practices and meanings associated with them are changing over time, and related to that, also the meaning and production of experiments, theories and instruments. Is for example image production and experimenting something different when it is done in a rather individual way, with a cloud chamber device, or in the context of large experimentation facilities which generate their representations through industrially fabricated bubble chambers. The same is true for mathematical calculators like the Geigerzähler, which is different to knowledge production practices that are related to Radar technology.

Although Galison puts a lot of emphasis on the cultures of image and logic and the related instruments, it does not mean that the two cultures always exist in complete separation. As he shows in the context of high energy physics research, as for example conducted in Cern, both, the image and the logic culture, get mixed in statistical calculations related to digital technology as well as the in visual output matter and are in terms of research related to each other.

Summarizing Galison´s approach now shortly, what he has described is physics as a very heterogeneous discipline, in which different sub-cultures as well as material cultures exist, and where change and development cannot be reduced to one single pattern or meta-structure. But the image that Galison has created causes also problems because as soon as questions get raised about the account for the historically evident collaboration and merging of these different cultures or answer is seek to the question why physics as a discipline does not fall apart, although it is highly segregated, an additional concept is needed in order to account for collaboration and stability.

In this regard he introduces the concept of the "trading zone" (Galison 1997: 781ff), which is highlighting the spaces where collaborations and exchanges between different cultures take place. Characteristically these trading zones are always locally bound and enacted in a certain setting. They function as a space in which a specific kind of language and practice become established, that are related to the different cultures, but cannot be reduced to them. Borrowing from anthropological concepts, Galison describes these hybridisations as pidgins and creoles. Languages that got created out of different cultures, in order to make trading between them possible, and which can become dense sets of linguistic hybrids, in form of creoles, allowing for coordination and exchange between different cultures.

In physics, a trading zone is a space in which common languages and understandings between the different sub-cultures are generated. Although the elements of the languages can still mean something different in the different sub-cultures, they relate these sub-cultures to each other and make collaboration and coordination of action and belief possible. In practical terms trading zones can also go beyond the spoken word. They can be for example a newly generated laboratory in which different

sub-cultures become spatially as well as topically converged or an instrument or a cafeteria, working as a meeting place for all kind of physicists. The influence of a trading zone can go so far that it changes the dynamics and structures of the sub-cultures related to it in a way that new experimental practices change theory production or a new device the way how experiments are done.

Furthermore the concept of the trading zone can also be applied to exchanges that go beyond the borders of physics, and as Galison writes: *"(...) pieces of devices, fragments of theories, and dots of language connect disparate groups of practitioners even when these practitioners disagree about their global significance. (...) Televisions, bombs, computers, radios, all are taken apart, rearranged, and welded into the tools of the physicist. And the process can be inverted: instrumentation from physics becomes medical instruments, biological probes, and communication apparatus."* (Galison 1997: 54)

What is important to understand is that although a trading zone exists, it does not mean that a change in theorising a phenomenon is automatically and directly related to a change of experimental practices, rather the relations are to be understood non deterministic and always contingent to the respective local realisation and the time in which it is happening. This is also the reason why physics, although highly disunified, still works as one field. A transformation in one sub-culture does not mean that the whole field has to be changed. Rather it allows the whole field to react in a flexible way to changes.

3.2.3.1 Art and Research as Trading Zone?

Relating Galison´s approach to my own research, especially the considerations related to different cultures and the trading zone are useful tools to understand art and research. Whereas "laboratory studies" (Latour and Woolgar 1986 [1979]; Knorr Cetina 1981) and the "epistemic cultures" of Knorr Cetina (1999) highlighted the heterogeneity in one established culture as well as the differences between distinct cultures, Galison opens up a way to understand different cultural dynamics in one field and also the exchanges between different cultures.

Translated into the context of art and research, that gives me the opportunity to be sensitive for different languages, practices and beliefs but also to ask if and how collaboration works between cultures. The difference of my case to Galison´s approach is, I cannot assume from the beginning onwards that art and research is a field like physics and to ask for the different sub-cultures of art and research and their relations. As I show in chapter two of this thesis, the contexts of art and research are various. In that sense, I will use the idea of distinguishable sub-culture and trading zones in a rather exploratory way, opening up questions like: In how far there are different cultures present? Can be described as belonging to one field or to different ones, or do they they sit somewhere in-between? Related to this set of questions, the concept of the trading zone makes it possible to ask, assuming that there are different cultures, how they organise their exchange? And furthermore how different beliefs and actions are coordinated and what that means in terms of knowledge production?

4. Assembling a Case Study

In the first two chapters of this thesis, I have written a lot about discourses, theories and analytical questions. In the first chapter I introduced the heterogeneous worlds, activities and discourses related to art and research, and in the second chapter I introduced some of the not less heterogeneous and complex theories of Science and Technology Studies. In thinking them together, I have discussed how art and research can be conceptualised from a STS perspective, and especially what kind of questions for further empirical research that opens up.

Taking up these questions, this sub-chapter of my thesis is dedicated to the conduct of empirical research on art and research. It should provide a solid understanding of the case I am analysing, the tools I am using to structure the research, as well as the questions and the methods guiding my research, and how they can be assembled in order to make a focused case study.

In order to do so I will first of all describe the analysed case, two of the relevant contexts it is related to, as well as my motivations to investigate exactly that case.

Furthermore I will describe the the sensitizing concepts, a conceptual tool that makes it possible to order what I have written in the theoretical part and thus helps to build a structure for my analysis.

Also I introduce my research questions in this sub-chapter and, I describe the materials I have analysed and the methods which allowed me to do so.

4.1. Research Field

While STS scholars such as Latour (Latour and Woolgar 1986 [1979]) and Knorr Cetina (1981) went into the laboratories of science, in order to do research, I have decided to take a different approach. Instead of a laboratory, I will analyse a different case, namely one project which I see belonging to the world of art and research. As pointed out by Stake, the advantage of using a case study approach is that I can focus my attention on one particular and distinguishable case and its complexities. The aim of such an investigation is to gather experiential knowledge about the beforehand defined case, and also to relate it to its context. The generated knowledge is on the one hand based on the particularities and set up of the scrutinized case, but on the other hand, it can also speak to more general questions (Stake 2005).

The aim of this case study is to learn more about the specificities and complexities of one particular art and research project, and to relate these insights to the issue of knowledge production in art and research. This approach suits my research interest, because my motivation is not to come up with the next big story, as narrated in the context of “Mode 2” (Nowotny et al. 2001, Gibbons et al. 1994), but

to look for the details and understand research activities from a more fine-grained bottom up perspective.

Being aware that I just analyse one case, I want to avoid assuming that this single investigation provides a generalizable impression on how art and research projects are conducted. I rather understand this study as one example, from which hopefully something can be learned about art and research, but which at the same time draws lessons under consideration of the particular case and context. In order to define my case, I now introduce the project as well as its contexts which seem the most relevant to me in regard to this thesis.

4.1.1 Case and Contexts

The Case: (St)Age of Participation

The (St)Age of Participation project was one of the first projects funded in 2009 by PEEK[6], a programme explicitly dedicated to the funding of arts-based research projects. (St)Age of Participation is positioned in the field of media art and stage performances and the aim of the project is to do research on stage based media art performances, and possibilities to open up those performances for audience participation (stageofparticipation.org). So what should be achieved is to allow the spectators of a performance to not just to witness it, but also to co-create the performance. The means of achieving this interactivity are articulated on the one hand in regard to the way how the performance is choreographed, and on the other hand related to interactive media technologies. The basic idea is to find ways to design a performance in an open and attractive way to allow participation of the audience members and to motivate them to become active participants, and to develop suitable interactive technologies which should support and enable interactions between the performance and audience members. The final outcome should be *"(...) to impart a new quality to the audience's emotional and social involvement in artistic experiences."* (stageofparticipation.org) The (St)Age of Participation project started in 2011 and runs for 3 years. It is currently conducted by an independent media artist, and the members of an Austrian art and research laboratory, called Ars Electronica Futurelab.

Contexts 1: Arts-based Research in Austria and PEEK

The first important context (St)Age of Participation is related to is the programme it is funded by, as it sets a frame in which the project has to operate. Before introducing the funding programme, I describe the institutional situation of arts-based research in Austria in order to understand the particularities of the national context the funding programme is embedded in.

On policy level, arts-based research in Austria is heavily related to the changing mandate and

6 For a more detailed description of PEEK, see the following sub-chapter: "Arts-based research in Austria and Peek"

institutional reformation of the Austrian art schools, through which the art schools got related to concepts of academic research. The most important reform was implemented between 1998 and 2002, and ended with a transformation of the former art high schools (Kunsthochschulen, BB) into art universities. Jürgen Mittelstraß, the head of the Austrian Science Board, described this transformation as: *"(...) an important institutional step, which could be regarded as an acknowledgement by the existing university system and university policy of the great tradition and outstanding achievements of the Austrian Kunsthochschulen. Two separate spheres, the academic and the artistic, were united in educational matters. However, it was also a step that created new challenges for the six state Kunsthochschulen as they became universities."* (Mittelstraß 2011: 17) Furthermore, elaborating on the issue of research, he highlights that due to these changes "*(...) in matters of research and Performance Agreements on research, the state universities (...) were given equal standing to the scientific universities, or put another way, the arts universities were also encompassed by a concept of research that had hitherto applied only to the scientific universities. Clearly, this is neither self-evident nor unproblematic, given the special character of art and the traditional duties of the Kunsthochschulen."* (Mittelstraß 2011: 18)

Comparing Mittelstraß´ descriptions with what I have stated in the sub-chapter on arts-based research it is apparent that also in the Austrian context the political and institutional transformations and the development of arts-based research are strongly related to the world of academia, and questions and uncertainties addressing the role of research. As the quotes of Mittelstraß show, this new situation is described as a fusion of two formerly separated worlds. Compared to most other European countries where art education institutions are related to research, but not necessarily directly to universities (Kälvemark 2012: 4f.), the special situation in Austria is that the former art high schools became full universities, inhabiting the same status as all the other Austrian public universities.

As one approach to deal with the with this university status and to provide funding for research the so called "Program for arts-based research", in short "PEEK"[7], was launched in 2009. PEEK operates under Austria´s central science funding institution "FWF"[8] and its aim is, as described in the program document, to support *"(...) the production of artistic knowledge that is accompanied by reflection and so leads to an increase and advancement in society's knowledge*." (PEEK 2013: 3). In principle, grants can be awarded to any person interested in conducting such a project. However, the programme places focus on funding the activities in universities: "*Projects funded by the Program for Arts-based Research (PEEK) will take place at various institutions in Austria, primarily at arts universities. Because of their available infrastructure, university and some non-university institutions can offer artists the possibility of undertaking arts-based research in appropriately supportive*

7 This acronym is based on the German title: "Programm zur Entwicklung und Erschließung der Künste"

8 Fonds zur Förderung der wissenschaftlichen Forschung

environments."(op.cit.: 4)

in PEEK knowledge production is imagined similar to the theoretical conceptualisations I have outlined above in the sub-chapter on arts-based research; art practices are understood to be the main source of new knowledge. Furthermore, similar to Borgdorff´s (2012 [2010]) disciplinary descriptions, the programme draws boundaries to other areas of knowledge production, described in the document as: *"Arts-based Research differs fundamentally from disciplines such as literary criticism and history, art history and musicology, which apply scientific methods to the study of art. Arts-based research can be understood as fundamental research that leads to the acquisition of knowledge. It implies the development of methods by artistic and aesthetic means as opposed to applying purely scientific processes in order to gain information."* (PEEK 2013: 3)

The aims as well as expected outcomes outlined in the programme document are various and range from the conduct of high quality arts-based research, the development of genuine methods and theories, the establishment of a brain gain of arts-based researchers, the creation and expansion of arts-based research centres, the training of young researchers to the creation of greater public awareness of arts-based research, a higher degree of acceptance for this research form, and the establishment of international networks. The progress towards meeting the aims and producing the expected outcomes is monitored and assessed, according to the PEEK document, using the following indicators: references in international media, contribution in peer reviewed journals, awards, memberships in national and international boards, the creation and management of networks, the documentation and archival of work conducted during the project, the publication of materials, engagement in presentations and dialogues, as well as the evidence that the research is applied on or used by other areas of the arts or sciences.

PEEK awards grants once a year, and the maximum duration of funding for one project is 36 months. As by no means every project is funded, an application and evaluation process exists. Similar to the other selection procedures of the FWF, every applicant has to write a project description, including a summary of the research intent and the way how the research questions are going to be addressed. This document is sent by the FWF to international peer reviewers, in order to get feedback on the quality of the proposal. In the next step, applications are examined by the Peek advisory board, a group of eight people with international reputation in arts-based research, which recommend the projects to be funded. The actual decision is then made by the FWF board, which consists of professors from different Austrian universities.

As a last formal step, the programme requires each funded project to prepare and submit a final report to the FWF, which is again evaluated by an international expert in arts-based research. This evaluation focuses on the projects' results and impacts in the artistic context, as well as on the institution which has conducted the project.

Taking this context of the funding programme into account, the (St)Age of Participation project is

connected to a world strongly entangled with transformations of universities, the "Bologna Reform" and the discussions about research in art universities. Furthermore ideas about research are tied to the academic sector and imagine knowledge as based on artistic practices and reflections.

Context 2: The Ars Electronica Futurelab

The second important context is the Ars Electronica Futurelab, an institution which from my point of view can be labelled as an art and research laboratory. Called by Tanaka a *"Media Lab"* (2011: 15), by Naimark (2003: 14) a *"(...) research lab with an interest in art"* and by Shanken (2010: 19) one of the*"(...) experimental labs dedicated to broad transdisciplinary collaboration at the intersections of art, science and technology*", it is one of those institutions that are active in a rather fuzzy world. About which as Brouwer et al. (2005: 6) has argued that it is all about exploring, doing research, and experimenting with new technologies, as well as reflecting on the social and artistic implications of these new technologies. Having this heterogeneous background in mind, it is also no surprise that Naimark (2003) characterised the director of the Futurelab seeing "(*...) no problem speaking with corporate executives about turbine visualization and "Tele-Symphonies," and about office products and the "Sperm Race," all in the same breath." (2003: 14).*

In regard to the (St)Age of Participation project, it is important to know a bit more about the Ars Electronica Futurelab, as it is the hosting institution of the project, most of the research and development activities are conducted there, and it employs most of the members of the project. To give a more detailed impression of this context, I briefly describe the history of the Futurelab as a 'child' and a part of a bigger institution called Ars Electronica, as well as its current activities, as they are described at Ars Electronica´s webpage and in texts written by the director of the Futurelab and the artistic director of the Ars Electronica.

Founded in 1979, the Ars Electronica was in the beginning a festival for electronica arts and served as a place where artists, scientists, technologists and a variety of actors from all different fields met, to discuss and present works which were in the one or other way related to questions of technology, art and future societal developments. Since its establishment, the Ars Electronica has been continuously growing; a competition for media art was launched in 1987 and an own exhibition centre and a museum was opened in 1996. At the same time with opening the exhibition centre, the Ars Electronica Futurelab was established as a department producing infrastructure and content for the centre and the festival. (aec.at)

However, soon after the its establishment, the Ars Electronica Futurelab started to function as a financially independent department not only working for the Ars Electronica, but establishing relations to private business partners and local universities. Early examples of such collaborations are web development work done for the Quelle company, the department of software engineering at the Johannes Kepler Universität Linz, and the Arts University Linz. (Stocker 2009) Today, the Futurelab is

next to the festival, the museum and the media art competition one division of Ars Electronica, and has the status of a research and development department.

While in the beginning of its business activities, Futurelab focused on the field of new media, especially of web and software development and 3D technology (Hörtner 2009), it has grown over the last decades to an organisation describing its mission as: *"Ars Electronica Futurelab focuses on the future at the nexus of art, technology and society. We consider our works as sketches of possible future scenarios in art-based, experimental forms. In this way, we are aiming at developing contributions through methods and strategies of applied science, the results of which reveal new knowledge and experiences of societal relevance in art and science. The lab's team bases its work commitment upon transdisciplinary research and work which results in a variety of different disciplines at the lab. (...) Our range of services concentrates on expertise developed throughout the years in fields such as media art, architecture, design, interactive exhibitions, virtual reality and real-time graphics."* (aec.at/futurelab)

At the moment, the Futurelab employs around 30 people with professional backgrounds in fine arts, architecture, media design, media technology, biology, physics as well as social sciences. In the last years, the Futurelab has realised projects for private business institutions, implemented research and development projects together with universities and artists in the areas of media architecture, stage performance, interaction design, exhibition design and consulting. (aec.at/futurelab)

Comparing now the case and the contexts with each other, it becomes obvious that although the PEEK programme got developed in a close relation to transformations of the higher education and academic sector, the Ars Electronica Futurelab, although having relations to academia, is actually rooted in a much more heterogeneous context, somewhere in-between business developments, exhibition production and research. Apart from having to be aware of that, maybe the one or other reader asks, why I have chosen to study such a project. Being interested in research and knowledge production in art and research, would it not be more suitable to take a classical example of an arts-based research project based at an arts university, and then move forward to study the more unusual projects? I have to say: yes, that would have been a logical and stringent step. On the other hand, I think that exactly this heterogeneity of an art and research lab conducting an arts-based research project makes the project such an interesting case to study. In the next sub-chapter I aim at shedding light on my decision to study this particular project, and not a different one.

4.2 Choice of the Field

First of all, I have to say that it was not my initial plan to do a case study on a project funded by an arts-based research programme. My first idea was actually to investigate the Futurelab as an institution working on the borders of art and science. In that context, I came up with the plan to do a case study on one project, as a way to investigate the organisation and especially the knowledge production processes in the Futurelab.

The reason why I had this idea to conduct a study on the Futurelab is partly related to my former employment at this institution, and an ongoing fascination for work related to art and research. Combining this interest with my STS master studies, I developed the idea to investigate an institution such as the Futurelab from the perspective of STS. Having that as a point of departure, I decided to take (St)Age of Participation as one project that could serve as my case study. Initially, I chose the project not because it was funded by the FWF or a similar organisation, but because the more practical circumstances were the right ones. Around October 2012, the time when I started to plan conducting field work, the (St)Age of Participation project was already ongoing and also far enough developed to interview the members of the project about their experiences. It was actually my supervisor, Max Fochler, who made me aware that it is a bit overconfident to assume that it is possible to make an analysis of the whole Futurelab by just investigating one project. However, he also realised that it is very interesting to look in particular at (St)Age of Participation, because it is related to arts-based research. The advantage of combing these heterogeneous worlds of a funding programme conceptualising research in the arts in a rather academic way and a transdisciplinary art and research lab is twofold. On the one hand there are just case studies available on outspoken art-science projects, and thus this research investigates new contexts. On the other hand, through combining arts-based research and art and research laboratories in one case study, worlds and complexities are related to each other, that would probably not been opened up in the context university based based arts-based research projects. So this thesis developed as it developed, and an investigation of the Futurelab got transformed into an investigation of a project that is funded under and arts-based research frame and conducted by members of the Futurelab and an independent artist.

4.3 Sensitizing Concepts: Epistemic Living Spaces and Boundary Objects

So far this thesis has touched and discussed a variety of topics, dug into worlds which are under constant change, in their composition heterogeneous and again connected to a variety of different contexts. A world in which the borders between different spheres are blurring and in which artistic considerations become tied to different notions of innovation, research, knowledge production and collaboration, in which it is furthermore not obvious how these relations are to be imagined and

especially not how that is realised on a practical and day to day level. After narrowing these complexities down to one specific case, which serves as an example, I outline the so-called "sensitizing concepts" (Bowen 2006) in this sub-chapter. In order to insert structure to this complex assemblage of discourses, theoretical concepts and open questions, I introduce two concepts that allow me to ask specific research questions about my case and to structure the analysis of the research materials along the important parts of the theoretical frame. The concepts I have chosen in this regard are "epistemic living spaces" (Felt 2009) and "boundary objects" (Star and Griesemer1989). As the latter concept is understood to be a potential part of the first one, emphasis will be placed on the epistemic living spaces.

Epistemic Living Spaces

Developed in the context of a collaborative investigation on changing research cultures in Europe, the concept of epistemic living spaces is guided by a co-productionist approach, stressing the multiple relations and entanglements of science and society, and that *"(...) the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it"* (Jasanoff 2004: 3). Taking a person centred-approach, the idea is to focus on the reflections and narrations of individual researchers, and their accounts on what it means to know and live in a research world currently facing a high degree of transformation. Other than "Mode 2" (Nowotny et al. 2001; Gibbons et al. 1994), this concept does not just produce theoretical accounts of changing science-society relations but gathers impressions and analytical insights on how knowledge production is changing in the current society, by analysing the perceptions of individual researchers. Thus unlike Mode 2, epistemic living spaces do not assume that there is a general tendency towards socially robust knowledge or more inclusion of different actors into science. Instead, this concept puts these assumption to question and tries to understand the heterogeneous dynamics characterising current knowledge production in science and beyond on empirical grounds (for examples see Felt and Fochler 2012 or Felt et al. 2013).

In order to be sensitive for the different and changing values, structures, rationales, and actors shaping and re-shaping the world of research, the epistemic living spaces approach is interested in the individual or collective perceptions and narrative re-constructions of *"(...) the multi-dimensional structures – symbolic, social, intellectual, temporal and material - which mould, guide and delimit in more or less subtle ways researchers' (inter)actions, what they aim to know, the degrees of agency they have and how they can produce knowledge."* (Felt 2009: 19). In this regard, individuals are understood to be the ones which have to manoeuvre and find their way within a changing world and thus can give account of the experiences they make in doing so. Focusing on the individuals´ perceptions and reconstructions, epistemic living spaces are interested in how researchers produce structures, through the way how they imagine what it means to do research and what is possible and important in that

regard. Reversely, they also work out how structures are reproduced by researchers, through the way how they align themselves to established fields and practices of knowledge production as well as cultural patterns. Thus epistemic living spaces draw attention to the *"(...) constant reordering taking palace, as well as to make us alert to the continuous efforts of stabilising, extending or protecting the spaces researchers occupy"* (op.cit.: 19).

In that sense the epistemic living spaces concepts is also different to the laboratory studies. Unlike Latour and Woolgar (1986 [1979]) or Knorr Cetina (1981), this concept does not take it for granted that scientists act in established settings and reproduce standardised versions of what it means to be scientific. In addition, epistemic living spaces open up a perspective on the active production of research spaces and how that is shaping knowledge production practices. Following that intention, epistemic living spaces are according to Felt (2009: 19) closely related to what the sociologist Thomas Gieryn (1983) has called "boundary work".

Boundary work is an approach highlighting the active differentiation strategies and rhetoric efforts, which people belonging to a profession or occupation are using to demarcate their own activities from others, in order to gain access and advantages over resources and authority. In particular, Gieryn (1983) demonstrated how scientists managed to demarcate science from non – science and also how that is done differently in different contexts. Taking 19th century England as an example, Gieryn shows that the main argument to distinguish science from mechanics was its theoretical nature, whereas the demarcation argument to religion was science´s empirical and experimental constitution. Summarizing these observations, Gieryn concludes that differences between professions, occupations, or science and non-science, are nothing given but something actively erected and maintained, changing over time and related to the specific context. Herein lays also the similarity to epistemic living spaces, as the boundary work concept also focuses on reordering processes as well as stabilising efforts and activities related to an expansion or protection of research spaces (Felt 2009: 19).

Apart from these efforts to establish and protect a space for research, and the norms and formal rules guiding research, epistemic living spaces are also interested in categories like `feeling intellectually at home´ and tacit cultural patterns, such as non-codified values, temporal regimes or tacitly shared practices addressing knowledge questions. In that sense, epistemic living spaces are always opening up and closing down opportunities and possible degrees of agency at the same time. On the one hand epistemic living spaces create the feeling of being on safe ground from which one can act and explore unknown fields, while on the other hand, they impose limitations by giving tacit guidance and thus, inhibit more radical forms of innovation. Altogether the epistemic living spaces approach tries to analyse the *"intertwinedness of the personal, the institutional, the epistemic, the symbolic and the political"* (op.cit.: 19), and is interested in both, transformation and structure, addressing "(...) *the inextricable interdependence of epistemic practices, institutional rationales, individual biographical decisions, as well as political and broader societal frameworks, which characterise the lived*

experiential realities of researchers today." (Felt et al. 2013: 513)

Being interested in structures, epistemic living spaces have a similar intent than the "epistemic cultures" of Knorr Cetina (1999). According to Felt (2009), both approaches go beyond formal descriptions such as discipline and are interested in practices and symbolic components. However, compared to the dense way how Knorr Cetina defines the *"machineries of knowledge construction"* (1999: 3), Felt includes beyond the epistemic *"(...) also the social, political, structural, temporal and institutional machineries"* (2009: 20). In that sense, an epistemic culture can be part of an epistemic living space or even the main element of it, but an epistemic living space is not necessarily limited to an epistemic culture.

In order to study the heterogeneous epistemic living spaces, Felt and Fochler (2012: 137f.) suggest to focus on the following five different dimensions:

1. **Epistemic Dimension:** Identified as the most central dimension, the epistemic dimension draws attention to the epistemic structure and the researchers´ reflections on the construction of research questions, notions and beliefs about how knowledge should be produced and the question what constitutes good knowledge.

2. **Spatial/Material Dimension:** The focus of this dimension is on the one hand on the material actors like technology and architecture, and the question to which extend the research is enabled or constrained by them. On the other hand, the spatial/material dimension looks on the symbolic and geographic maps researchers are using to orient themselves, how they perceive proximity and distance, and how `tacit geographies´ inform their identification of an own place in the research world.

3. **Temporal Dimension:** This dimension scrutinizes the tempo of research work and the different forms of time structuring it. Furthermore, it goes beyond the actual case and looks at other time regimes, like institutional evaluations, structuring the research activities of the investigated field.

4. **Symbolic Dimension:** On a macro level, this dimension is concerned with the values and modes of ordering, perceived as important for research work. On a micro level, it asks questions about the virtues and qualities which are currently expected from individual researchers.

5. **Social Dimension:** In the social dimension, the researchers are asked to talk about

collaborative knowledge production, how they imagine togetherness and their expectations about other people who share their epistemic living space.

Boundary Objects

By introducing the concept of the "trading zone", Galison (1997: 781ff) provided a first way to conceptualise the coordination of action and belief through the creation of a common space. Additionally to that, I want to put in the notion of the object as means of collaboration and possible part of an epistemic living spaces or a connection between different spaces. As mentioned already in the context of Halpern´s (2012) study on collaboration in an art-science project, the "boundary object" (Star and Griesemer 1989) is in this regard a useful concept for such a case as mine and its heterogeneous contexts, as it is defined as an object which is on the one hand robust enough to maintain a distinct identity, but on the other hand, weak enough to be adaptable to different contexts.
Developed in a study on the coordination of action and knowledge production in an early 20th century natural history research museum, Susan Leigh Star and James Griesemer (1989) showed how the activities of the various actors involved in building up the museum's collection and generating knowledge about it, such as amateurs collectors, museum managers, taxidermists as well as early professional scientists, could be coordinated and steered through introducing boundary objects. Drawing attention to these different actors and considering their different interests, such as the arrangement of a collection according to principles of evolution theory or the generation of scientific knowledge about certain species, the authors demonstrated that various objects, ranging from maps of where to collect animals and fossils and standardised methods of classification to repositories like the museum itself, were needed to coordinate these actors. As regards to these findings, Star and Griesemer define the boundary objects as: *"(...) objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual- site use. These objects may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation."* (Star and Griesemer 1989: 393)

Translating epistemic living spaces and, as potential part of them the boundary object, into the context of my own research, these concepts turn the focus to the individual members of (St)Age of Participation and the question of how they imagine knowing and living in relation to the project and the contexts of the Futurelab and arts-based research. Connecting the epistemic living spaces with the analytical frame I have built, it serves as a good tool to understand how the participants of (St)Age of Participation perceive and describe their identities, motivations to work on the project and the

practices associated with doing so, how that is shaped by different discourses, the local context and relations to other actors, as well as if that is done in a similar way or if every member tells different stories. In that sense this concept allows me to study bottom-up what matters to the people who are working in the (St)Age of Participation project and how that is expressed.

Furthermore epistemic living spaces are open enough to take the identified problems and limitations of the STS concepts into account. For example I do not have to focus on the fact production but can ask how practices are described. I do not have to assume that all project members have one specific identity related to one culture but can make an open question out of that. I can also analyse if a distinguishable "epistemic culture" (Knorr Cetina 1999) guides their reflections and if some of the different discourses in art and research shape these narrations. Furthermore, it is possible to analyse if the local contexts play a specific role in their understanding of working in the project, and how the social organisation of the project is imagined.

In case there are a lot of heterogeneous considerations present, I can use the concept of the boundary object and analyse if these objects are present in the narrations of the members of the project, how they are constructed, and how they help the project members in coordinating their activities and doing research.

Thus the epistemic living space as well as the boundary object make it possible to adapt the investigation to the heterogeneity of art and research and in particular to the complexity of my case and its contexts.

And in order to sharpen these analytical tools, I will introduce now my research questions.

4.4 Research Questions

The main research question I want to investigate in this thesis is:

How is knowing and living in the (St)Age of Participation project imagined by its members, and how are these considerations related to arts-based research as well as the local context?

Combining now the theoretical frame and the dimensions of the sensitizing concepts, it is possible to define more specific sub-questions, which I have clustered in three groups: identity and career; practices and knowledge production; and social organisation.

Identity and Career

Latour and Woolgar (1986 [1979]) have demonstrated that an important driving force for researchers in science is to gain scientific credibility, and that career considerations shape decisions about a

scientific field a researcher wants to be part of. Therefore, it is interesting to analyse what `drives´ the people who are part of (St)Age of Participation, how they imagine their careers and how that is related to arts-based research and the local context. Furthermore, to focus on narrations of identities is also interesting from the perspective of Knorr Cetina´s "epistemic cultures" (1999) because I can get an impression if there is a distinguishable "epistemic subject" present, which is tied to the individual and to a certain distinguishable culture and to a specific set of epistemic practices.
Additionally, as the study of Leach (2011) has shown, different personal identities can be an important factor in epistemic terms, as they structure who can say what about which part of the world, and thus make different actions possible for different people. Therefore my sub-questions on identity and career are as follows:

> How do the members of the (St)Age of Participation Project describe their professional identity?
> How is this identity positioned in relation to the project, arts-based research and/or the Ars Electronica Futurelab?
> How do they imagine their career opportunities in these contexts and beyond?

Practices and Knowledge Production
Being interested in knowledge production the focus on practices forms a centre of my study. Like the "lab studies" (Latour and Woolgar (1986 [1979]); Knorr Cetina (1981)] have pointed out, in order to understand knowledge production it is important to have a look at practices and how they are related to the local context. But because I cannot assume from the beginning onwards that doing arts-based research is like in established scientific settings all about the production facts or even the production of knowledge, I want to be open for whatever comes in the reflections of the participants. Thus, I am first asking what kind of practices are described and then try to connect them to research and knowledge production and how that is narrated by the project members. The hope I associate with this strategy is to get a fine grained understanding of what it means to do research and to produce knowledge and how that is related to arts-based research and the local context. In this regard it is also interesting to ask about the outputs. If in scientific laboratories mostly papers produced as outputs of research activities, the question opens up what it is in (St)Age of participation.
Related to Knorr Cetina (1999) a focus on practices allows also to get an impression in how far the people reflect about a similar kind of practice or maybe a whole machinery of knowledge production? Furthermore it is then also interesting to have a look if they draw boundaries (Gieryn 1983) to other forms of practising, and what that opens up and closes down in terms of knowledge production. Therefore my sub questions about practices and knowledge production are:

> How do the members of the (St)Age of Participation Project reflect on their practices?

When and how do they describe them as knowledge production practices?

What are the imagined outputs of the project?

What does it mean to do good research?

How are the reflections on their practices related to arts-based research, the local context as well as other forms of doing research?

Social Organisation

Knorr Cetina (1999) has highlighted that an "epistemic culture" has a certain structure, is socially organised and would work differently if it would be organised in a different way. From that perspective it is interesting to analyse how collaboration and organisation is imagined and what that tells about the structures as well as the boundaries of that project. Furthermore these questions are also cautious to what Galison (1997) has outlined about the concept of the "trading zone". So if different cultures or approaches are present, these question should allow to get an impression how the different people imagine collaboration between the different cultures and across approaches. Therefore, in relation to social organisation, I ask:

What kind of organisational arrangements characterise the project?

How is collaboration imagined?

Are there specific relations to the local context and/or the world of arts-based research articulated?

4.5 Methodological Approach

The methodological approach is guided by the concept of the "epistemic living spaces" (Felt 2009), I have chosen to study my case with. As the epistemic living spaces are about narrations and reflections of individual researchers, I will use a qualitative research design (see for example Silverman 2000).

A quantitative way of conducting research would generate theories from scratch, build hypothesis out of them and test them via a questionnaire (see for example Eder 2003), since I am more interested in exploring and understanding individual perspectives, how they are related to discourses, other actors, institutions, identities and boundaries, and to build the theories so to say bottom up, qualitative methods fit for my purpose better. Focusing on my case the qualitative research design also allows me to follow local meanings, how individual members narrate their involvement in the project, how they make sense of being part of (St)Age of Participation and of doing research in this project.

What is in this regard important for me is to draw attention to the specific methodological understanding that STS scholars have developed during the last decades (see for example Clark 2005

or Law 2004). Unlike in a lot of essentialist definitions of science, my research outputs are not understood as objective representations of the world that got investigated. Instead, the knowledge I generate is perceived to be based on active engagement with actors I am doing research on, the theories I am using, the experience that I have made, etc.. John Law for example doubts that there is a certain world and research objects simply `out there´, but highlights the active character of research and discusses how researchers, theories, methods, devices as well as a variety of different actors, shape the knowledge that is produced through research (Law 2004). In that sense, my research is understood as an active process rather than a passive observation of the world, in which the theories, methods, contexts, situations and my personal history as well as interest shape my own knowledge production processes.

4.6 Field Access, Materials and Methods

My decision on what materials I should analyse was driven by two factors. First, the "epistemic living spaces" (Felt 2009) concept focuses on the reflections and narrations of the individual researchers, and second, I have decided to focus my investigation on one case (Stake 2005). Translating that into the world of methods and my research context, I have decided to do on the one hand interviews with the members of (St)Age of Participation and on the other hand analyse documents that got produced in the context of the project and by its members.

In order to get access to the interviewees and the materials, I had to establish contact to the members of the (St)Age of Participation project. That was not difficult, while I had known people working on (St)Age of Participation from my time as employee in the Futurelab. In detail, I contacted one of the project leaders in early 2013, and arranged a meeting with him in which I presented my ideas and the plans for conducting research. After, he welcomed me as a researcher, he helped to establish contact to the other project members and provided me with materials like the grant proposal and books about art and research.

The documents I have `collected´ consist of the project webpage, the funding application as well as the first publication written in the context of the project. I had gotten the first two documents before I conducted the interviews, and I was given the publication during the third interview. From an analytical point of view, I took these documents as official reflections about the project and as products of it, which gave me a first impression of how the project is described and how doing research is understood, as well as how the outputs, in form of the publication, look like. Furthermore, I have integrated some terms and notions of the webpage and the application into the interview guidelines, in order to actively trigger reflections on the specific terms and concepts developed by the members of the project. I used parts of these documents as "stimulus texts" (Törrönen 2002). That is

texts or parts of texts the researcher chooses beforehand, in order to help the researcher to make people reflect and give the researcher an impression what the interviewee associates with the presented text parts, what perspectives the person opens up and how he/or she interprets the text.

The interviews were conducted between March 2013 and June 2013 with the project members who are working on a permanent basis for (St)Age of Participation. I interviewed the following members: an independent artist, working as media artist, director and composer, having in the project the position of the project leader and the artistic project manager and an artistic research director; the co-director of the Ars Electronica Futurelab who has in the project also the position of a project leader and of the chief of software and hardware architecture; a permanent member of the Futurelab who holds in the Futurelab currently the position of a leading manager in the field of technologies and has in the project the position of the technical head and project coordinator; and one member of the Futurelab who holds in (St)Age of Participation the positions of a social scientist as well as a writer, who is in charge of writing press releases, the content of the webpage, and all other kind of publications.

The chosen interview method was the so called is the "reflexive peer-to-peer interview" (Felt and Fochler 2012: 154). Developed in the context of the "epistemic living spaces" (Felt 2009), the idea behind this interview technique is to actively reflect with the interviewees about issues of interest. As described by Holstein and Gubrium (1995), the interviewee is not, like in other interview methods, understood as a passive vessel out of which as much information as possible has to be gathered, but as an active agent. Thus the interviewer and the interviewee are both actively producing the interview together, meaning for the researcher that *"(...) these interviews represent concerted efforts to collect actively assembled interpretations of experience that address particular research agendas."* (op.cit.: 50).

In the reflexive-peer-to-peer interview, the interviewee is not just perceived as active, but also as peer out of the same world. In the context of the epistemic living spaces that makes sense, since researchers using this concept are working in scientific contexts and interview most of the time other researchers also working in science, who are furthermore both affected by changes that are often put to question in the interviews. Thus in the interviews the interviewee as well as the interviewer are conceptualised as colleagues and experts at the issue at hand. The advantage of doing so is that it helps *"(...) building trust and to explore the discussed issues in considerable depth"* and it makes aware that it is also needed *"(...) to be reflected in analyzing the interviews, in particular with regard to meanings taken for granted by both interviewer and interviewee."* (Felt and Fochler 2012: 154)

This specific peer relation is also in my case important as I already had a working relation with the Futurelab. As a consequence, I was not just a student gathering material for a master thesis, but also someone who knew from the inside how the Futurelab works. With this background it was helpful for me to position myself affectively as peer and researcher to whom the interviewees can talk to, in order to make them reflect on topics related to the (St)Age of Participation project, the Futurelab and arts-

based research.

As suggested by Felt and Fochler (2012), the questions I asked were structured along different issues. So it got possible to trigger answers along the topics I was interested in.

In detail, my interviews consisted of three blocks. The first block was the biography and professional development of the interviewee and the second, the (St)Age of Participation project. In this second block, I tried to make the interview partners actively reflect on their involvement in the project, the way the project was conducted, how they would describe the research approach of the project and what for the individual member was important and why. In this block I also used the information that I got from the document analysis of the webpage, in order to trigger reflections on the project. In the third block, I asked questions about topics that were not directly related to the project, but about issues which I have assumed to be relevant in order to get a better understanding of the case, like the influence of media art on the project or the relation of the project to the context of the Ars Electronica Futurelab and arts-based research. The interview guides were apart from these three basic blocks adapted to the individual interviewee. All the interviews were recorded and fully transcribed for further analysis.

4.7 Data Analysis

The chosen analysis method is "Grounded Theory" (Strauss and Corbin 1998). The advantage of this approach is that it allows summarising data and generating an overview, as well as to explicate the data and go more into detail. Furthermore, it is a method that is open for a variety of data types and thus allowed me to analyse the interview transcripts, the webpage as well as the other documents with one method, and also to compare my materials and to generate an analysis out of it.

Another big advantage of Grounded Theory is that I can generate theories out of the data, allowing me to get some first and careful theorisations of living and working in the project from the perspective of the practitioners. Additionally Grounded Theory is in its recent interpretation not anymore based on rather objectivistic assumptions (Strauss and Corbin 1998, Clark 2005, Charmaz 2006), and thus fits to my general approach of understanding my own research process as an active endeavour, and not as a passive observation of the world. That is nicely summarised by Strauss and Corbin in the sentence: *"Analysis is the interplay between researchers and data"* (1998: 13).

Following the logic of Grounded Theory, the researcher has to start with an open way of coding his or her materials. In this first step, the codes are generated inductively out of the data material through assigning codes to single words, sentences or whole text passages. These codes are in a next step summarised under different categories and the researcher has to relate the different categories to each other and to reflect about the character of their relation. As the categories are defined out of the initial

codes, the work of coding, summarising them under a category and relating the categories to each other is leading in the best case to the development of small theories, which are grounded in the data material of the researcher.

The analysis process is open and allows for a mixture of data collection and data analysis efforts. In this regard, the definition and redefinition of codes and categories is an important part of the analysis process and leads to a permanent reflection of the generated analysis. That was in my case a big benefit as I would describe the conduct of my research as heterogeneous, in terms of coding and categorising the data, building theories, and re-coding and -categorising these data and building new theories. Also in terms of materials the openness that was a benefit as, I have for example used the results of a first analysis of the webpage for constructing an interview guideline. The same is also true for the research questions and theoretical backgrounds which got re-articulated and transformed throughout the whole research process.

In the context of my research, I have focused the coding activities mainly on the interview transcripts and coded them according to the “open coding” logic, as described by Charmaz (2006: 42ff). Furthermore, I created categories out of the open codes. After I have related the interesting materials of the documents to the categories and codes, I created my final analysis.

5. Analysis

Knowledge production can be structured in different ways. As I have demonstrated in the theoretical part of my thesis, it can take the form of dense knowledge cultures (Knorr Cetina 1999), or take place in established settings like laboratories (Latour and Woolgar 1986 [1979]).

But as my analysis will show now knowledge production can also be ordered in a much more loosely coupled way. Instead of similar narrations about identities or descriptions of a dense set of practices and epistemic considerations, my case study shows that there can be a lot of heterogeneity in the reflections of the project members on identities, positions in the project, relations to the local context, of what it means to work in the project and to do research, as well as how that is related to discourses on arts-based research. Furthermore, the structure of the whole project reflects heterogeneity as positions and assigned tasks are related to personal identities and motivations to work on the project. Nevertheless, despite the varying reflections, the people in (St)Age of Participation managed to make a collaborative project, that they have planned and implemented together.

In order to account both, the heterogeneity and the common elements, I divided the analysis into three parts. In the first part, I will give an impression how (St)Age of Participation is narrated in the project application. This is interesting for various reasons. First of all, it provides the reader with an overview of the aims of the project and how doing research is imagined in. This document is also an outcome of collaborative work of the project crew and thus it represents an agreement of what to communicate to the funding agency, the FWF. In that sense, the project proposal can be seen as one frame within which (St)Age of Participation has to be conducted in, as the promised progresses of the project as well as the results have to be communicated to the funding institution, and will also be evaluated by this institution.

In the second part, I will analyse how the interviewees narrate their personal backgrounds and professional identities and how these backgrounds become visible in their reflections on doing research in the project. Related to that, I describe what it means for the individual member to be part of this project, in terms of practices and relations to the local context as well as arts-based research. The aim of doing so is to highlight the heterogeneous reflections and that doing research as well as arts-based research has a different meaning for the different people. Consequently, different spaces are opened up, in which the people can act.

Finally, in the third part, I will show how the members of the project deal with this heterogeneity, how they relate different approaches, identities and interests to each other, and how they organise the project in a way that collaboration and knowledge production is possible.

5.1 (St)Age of Participation as Arts-based Research Project

The motivation for the (St)Age of Participation project is an identified artistic challenge which is related to socio-technical transformation. This transformation is located in the realm of digital technology and as one can read in the application, based on the theory that in: *"(...) our own Digital Age, the technologies that have repeatedly made the greatest impact are those that have paved the ways to a broad-based, mass-appeal lifestyle of participation and DIY, of user generated content and social networking. The passive surfer has morphed into an active participant. The younger the user, the likelier it is that the process of actively designing, evaluating and posting content is a part of everyday life he/she takes completely for granted."* (Q1)

The identified challenge in the St(Age) of Participation project is to adapt the art form of theatre and performance art, which is mostly based on one way communication – from stage to audience – to these new circumstances. In order to do so, it is according to the application important to take care of two elements. First, the audience should be involved in stage based performances as active participants and co-creators. Second, this involvement should not lower the artistic quality of the art pieces, as audience participation implicates a potential *"(...) exhaustion of the performance´s aesthetic, emotional and intellectual quality" (Q2)*.

These challenges open up a space for research, in which to find ways how to deal with the challenges and to get insights about interactive stage performances is described to be important.

This means that in regard to the involvement of the audience, new strategies to motivate the audience members to participate throughout a whole piece needs to be found. Examples of such strategies are to develop and use tools like interactive technologies, and to arrange interaction in a way that the audience members have the feeling of being involved into the performance and in the process of creating it.

In regard to the artistic quality, it is seen as important to invent concepts and examples of stage based performances including audience participation *"(...) that display a high level of dramaturgical and aesthetic excellence." (Q3)*

But how can the strategies, tools can concepts be found? Or asked in more analytical terms: What does it mean to do research in the context of the (St)Age of Participation project and how are the research practices imagined in the application?

The narration of the application is related to the discourse on arts-based research, and is similar to the arts-based research concepts I have introduced in Chapter 1. Generally, arts-based research is understood as a research approach based on art and art practice. Following this definition, the mission of the project team is formulated in the proposal as *"(...) to arrive at findings that emerge by means of and during artistic practice." (Q4)* Related to that is a narration explaining how art can produce these new findings: *"The process of artistic confrontation brings forth new differentiations on the levels of*

perception, emotion and intellect, experiments with new varieties and forms of differentiation, and engenders, over the course of these processes, novel aesthetic, emotional and ideational constellations." (Q5)

Despite this rather open definition the artistic research process is not imagined as structureless. Instead, in the application an arts-based research scholar is quoted and arts-based research is understood as a *"research strategy"* in which *"(...) the use of systematic experimentation with the goal of gaining knowledge (Q6 – McNiff 2008:33)"* is regarded as important. In that sense, arts-based research is articulated in a twofold way, and as written in the application: *"On one hand, there is the demand for clarity, form and method; on the other hand, the vital basis of the creative process that can and should lead to surprising results." (Q7)*

Concretely this means that the project members are planing and implementing together experimental performances, which are open for audience participation. These so called Micro-performances/Dramaturgical Experiments are then tested publicly in front of an audience, which is invited to participate. Time-wise within the funding timeframe of three years, three to five different performances/experiments are planned and experiences from one experiment/performance are imagined to influence the design of the next Micro-performance/Dramaturgical Experiment. Thus, planning, performing and generating insights related to one Microperformance/Dramaturgical Experiment form one iterative loop (Image 1), of the whole research process.

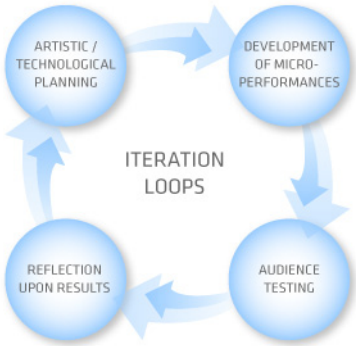

Image 1. Source: stageofparticipation.org

The new insights, which feed into planning of the next performance, origin according to the application from the creative process of working on the performance and conducting it. In order to produce knowledge about the outcomes of these performances/experiments the iterative loop consists reflection upon results as an activity.

Reflecting is seen as a *"spontaneously conducted process" (Q8)*, but simultaneously it is guided by research questions. These questions can be summarised as addressing the investigation of

- how audience participation can be sensibly integrated into a stage performance without reducing its quality in terms of dramaturgy, aesthetics and intellect;

- how the integration of participatory elements changes a stage performance in terms of aesthetics and the dramaturgical conception;
- which kind of interaction metaphors do audience members find engaging;
- what feedback mechanisms are needed by audience members for satisfactory, comprehensible interaction; and
- how uncomfortable situations for audience members can be avoided.

In addition to these, the project aims at answering rather technical concerns and questions, targeting which kind of technical interfaces are needed to implement interactive dramaturgical design, or what demands are there for stage and sound settings.

The way how these questions are addressed is separated along different perspectives attributed to the different project contributors as follows:*"From an artistic perspective (by the artist[9]). From a technical perspective (by the Ars Electronica Futurelab), From the audience perspective (by members of the test audiences). From the perspective of the social sciences (for example, by commissioning sociological-psychological consultants). From an outside artist´s perspective (for example, by commissioning a choreographer to consult)" (Q9)*

The expected outputs of this research process are multiple, and one can find in the application general statements like, *"(...) to blaze new trails and thereby to come upon things we do not realize yet." (Q10)*, or *"(...) insights into how audience participation could function successfully in a stage context" (Q11)* as well as promises, such as inventing *"(...) a concept that could potentially serve as a model for a dynamic interaction dramaturgy" (Q 12)*, or the development of new interactive technologies which could be useful for future interactive performances, the dissemination of research insights in form of seminars at universities and in publications, as well as a better position of the Austrian art world through pioneering work and the production of innovative performances. The target group, which should benefit from this kind of research are people belonging to media- theatre- and performance art.

5.2 One Project, Many Perspectives. Heterogeneous Narratives on Knowing and Living in (St)Age of Participation

Going beyond the text of the project application, a much more complex world opens up when analysing the interviews of the project members. I felt reminded on the work of STS scholars like Latour and Woolgar (1986 [1979]) or Knorr Cetina (1981) who have argued that in order to account

9 *Name of the artist exchanged by BB*

for scientific activities texts are a rather limited source. In that sense, it is not surprising that the reflections of my interviewees are more complex and more heterogeneous than the research approach articulated in the application. What makes the interviews analytically interesting is them all being heterogeneous in their own way. When reading and coding the transcripts, I got the feeling that instead of one approach, one culture and one specific set of practices, the reflections of my interviewees lead into different directions and that many different narrations are shaping the way how living and knowing is understood in the (St)Age of Participation project. What stood out were the narrations being strongly tied to the background, the professional identity and the past experiences of the individual person. As a consequence, everyone is relating him or herself differently to the described frame in the application and for the different members different "epistemic living spaces" (Felt 2009) are opened up in this project.

In order to take that specificity of the project into account and show this heterogeneity, I will highlight in this sub-chapter the differences between the interviews, show the distinct ways how each of my interview partners describes the professional identity and motivation to work on the St(Age) of Participation project and how that is mirrored in the project in terms of involvement. In this latter regard, I summarise the different ways how they describe their activities, the relations to the local context, as well as what it means to do research and arts-based research.

Co-Director Futurelab/Project Leader (St)Age of Participation: Applying Creativity, Doing Arts-based Research, Establishing a Research Institution

The first person I want to describe is a long standing member of the Futurelab and currently co-director of this institution. In this position he is responsible for securing funding for the Futurelab´s activities as well as managing several projects as project leader. Based on this background he holds the position of one of the two a project leaders also in the (St)Age of Participation project.

Summarizing the reflections on his professional development shows that he has quite a distinguished history within the Ars Electronica, as he got already in contact with this institution before studying at a university. As one of the winners of the Prix Ars Electronica youth price[10], he could witness the Ars Electronica Festival for the first time in 1994, while still attending secondary school. Describing himself as someone who developed an interest in digital technologies very early, what he experienced at this Festival was for him what he called a *"very defining moment" (Q13)*. Seeing artists perform with computers and making the audience members in life performances interact with each other, he was especially surprised to realise *"(...) that one can make with technology something simple, and can move at the same time such a mass of people." (Q14)*. Furthermore, it was fascinating to him that all of this is happening in the context of a Festival dedicated to media art, which made him *"(...) start to*

10 Which was at that time honouring the work of people under 19 years, engaging creatively with digital media

question my concept of art". (Q15) Based on this experience, he decided to move from Salzburg to Linz to study at the local university and get in touch with the Ars Electronica. Being successful with his plan, he started working for the Ars Electronica as an guide in the museum and later also for the, at that time, young Futurelab, while studying Mathematics and Informatics. Having had several different positions, ranging from project member, key researcher to now co-director, he has been heavily involved in building and shaping the Futurelab, from the technical group maintaining the museum to a financially independent art and research organisation. Reflecting on the current situation of the Futurelab he says that it is a place which is even for him hard to define *"(...) because so many different things are happening" (Q16)*. However, he narrows the Futurelab down to a research institution where people with all different kind of backgrounds meet, and which can be understood as a *"(...) laboratory or place where something new should be created" (Q17)*.

Alongside this development he established his professional identity, in a rather fuzzy way, not related to a single discipline or field but to his border crossing activities in the Futurelab. Asked how he would describe his profession, he answered that this is for him a though question he had thought about already for quite a while. Because although he is working in the Futurelab in a research institution, it would feel exaggerated calling himself a scientist. So in case he is asked, he found a solution in saying student or expert. The first one because it characterises for him a searching attitude and the second one because he still can feel the connections to the fields he has studied. So although he does not know how to describe the field in which he is working in, he knows his background. In that sense, what he likes in particular about the term 'expert' is its Latin root *"exportare" (Q18)*, which he described as: *"Expert is someone who, exportare: to carry something into the world, who has a background in a discipline, has a strong standing there, and stimulates with his knowledge other disciplines, and vice versa." (Q19)*

His understanding of arts-based research and the (St)Age of Participation project is related to this personal identity, his position in the Futurelab and the understanding of what it is. Thus, in order to find out how he imagines doing research in (St)Age of Participation, it is first of all necessary to analyse how he imagines the research work done in the Futurelab, how he draws the boundaries to other research institutions, and what that means in terms of acquiring funding and acknowledgement for one's own work.

Rather than a clearly circumscribed definition of methods and theories or stories about producing facts, as articulated in natural science laboratories (Latour and Woolgar 1986 [1979]), he has a much more open way of describing the Futurelab´s activities. Labelling the work as *"applied creativity" (Q20)*, the core task of the members of this research institution is according to him to produce effects and to reach goals through using one's own creativity. The outcome of this work should be a contribution to society, *"(...) to a bigger picture, and should not be an end in itself." (Q21)*

Nonetheless, in order to do good research, it is not enough for him to just be creative. In order to reach an identified aim, to produce effects and to make a contribution to the world, creativity has to be applied in a structured way because otherwise there is the danger of getting nowhere.

In that regard, it is important for him to know from the beginning of a project *"(...) what is the starting condition, what is the starting point and what do I want to achieve" (Q22)*. Furthermore, it is necessary to define how to produce effects. Saying that creative practice per se should actually have no limitations, he claims that in order to get somewhere and make a contribution it is necessary to reflect about *"(...) your direction, your approaches" (Q23)* which he summarises under the term "*methods"*. Related to that *"scientific disciplines" (Q24)* can be an important part of the research process. Important for him is that the integration of scientific disciplines means to integrate methods and at the same time to integrate reflections on how this methods contribute to reaching the desired effects. In that sense scientific methods contribute to the research as to integrate them means for him to reflect on and structure the creative activity. In this regard especially the humanities and social sciences are an essential part for him as they have a strong relation to methods and a high degree of reflexivity.

In this research approach knowledge is produced through the observation of the produced effects and changes, as the observation makes it is possible to have a *"process of validation" (Q25)* of the effects and thus to know if the project and the defined methods have met the beforehand identified aims or not.

Although, due to the use of scientific methods and the validation processes, the work done in the Futurelab is for him actually close to scientific research, he identifies boundaries, separating the Futurelab´s activities from science. Talking about the disciplines he studied, according to his experience, a lot of times research is done for research´s sake and not in order to make a societal contribution. Furthermore, he identifies a difference on the level of research practices, as the scientists behave, as he calls it *"in thrall to methods" (Q26)*, meaning that methods are used not because they make sense in regard to a specific contribution to society, but because they have to be used in order to fulfil the demands of scientific routines. Compared to that, the work of the Futurelab is different as the methods are not used for methods sake, but reflexively in order to think about one's own practices and to reach a defined aim in a structured way. However, this approach is causing troubles for the Futurelab as a research institution. Because although they are using scientific methods, he explained that due to the Futurelab´s difference and especially because they are not acting as if they are in a thrall to methods and thus not according to the conventions of science, it is difficult to get recognized as non-university research institution, to acquire research money and to establish a position within the research world. Furthermore, he also experienced problems on institutional level because the work done in the Futurelab does not fit to the research categories as they are defined by official state authorities, making it impossible to get officially recognised as a research institution. In that sense the boundaries he draws have a reverse effect. Has Gieryn (1983) identified that "boundary work" is used

in order to secure resources, in the context of science it means for the Futurelab to not have access to available funding.

In this regard one story he told me about the first time he realised these boundaries can serve as an illustrative example of the way how he experiences the situation.

Describing the experiences he had with one media art installation the Futurelab was setting up in London, he also talked about possible research that could be done by using this art piece. The way how the installation worked was characterised by him as pretty simple; based on a camera recording the person standing in front of it and a screen where the recorded person could see one part of his or her own body in form of a Kaleidoscope. The surprising effect this installation had on a group of autistic children was that the children started to behave in a way never experienced by their carers. They started to *"(...) break out of the autism" (Q27)*, as he called it. Surprised by this effect on the children, the carers started to think together with the people from the Futurelab about ways to use this effect in the therapy of the disabled children. Together they planned to conduct a series of experiments to find out what kind of visualisations could be used to support the children, and to come up with tools that could become part of the therapy. In order to do so, and because for him these activities could also be seen as scientific research, they tried to team up with science, but without success. As he explained, the approached people in the field of informatics and medicine were not interested in supporting the project. For informatics the visualisations were too trivial and for medicine no common ground for establishing collaboration was given, because no scientific reason existed for them why the children would change their behaviour due to such an installation. Thus, it became impossible for him to pursue further research.

Having all of that as the ground he is positioning himself on, he is living in, and from which he can, respectively, due to the institutional limitations, cannot explore unknown fields (Felt 2009), arts-based research has a specific meaning to him.

Knowing this term since 2003 and being involved in several discussions evolving around it, he identifies arts-based research as an approach to research which is *"(...) very similar to the processes we are living in the Futurelab" (Q28)*. In order to understand why he identifies this similarity it is important to know that engaging in applied creativity and arts-based research are for him close to each other. This is possible because he understands art as creative activity, and thus in terms of doing research, the same structuring elements that can be used for creative practices, like the definition of a starting condition as well as the implementation of methods, can be used for arts. Due to art´s performative power, which he describes saying: *"(...) the power of shifting perspectives, that has for me always been the essence. And I´ve asked myself the question: What kind of shift of perspective? There are several: aesthetic, intellectual, emotional. And I think that this is the power of artworks, their essential power." (Q29),* doing art means also to trigger changes and effects and thus it can be

used to make a difference and a societal contribution. Thus art and its performative elements can be again combined with his research approach of applied creativity.

Furthermore, he reflects on the people who are working in this field as not necessarily interested in acting according to scientific structures, because *"(...) the self-conception of the people doing that does not necessarily lead to making a publication or having a track record." (Q30).* This makes arts-based research at the same time less thrall to methods and open to new ways of research.

Perceived from that perspective the PEEK funding is a chance to receive resources exactly for the kind of research that the Futurelab has already been doing for several years. Being furthermore strongly related to the academic world, it means for him that the available funding opportunities are not just another possibility to get money, but also to actively establish the Futurelab as a recognized non - university research institution in Austria. Furthermore understanding arts-based research as a new discipline it means that *"(...) you can position yourself very well in a new discipline, as co-designer of this discipline." (Q31)*. Thus, as identified by Latour and Woolgar (1986 [1979]), (St)Age of Participation is for him a possibility to get recognition and reputation. But not as it is the case in natural science laboratories, in order to produce facts and try to give the knowledge of the competitors an artefact-like status. Summarizing his reflections and relating them to (St)Age of Participation, the epistemic living space that opens up for him in this project is one in which making a societal contribution is important, and not so much becoming part of a scientific *"agonistic field"* as described by Latour and Woolgar (1986 [1979]: 167). Furthermore, a very open space is present in his reflections on arts-based research in which art production is the central driving force of doing research, which can be combined again with approaches from scientific disciplines. Summarizing his narrative, this is possible because for him art is able to produce effects and doing research does not mean to stick to one defined research field or a specific set of practices, but to be creative and use what is needed to produce effects, trigger changes and make a societal contribution. The boundaries he draws in this regard to creativity per se are related to what he calls applied creativity. That means, that in order to do research creativity has to be applied in terms of defining starting conditions and aims that should be reached through the creative praxis as well as methods how to do that. The boundaries to science are defined through the use of scientific methods; not in order to become part of a scientific discipline, but as a structuring mechanism of the creative practice. Additionally, do to research also means to produce knowledge about the way a societal contribution has been achieved and to what degree it has been achieved. In this regard reflections on the way how to achieve effects and the reflective validation of the produced effects, in terms of what has worked as planned and what not, are regarded as important.

In that sense to work on (St)Age of Participation, and thus to define approaches and ask research questions, to create performances, to find and implement interactive technologies and to reflect from artistic, technical and social scientific perspectives about the effects of one's own work means for him to apply creativity and to do arts-based research.

Regarding to the outputs of the project, his research understanding is reflected in two ways. On the one hand he identifies the potential for societal change, because investigating possible stage performances of the future has societal relevance as the stage is becoming a more and more important medium of exchange for people. On the other hand the openness and indefiniteness of his research understanding is reflected, as he said that in the context of (St)Age of Participation it is important that the people who are potentially interested in producing this kind of stage pieces, which he identifies as people working in related art fields, have the chance to benefit from the insights the project crew generates. However, how that is going to happen was for him at the moment of the interview an open question, and he saw everything from publications to the development of full interactive performances as a possible output.

Artist/Project Leader and artistic Project Manager and artistic Research Director (St)Age of Participation: Making Art, Doing Research, Securing a Position

The second member I want to reflect on is the independent artist, who has in the project the position of the second project leader and the artistic project manager and research director. Compared to the co-director of the Futurelab, he has quite a clearly circumscribed identity as artist, whereas artist means for him to be a director a composer and a media artist.

Characterising himself as someone who has many interests ranging from music to dance, theatre and the visual arts, he has always been open to and interested in working in different artistic fields as well as with new technologies. In this latter regard he is especially enthusiastic about computers, as they opened up new possibilities for him to produce more on its own, like music, video cutting, or visuals, and combine that again in performances he directed or other kinds of artworks. These possibilities are especially appealing to him as he is describing himself as hands on person, saying about himself that *"(...) I want to know how it works and I want to do it on my own, no matter what it is. (Q32)*. The computer allows him to have more art production steps in his own hands. It has been also the computer that related his work to interactive art pieces as he established contacts with other artists and people who could use these new media technologies on the level of programming, and with whom he created in the beginning of the 1990's art pieces which had interactive elements.

In this context he had also already collaborated with the Futurelab in the past, as this is for him an institution where a lot of know how in the field of new technologies is combined. And as he characterised it, the Futurelab is a place where he can collaborate with people who can do technologically highly sophisticated things, which he is not familiar with. This is especially important in the context of art productions of a larger scale because he needs an institution *"(...) where there are a lot of resources" (Q33)*, where there are people who understand computer programming also on the level of mathematics, and who already have experience in handling the newest media technologies.

Albeit he was in the field of new media art a very early artist, gained already international reputation,

and his work secured him a quite unique position, he is in a difficult situation right now. Looking 10 years back he was one of the few artists in the field of performance art who already had had experience in working with new media technologies, and also in producing interactive performances. But, as he explained, due to a growing professionalisation of the work related to digital media as well as an easier availability of these technologies, the use of new media technologies has nowadays almost become state of the art. Consequently, in order to maintain a unique identity as an artist, he needs to distinguish himself more and more from what is produced today.

Being in this difficult position, to be part of (St)Age of Participation means for him that he can work on a project in which something is developed and researched that is different to already existing new media art productions. Furthermore it is not surprising that the focus of the project towards interactive performance and audience engagement is especially appealing to him. Firstly it is related to his background, and dedicated to art production in a field where in terms of interactivity *"(...) really nothing has happened." (Q34)* and secondly, in regard to the expected outputs it allows him *"(...) to create a foundation for further performances to come." (Q35)*

Therefore, similar to the co-director of the Futurelab, and as described by Latour and Woolgar (1986 [1979]) his motivations are based on doing something that allows him to position himself in a field. But although there are these similarities, there are also differences between the co-director of the Futurelab and the artist, in terms of the relation to the local context and how the practices of doing research are described.

As it was already visible in the description above, collaborating with the Futurelab means for the artist first of all collaborating with an institution that is supporting high tech art productions. Although he is aware that in the Futurelab there are a lot of different activities going on, for him it is not so much the Futurelab as research institution, but the Futurelab as place with technological know-how that makes it an interesting place.

In terms of practices being part of an arts-based research project means also something different to him than to the co-director of the Futurelab. Asked about the research aspect of this project, he answered this question on the level of practices familiar to him. Saying that art production is for him always research, which he articulated in the interview: *"(...) in the arts it is always about research, no debate. You test material, you test technology, you test movements, you test hundreds of things. And you do always research, as you have a look for things like: what kind of possibilities are there, what is there already, what can I do etc. That is inherent to the system as soon as you start to do something, there is no alternative." (Q36)* But unlike the co-director of the Futurelab he does not describe art as research in terms of being creative and the production and observation of effects. For him the goal behind making art is more about self-expression, as he said: *"I absolutely want to have that one thing, that this special language that art has..., taking myself as an example, when working with dancers,*

then I want to say something that I can´t say otherwise. That I cannot write down, that I cannot explain why it is like that." (Q 37)

Having that understanding of producing art and of doing research, he is talking in regard to (St)Age of Participation less about applying creativity and the production of effects with social consequences. Being in the project in the position of a project leader as well as *"artistic project manager and artistic research director" (Q38)* to do research means for him that he is focusing his activities on the production of the artistic elements, such as the performances to be realised. In this regard, he explained there are some crucial elements which have to be taken care of in the context of interactive stage performance. For the artistic research director of such a project the first thing needed is an idea of how such a performance can look like and an identification of the right technologies that work for a bigger amount of people. Furthermore, planning a performance is challenging in terms of the dramaturgy because the right balance between professional performers and audience participation needs to be found. What he wants to avoid is either the performers or the audience being bored in such a performance. Thus the challenge for him is *"As soon as the audience contributes something then it has to be contributed in a way that the performers have something interesting to do at the same time. And they should be challenged. And not be bored because there is input from the audience, so to say not from the professionals on stage. And you have to interweave that into a performance, in a way that it works. That means that you have to think about what kind of audience activities make sense at a certain point in time. (Q38)*

In that sense, this project opens him up a research space in which art production practises are research practices. These practices are based on trying and finding strategies and technologies which help him to deal with the challenges of interactive stage performances, on learning by doing and the production of non-verbalisable outputs.

Furthermore, in the project he is able to do that in a field where nothing comparable has happened, which allows him to inscribe and position himself in the arts world. Related to that the outputs he associates with this project are public presentations of examples of how such a performance can look like, to make experiences with this new kind of interactive stage art pieces, and looking into the future, to use *"(...) what I have learned"(Q39)* in performances to come.

There are also further differences between the reflections of the co-director of the Futurelab and the artist. Compared to the co-director of the Futurelab, the artist's relation to arts-based research is less straight forward, as he does not describe arts-based research as being similar to his own research practices. Rather he is in this project in an ambivalent position as he feels the need for doing research practices that are not his own. Describing arts-based research as it is funded by the FWF as something very much related to the academic world, he identifies differences between his own way of working and the one demanded by academia. Because instead of art practices, for him research in the context of

academia is based on making theories, reflecting and talking about the world, instead of creating something. Translating this tension into the context of (St)Age of Participation, the PEEK funding was problematic as *"(...) two worlds collided. So to say the practical oriented art world, because it is most of the time practical oriented. As soon as you have to go on stage you need a result, on stage there has to be someone, and so on. And the scientific, the pure scientific research, where you actually just talk about the fact that someone has to be on stage." (Q40)*

He deals with this tension by defining boundaries and distinguishing between two ways of practising research. The first one is the research-through-art practice approach that he is doing, and the second one is the theoretical approach which he associates with the other members of the project. In terms of possible outputs of the whole project this situation leads to a bifurcation. On the one hand there are publicly shown art productions, through which´s preparation he can do research, and on the other hand he anticipates theoretical outputs, in form of presentations or publications, that are produced by the other members of the project.

Social Scientist and Author/Social Scientist and Writer (St)Age of Participation: Investigating Audience Participation, Developing Artistic Methods, Doing Arts-Based Research and Doing it not

The third project member I have interviewed has a background in the social sciences and has in (St)Age of Participation the role of a social scientist and writer. She gained working experience already in different contexts, ranging from professional journalism, publishing a book about identity construction in web based social networks to research activities in a design office and proofreading work for design researchers. Through these activities she also got in touch with members of the Futurelab, for whom she started to proof read texts and gradually began to work on projects as a sub-contracted concept developer and researcher. Apart from these activities she is also currently a PhD candidate at the University of Linz, investigating human – robot relationships from a social psychological perspective.

Having all these various experiences, she articulates her professional identity again differently to the already outlined members. The way how she describes this identity depends always on the actual situation and most of the time she finds it quite hard to find a satisfying definition for what she is doing. Therefore, her identity is far away from the clearly circumscribed identity of the artist. The way how she deals with this situation is to relate herself to the university based education and to describe herself as social scientist. As she mentioned, due to her PhD it is now also possible to say media psychologist, technology psychologist or robo-psychologist, if she finds that suitable in the respective situation. Furthermore, she also likes to add author, but again just if she has the feeling that this is appropriate. Although that looks at the first glance similar to the way the co-director of the Futurelab deals with this situation of having no clearly circumscribed identity, for me there is difference. Because unlike him, she does not relate her professional development and activities that strongly to the

Futurelab and to a specific research approach which could stabilise her position at least in relation to a local context. Thus instead of labelling here activities as Futurelab typical research, she told me that she summarises all of here activities under the umbrella of technology and society relations. Building on that, in the future she would like to see herself as a *"mediator between science and society"* (Q41) or as she also calls it a *"salonnière on the interface"* (Q42). That would allow her to combine here experiences in doing scientific research with her research work on technology and society relations, as well as with journalistic work.

Having this background and visions of the future, it can be asked why someone who is interested in science–society and science-technology relations is part of an arts-based research project? Is it for the co-director of the Futurelab the motivation to receive funding and recognition for the Futurelab´s research activities and for the artist (St)Age of Participation it is an opportunity to gain experiences and keep a position in a more and more contested art field, what is her interest in being part of an arts-based research project?

In order to understand that it is important to look how she narrates her relation to the context of the Futurelab as well as how she describes her interest in the project and the practices associated with it.

To be in a project conducted by the Futurelab means for her that she can work in a context that is not academia, which she describes as: *"(...) at a university you are partly quite strongly bounded to one discipline, and also the people that are around you doing usually similar things, or they have a background in a similar horizon of experience or horizon of knowledge." (Q43)* Compared to that she experiences the Futurelab as an open environment, in which people with different backgrounds meet. The work done there is for her based on research and development activities in the area of new technologies, and as she describes it, the activities encompass conceptional meetings in which projects are discussed from different perspectives, the development and creative application of technologies, as well as reflections and observations about the impacts that these technologies have on the people using them, as well as on art and society in general. The outputs of this way of doing research are heterogeneous and range from installations in the field of media art, creative technological applications for industry partners, collaborations with partners from the private sector, in which members of the Futurelab reflect with business partners on creative processes and future socio-technical developments, as well as projects done together with universities. So working for the Futurelab gives her the freedom to collaborate with all different kind of people, to gather a lot of different impressions, and to work and do research in an institution in which she can reflect on society – technology relations. The latter allows her also to integrate her background in social sciences into the projects and at the same time to act in a context which is less focused on rather narrowly defined questions and approaches. Comparing that with her PhD work she said that *"(...) you don´t have to do always things that produce on a quantitative level crystal clear results." (Q44)* and that in the

Futurelab she has more freedom to produce all different kind of outputs.

In regard to the content of (St)Age of Participation she understands the focus of this project as *"(...) it is about finding out how the audience can in the future be better integrated in stage performances that are strongly entangled with technology. For me this participatory approach is very much in the foreground." (Q44)* Saying that she shares with the other project members an interest in the questions of integrating a Web 2.0 lifestyle into art performances and possibilities to integrate the audience as active participant in such a performance, she can work on an issue which she describes *"totally interesting"* and *"really up to date"(Q45)*.

Taking the interest in the local context as well as in the actual project, to be part of (St)Age of Participation means for her that she can do research in an environment as open and interesting as the Futurelab as well as working on a project that is dedicated to society-technology relations.

Being in the project in the position of a writer and social scientist allows her furthermore to participate in a beneficial way as she can practice in accordance with her professional identity. Describing the work she has done so far as writing the project application as well as press releases and texts for the webpage, being involved in conceptualising the project, and producing and summarising first research results, she can be part of that project as an author as well as researcher. In this latter regard she even said that she has included *"(...) a quite strong social scientific component" (Q46)* into (St)Age of Participation.

Elaborating further on this component, she explained that for her it is interesting to focus especially on the interactive aspects of the project and the participants. In this regard she articulated that she is doing research on the involvement of the audience members in interactive performances and when and how they have the feeling of being part of it. Related to that she mentioned the flow theory and more generally theories from the field of positive psychology as approaches through which she can understand the involvement of people into activities such as co-creating a performance. In more detail, she wants to know which kind of patterns and elements of a performance can trigger a flow feeling, which means for her a feeling of becoming part of an art performance, being immersed into the process of art creation and having the feeling of *"a creative self-expression." (Q47)* Furthermore, she can also articulate a research question: *"Are there correlations between a degree of participation and flow experience?"(Q48)* This question can be operationalised along the flow theory and the involvement of the participating people measured through questionnaires. Apart from that she included this approach in the concept meetings of (St)Age of Participation and made suggestions regarding a flow experience and the design of interactive performances and articulated this approach also in one paper that got published about the project.

What these considerations show, is that to do research in the project is for her related to the field of social psychology and to practices like formulating research approaches and research questions, operationalising them and handing out questionnaires. Furthermore it is connected to the project as she

is focusing her research activities on the involvement of audience members of into a stage performance, and it is also related the open environment of the Futurelab in which she does not have to work according to all the conventions of the field that she is doing her PhD in.

Participating in the project in that certain manner does not allow her 100 percent to be part of the world of arts-based research. Reflecting in the interview on the arts-based research frame of the project, and in particular that to do arts-based research means to produce knowledge through art practice what she is doing as research practice is for her not arts-based research. Because as she explained: *"I am cheating partly a bit, as I enter (the project – BB) with my questionnaires, and so on. But it should be like that, that somehow, if you imagine it now on a fundamental level, the painter through painting a picture, in the process, should suddenly arrive at an insight that is also relevant for other people." (Q49)*.

In that sense she is in a similar situation as the artist, as the practices she is using as research practices are not congruent with her understanding of arts-based research. Still, how she deals with that tension is different to the artist, and the way how she resolves it comes in two ways.

First, through the relation to the local context. Understanding the Futurelab as *"natural context" (Q50)* of arts-based research activities she describes the practices of conceptualising a project from different perspectives, finding new and creative ways how to deal with technologies, and reflecting on the impacts as research activities. Compared to arts universities in which doing research is for her a rather new phenomenon related to the `Bologna Reform´, the Futurelab is a context in which research and development activities in a creative and artistic context have been lived since the very beginning of the institution. Consequently, to work in the Futurelab and become part of the creative process lived there, in a way that the other project members have the feeling that they can profit from her work, means for her doing arts-based research. In that sense practising arts-based research is activities such as conceptualising the (St)Age of Participation with the others, coming up with ideas, formulating approaches, integrating them in the performance as well as reflecting on them. Perceived from that perspective, her understanding of doing arts-based research is similar to that of the co-director. But unlike him, she articulates the research done in the Futurelab in a less formalised way, not as *"applied creativity"* and also not focused on the establishment of a research institution. Instead, she sees it more in terms of working in an artistic context, being creative, open and oriented towards research activities. Also the way she relates herself as part of (St)Age of Participation to this context is different. While the co-director is speaking about the combination of different approaches and how to structure that, she relates herself to the Futurelab as someone doing research in relation to the social sciences and as someone being interested in science technology relations.

Secondly, she orients herself along the outputs and a possible contribution of her research activities to the arts world, saying *"(...) what brings me back down to earth, for me personally, is that maybe these*

insights are often something like methods for the artistic discipline. Things that can be further processed and applied, by people doing similar things, and which work in similar art fields." (Q51) In this regard she articulates that it is also important to not just reflect about the project, but also to make the generated knowledge, for example publications in journals or presentations and online communication, available to others who are interested in (St)Age of Participation.

Summarizing these considerations, in this project a space is opened up for her that is due to the context of the Futurelab open to all kinds of creative practices and research approaches, due to the project focused on participation in stage performances and through the arts-based research frame at the same time connected to on an *"artistic discipline"*. The way how she deals with this situation is that she adapts her interest in society – technology relations and related to that social scientific research practices to the local context as well to the project and her understanding of doing arts-based research. In that sense, to do research in (St)Age of participation means for her to pursue her own interests in science - technology relations, to understand participation and interaction from the perspective of social psychology, and to use theories, ask questions and hand out questionnaires in order to do research. But it also means to contribute to the project as she can give the other project members input from the perspective of the social sciences as well as to do arts-based research as her research can lead to the development of artistic methods. All of that is done in an environment that is more heterogeneous and open than academia as well as the original breeding ground for arts-based research projects.

Researcher and Manager Futurelab/Technical Head and Leader Project Team (St)Age of Participation: Providing Technology, Supporting the Project, Not being in the centre of Arts-based Research activities

The fourth and last member I want to present has a distinguished history within the Futurelab, similar to the co-director. He started to work there already while studying media technology and design at an university of applied sciences, and spent his whole career life in the Futurelab. First he worked as a project member and researcher in a collaborative project between a university, a private company and the Futurelab, in which a project team of the Futurelab developed together with the other partners software frameworks for digital media technologies. Later, he started to work as a key researcher for interactive technologies, leading projects that dealt with the development of all kinds of different human – computer interaction projects, ranging from new developments in the game industry, like brain computer interfaces, to technologies visualising the human anatomy.

Thus, his identity is strongly related to Futurelab. Asked about his profession he straight away answered this question with the positions he occupied in there; ranging from being a project member to someone in a central research position and at the very moment a management position.

In this way he is also related to the (St)Age of Participation project. He is working in this project as a

member of the Futurelab and has the role of the technical head and leader of the project team. In this position, he is arranging the project meetings, taking part in them and also taking care of the technological issues and demands. In this regard he describes his work focused on the Microperformance/Dramatrugical Experiment and preparing the venue for it, as well as being responsible for the organisation of team meetings and getting the work process started.

Asked about the most interesting parts of this project for him, he answered that working in the context of stage performances is a new experience for him and due to this newness; he gets a lot of novel impressions. The project provides him with many new experiences, for example the technological set-up of a performance and seeing the project from the perspective of an artist, which involves choreographing a performance, casting dancers, and integrating audience into the performance. Unlike the artist who describes his work as research practice per se or the social scientists for whom doing arts-based research means to be part of the creative process and to develop methods for the artistic discipline, the technical head relates his practices in a different way to arts-based research. For him actually the artist and the social scientist build the centre of the research activities. The reason for ascribing the research activities to these two actors is the division of labour he associates with arts-based research.

Narrating doing art and doing science as different practices, similar as described by Leach (2011), artists are perceived to be subjective and scientists objective. Due to this difference the central people in this arts-based research project are for him the artist and the social scientist. The first, because for the technical head the task of the artist is to do the actual research in the context of arts-based research. The advantage of having an artist instead of a scientist in charge of producing knowledge is that due to their subjective approach artists can potentially find out something about the world that would not have been possible otherwise. Or as he articulates it, through art it is possible to arrive at insights, about that people can say *"(...) with conventional scientific research we would have never arrived there" (Q52)*. From this perspective it makes sense to put research questions *"(...) in the hands of an artist, who subjectively reflects these questions." (Q53)* The imagined task of the scientist is then to objectify these subjective results in order to make them available and understandable for others. The imagined relation between art and science is that as he calls it, art produces the *"raw material" (Q54)*, which is processed further by science. In the context of (St)Age of Participation this means that the artist maybe finds out something new about participation and interaction and through the social scientist, these new findings can be objectified and presented as research results.

The consequence of this understanding is that in the context of an arts-based research project he is not in the centre of the research activities and belongs not directly to the the knowledge production process.

5.3 Common Elements: A Trading Zone, a Boundary Object and Shared Criteria of Observation

What I showed in the preceding sub-chapter is how heterogeneous the reflections of my interviewees were. Moreover, I have shown the many ways in which they described their backgrounds, motivations to work on the project, the roles they are having as well as their practices and relations to the world around them, and the contexts of arts-based research and the Futurelab.

In this third part I ask: How can such a project work? Taking the heterogeneity into account it is hard to imagine how these people can collaborate and do research together. Where Knorr Cetina (1999) has highlighted the scientific cultures of molecular biology and high energy physics working as densely ordered epistemic cultures, in (St)Age of Participation it seems that the heterogeneous considerations and the individual approaches define the project, as well as the knowledge produced in it. It is even harder to imagine that there are forms of coordinated activity as actually all of the project members told me that they had a hard time in finding out if they are doing arts-based research in an appropriate way. What they saw as a challenge was the lack of examples, which could guide their practices, articulated by the social scientists in regard to the funding institutions: *"What is funny about these funding institutions... I have been several times present when there were discussions on arts-based research by official institutions, yes it is somehow a fashionable topic at the moment, and when asking the people: what is actually a prototypical project for that (arts-based research - BB), most of them can´t come up with something, or it is complicated." (Q55)*

In order to give an answer to the question of how such a project can work as collaborative effort, I draw attention to, as I call them, the common elements of the project. Apart from the rather heterogeneous reflections, my interviewees also talked about collaborative work, such as writing the project application together, the common conceptualisation, preparation and conduct of the first Microperformance/Dramaturgical Experiment as well as about collective reflections on the outcomes of this first performance.

As an outcome, of these activities there were elements in the reflections which cannot be reduced to the individual approaches but belong to a shared understanding of working and doing research in (St)Age of Participation.

The central position in these reflections was given to the Microperformance/Dramaturgical experiment, therefore I will start with a short description of the idea behind these performances and how the performance/experiment already conducted at the time of my interviews looked like. In doing so, I will also show hat the Microperformances/Dramaturgical Experiments are the actual core of the whole project and describe how the different approaches and research activities of the project members were coordinated and collaboration organised through the already conducted performance/experiment. Furthermore, I want to highlight that although different cultures are meeting in this project, the narrations of the interviewees give some first hints of the emergence of shared

forms of knowledge production, which are not reducible to the different backgrounds of the members.

5.3.1 The Microperformance/Dramaturgical Experiment. Coordinating Action and Belief and Creating an Object that Binds

Characterised in the application as research method, and positioned after the artistic and technological planing, the Microperformance/Dramaturgical Experiment is part of the research process, and labelled as the activity in which the developed technologies and dramaturgical concepts are tested publicly.

The basic idea behind the Microperformance/Dramatrugical Experiment is to create multiple small versions of a performance, the Microperformances. By small performance, the project members mean a performance, which duration does not exceed 20 minutes. Consequently, the Microperformance does not involve the whole dramaturgical arc of suspense, which would be expected form a full-fledged stage piece.

The experimental part comes in as these small versions allow for audience participation, which, as described by the interviewees, usually in a performance is not the case. In that sense the potential participants from the audience are perceived as something alien to a stage performance, or as one member said, as a *"virus" (Q56)* that is inserted into a normally closed environment. As the interviewees explained, the big challenge is that such a performance has to be good according to artistic criteria as well as in terms of participation. Nevertheless, to experiment means also something else. It contains also the meaning of a research tool, through which new insights into interactive stage performances can be generated.

During the three-year funding period, three different Microperformances/Dramaturgical Experiments are planned to be performed publicly, one each year, and each individual performance takes place two to three times. The idea behind this structure is to experiment with different forms of interactive performances, to translate the results from one performance into the design of the following one, and also to generate something that can be presented publicly.

Before I start to outline the connections of the different members to this kind of performance/experiment I give a formal description of the first Microperformance/Dramaturgical experiment which happened in the summer 2012. The intention is to give the reader an impression how such a performance looks like, and also to give information which will be needed afterwards in order to understand my analysis[11].

The first Microperformance/Dramaturgical Experiment took place in the so called Deep Space in the Ars Electronica Centre. In this context, worth mentioning is that the Deep Space itself is actually not

11 This description is based on the reflections of my interviewees as well as on the first paper that got published as an outcome of the project.

dedicated to stage performances. It is a venue similar to a cinema room, built in order to project videos and images, and thus organised in such a way that there is a big projection wall and an area in which the audience can sit or stand and watch the projections. The difference to a cinema is that the Deep Space is equipped with high resolution 3D projectors, allowing displaying three dimensional images as well as videos or movies. Normally, this space is used for public purposes: to show stereoscopic media art works or movies, special pictures in ultra-high resolution, for example of outer-space photography or famous paintings, or it serves as a public lecture space, where presentations can be displayed on the projection wall.

As already mentioned, the first Micro-performance/Dramatrugical Experiment was conducted in this special space in the summer 2012 and visited in total by more than 150 people, each three performances having approximately 50 visitors.

The Micro-performance/Dramaturgical Experiment was structured along five parts. In the first one, the audience members could use their smart-phones to write text messages and to display them on the projection wall. The team of the Futurelab developed an app for this purpose, which the visitors had to install on their smart-phones to send the texts to the projection wall where they got displayed.

In the second part, two dance performers entered the Deep Space, positioned themselves in the front of the projection wall and started to interact with the text on the wall. The dancers read some parts of these texts, and furthermore, the bodies of the performers were tracked by two Kinect cameras, which related their movements to the words on the wall. As a consequence, the words started to change their position in accordance with the movements of the dancers.

In the third phase, the audience members were invited to interact with the performers on stage, this time through sound. Here the participants could create sounds on their smart-phones, again through a specific app which appeared on the smart-phones´ screen in form of a character keyboard. Each of the characters created a specific sound related to the already beforehand composed music, which was then together with related visuals played and displayed in the Deep Space.

The fourth part was non-participatory and got described as choreographed dance final, and in the last part, the audience had the chance to try the body tracking system without the dancers.

One Performance/Experiment and Various Approaches

Summarizing the reflections of my interviewees on this first Microperformance/Dramaturgical Experiment, I got the impression that rather than just being one part of the project as described in the application, this hybrid construction of a performance and an experiment is the central element of (St)Age of Participation. It is the knot in which all the participating people can relate their different backgrounds and motivations, the central object of the research activities as well as the resistor that made the individuals rethink their positions and shape their approaches in active engagement with it.

Drawing now attention to how the project members reflected on the first

Microperformance/Dramaturgical Experiment, the way how this performance was created is described as a collaborative effort in which all of the project members participate, and where possible interaction technologies, dramaturgical scenarios and considerations of how such a piece can be designed are discussed and developed.

Furthermore, the relation of the dramaturgical and interactive elements to the defined research questions is an issue of concern, and in the conceptual meetings the project members discussed together how the Microperformance/Dramaturgical Experiment could be related to these questions. The way how this conceptual phase works got described as rather open, as this quote of a member shows: *"The conceptual phases are... I mean you can imagine it like that, all the people who have time on a certain date are sitting around one table, and then we simply discuss: what could we do, what is of interest, also related to the questions. (Q56)*

As the project members furthermore explained, the rehearsals started immediately after developing the first ideas. In the rehearsals, the artist together with members of the Futurelab and two dancers prepared a Microperformance/Dramatrugical Experiment as a real live event and presented it in the Ars Electronica Centre in front of and in interaction with the audience. Here again the form of the rehearsals was characterised as open and subject to constant change until the day of the premiere and as the central element all the project activities got dedicated to.

What is remarkable about this kind of performance is that it allows the different people to coordinate their different understandings of working in the project and of doing research with each other.[12] Analysing how the different members talk about the first Microperformance/Dramaturgical Experiment shows that everyone describes it form a different perspective, and furthermore that it works for everyone as an object the research activities can be related to. In order to give the reader an impression of how that worked I will now shortly summarise the different perspectives.

For the co-director of the Futurelab such a Microperformance is one example of how research is done in the Futurelab. Describing it as a *"starting condition" (Q57)* and a way to structure the creative research activities in which artistic, technological, and social psychological approaches are combined, he understands this performance/experiment as research as it is done in the Futurelab. Also the aim of this performance can be understood from his research approach of triggering change through creative praxis, as it is for him about creating events which trigger, due to their openness for interactivity, a potential shift of the perspectives of the audience members, from passive visitors to active participants. Furthermore, it is possible for him to get research insights on what works in this regard and what not because the performance and the acting audience members can be observed. Thus similar to his

12 Please note that I have not included the reflections of the technical head. As I am interested in narrations on doing research it would not have been fruitful to include the reflections of someone ascribing the research activities to other actors.

general descriptions of applied creativity and the power of art, also in the case of the Dramaturgical Experiment/Microperformance research means for him inventing something that can trigger a change of perspective and validate the effects of the artistic and the creative work going into the design of the performance. In regard to the Microperformance/Dramaturgical Experiment this validations is narrated as a change of perspective, from the performance/experiment as something that has to be created to an object of study: *"(...) you start asking these research questions, you ask this Microperformance simply the research questions, and through observing it, or through asking questions, you change it. And then this Microperformance becomes to some extent, then it is not anymore the art piece, but actually, I don´t know... a test tube. Where you can simply do things, where you can do analysis. Or you can observe certain things: does it work, does it not work? Is this meaningful or is that not meaningful, does that point exist or not? (Q58)* Finding answers to these questions is imagined similar as in the project application along reflections from the different perspectives of art, technology and social science. The way how he narrates the possible outputs of the project is also related to his understanding of doing research, as he identifies a societal contribution in the creation and analysis of the Microperformance/Dramaturgical Experiment, saying that *"Stage art is an essential element in the everyday life of today´s people" (Q59).* In this regard he further elaborated that their project has societal relevance as it contributes to the development of potential stages of the future, through giving examples in form of the Microperformances/Dramaturgical Experiments and by reflecting about what has worked and what not in those performances/experiments.

For the artist, the first Microperformance/Dramaturgical Experiment meant to create in collaboration with members of the Futurelab at least a small version of a performance, in which he has the main responsibility for all the artistic elements. In practical terms this means that:
he has composed the music, delivered a first concept how such a performance can look like in terms of the involvement of the dancers, the aesthetic appearance of the whole piece, as well as in terms of ideas how the interaction with the audience members can work in such a setting. Furthermore, to work on the Microperformance/Dramaturgical Experiment means to do artistic research work and dealing with questions like: *"How does that look like? What kind of light do we need? Where do we put all that stuff? Where is the Kinect positioned? How do we use the space? What should the dancers perform, what are they doing? (Q60)*
He understands these activities from the `research-through-art practice´ perspective, which means that during the rehearsals he learns about new technological tools which can be employed to conduct such a performance and to choreograph a participatory performance, in which technology, the professional actors as well as ideas about participation are combined. Furthermore, the Microperformance/Dramaturgical Experiment means for him a possibility to present an interactive performance publicly and thus to come up with a new artwork and to position himself in the art world

with that. However, he is also doing research through the public presentation as he can observe the live performance and especially the reactions to the performance. Thus, similar to the co-director of the Futurelab, he also understands the performance/experiment as an object he can observe. Asked what it means for him to do a Dramaturgical Experiment he told: *"I mean every performance is an experiment for me. It is insofar an experiment as it is just one option out of many. And you have to decide for one. It is an experiment because you believe in it, that it works, but you get the proof just as soon as you go in front of an audience, and you get feedback, or in front of critics, and so on." (Q61)*
Comparing this quote with what the co-director of the Futurelab has said, what is again obvious here is both having a different understanding of the object. Whereas, the co-director talks about the object in terms of a shift of perspective, the artist focuses more on observing the reaction to the art piece and what he learns while creating it.

For the author and social scientist, to work on the Microperformance/Dramaturgical Experiment means an event in which design she can include her ideas, and on the other hand, a central object of her social psychological research activities. Understanding the Microperformance/Dramaturgical Experiment as an experiment in which the beforehand developed interactive components are tested, she can focus especially on the integration of the audience members into the performance and try to investigate the involvement of the members from the perspective of the flow approach. In order to do so she handed out her pre-prepared questionnaires to the audience, on the occasion of the Microperformance/Dramaturgical Experiment. Here the fact that the first performance happened three times was for her important *"(...) as you have on three evenings such a performance, and altogether more than 100 visitors take part, then it is possible to observe that with questionnaires: Okay are there correlations between the degree of participation and flow experience, for example." (Q62)*
Doing this research in such a close relation with the actual performance, allows her to furthermore understand the knowledge generated as contribution to the world of art. Compared to the other two project members, this presents another way of understanding the Microperformance/Dramaturgical Experiment as an object.

The Microperformance/Dramaturgical Experiment as Trading Zone and Boundary Object
Summarizing these reflections the Microperformance/Dramaturgical Experiment can be seen as an central, rather flexible element that emerged out of the collaboration of the project members and the combination of their different approaches, which is due to its complexity hard to grasp analytically. Analysed from that perspective the Microperformance/Dramaturgical Experiment allows, as Galison (1997) calls it, to coordinate action and belief of different cultures. Thus the Microperformance/Dramaturgical Experiment can be understood as a "trading zone" (Galison 1997: 781ff), in which a pidgin combining the terms dramaturgy, experiment and performance is created, and

artistic and research demands are mixed. In this trading zone, the project members can meet, negotiate about joint activities with having simultaneously enough freedom to pursue their research approaches, which base on their different motivations, backgrounds and understandings of what it means to do research and arts-based research.

Nevertheless, the Microperformance/Dramaturgical Experiment is more than just a trading zone. It contains itself as an object. As already present in the analysis of the different approaches, to work on such a performance does not just mean meeting the other members in a hybrid zone or space that allows everyone to pursue his or her own research activities. Additionally, the members of the project have described the Microperformance/Dramaturgical Experiment as an object which can be used as focus point of the different research activities. From that perspective, the Microperformance/Dramaturgical Experiment can also be seen as a "boundary object" as defined by Star and Griesemer (1989) through which the different knowledge production approaches can be coordinated and focused at the same time on one object that is, *"(...) both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites."* (Star and Griesemer 1989: 393)

But this concept creates again a problem. Understanding the Microperformance/Dramaturgical Experiment as a trading zone and a boundary object creates an image as if in this project strictly separated and established social worlds meet. My interpretation of the interview material however does not fully support this assumption. The reason is that being part of the trading zone and doing research on it as an object means for some of the members that they have to change their practices and cannot work according to their cultures or social worlds of origin straight forwardly anymore. Thus working in (St)Age of Participation does not mean that everyone can straight forwardly practice according to the different research cultures the individual members are ascribing themselves to, but to transform the research practices in relation to the project and to adapt them to the Microperformance/Dramaturgical Experiment. Furthermore, there are reflections on forms of knowledge production present in the interviews that cannot be reduced to the different approaches. The aim of the last chapter of my analysis is to show what that means.

5.3.2 From Coordinated Action to Shared Elements of Practising Research

(St)Age of Participation – A Project Shaping Practice

The first problem I have identified with understanding the Microperformance/Dramaturgical Experiment as "trading zone" (Galison 1997: 781ff) as well as "boundary object" (Star and Griesemer 1989) is that both concepts assume the different people who are gathered in the trading zone and/or grouped around a boundary object are doing that as part of an established culture, in which they can `go back´ without a problem. This means that the researchers who are part of either the trading zone or

the boundary object can practice in the zone as well as around the object according to the dynamics of their culture of origin.

However, in the case of (St)Age of Participation the people working on the Microperformance/Dramaturgical Experiment are not just part of a trading zone in which they practice different kinds of research approaches related to a boundary object. To be part of the project and to work on the performance/experiment means also that they are part of a project that shapes their activities, and opens up a space for practising that is not reducible to any of the backgrounds. Thus, the project and particularly the Microperformance/Dramaturgical Experiment is something they share, in the sense that everyone is part of it and everyone is also part of its structure and dynamic. The consequences are for each of the members different ones.

For the co-director of the Futurelab to work on the performance/experiment means that he has more freedom to reflect about what he is doing and to be less pressured to produce something in time. Comparing the way he is working in (St)Age of Participation with the way he is working in Futurelab´s projects related to the private industry or commissioned art productions, he finds working on the Microperformance/Dramaturgical Experiment different because *"(...) you can explore more and you also have this luxury of, especially of validating, of reflecting, of discussing about it, of doing research. I mean usually there are simply projects, and that has nothing to do with the amount of budget, but simply, at a certain point they say: performance in three months, and you are so goal-oriented towards it that you cannot afford this luxury. But if you have suddenly the possibility to work on something for three years, to work on a question, and you know it. (Q63)*

For the author and social scientist to do research on the performance means that she is not doing research according to the "epistemic culture" (Knorr Cetina 1999) where she got the research practices from. Because although she is doing social psychological research in terms of theoretical and empirical work, it does not mean that she is doing social psychological research according to the epistemic culture of social psychology. Asked about the differences of her work on the Microperformance/Dramaturgical Experiment to her PhD related work she said: *"Yes there are many differences, what do you want to hear? The people are not randomised or assigned to conditions, they can simply join and take part. No, actually, we have, starting with that, we did not work with hypotheses, you know, my background is in a very quantitative context, yes, in my other research. Ahm, so actually I really can´t compare that." (Q64)*. She also identified a lot of differences in the research processes. According to her, there were constant changes to the way how the performance was set up and related to the research questions. This meant for her that she also had to adapt her research approach to a, compared to PhD based research activities, open way of how the research questions got formulated and addressed. Reflecting in this regard on the first Microperformance/Dramaturgical Experiment, she told me that she took this performance rather as point of departure along which she oriented her research activities to come. So unlike in her work at the university, where she has to

define approaches beforehand and then do empirical research, in the context of (St)Age of Participation she permanently reconfigures her approach in engagement with the progress of the project. For example, although she had formulated an approach already before the first Microperformance was conducted, it was still very helpful to witness the first performance live, as *"(...) sometimes you need these evenings that you witness: how is that actually, and then there appear new ways how one can actually think about that" (Q65).* In that sense she is not relying with her practices on a full *"machinery of knowledge construction"* (Knorr Cetina 1999: 3) but is using some parts of this machinery and applies and transforms them in the context of the project in active engagement with the object she studies. So instead of a whole machine, rather some parts of it are used.

For the artist, to work on the project means a need to deal with limitations as he cannot realise whatever he wants. Instead of spending the available money for things needed to produce a stage performance, he has to find arguments why certain elements, like stage light, are necessary for this kind of a research project. Furthermore, he mentioned that at occasions like the preparation meetings of the performance/experiment he has to think how what he is doing can speak to the research approach of the project. Therefore, compared to other art projects he has done, in (St)Age of Participation the emphasis on, as he calls it *"theoretical"* and *"reflexive"* work, is much higher. In that sense, he has to deal permanently with *"limitations"* and find ways to still do arts-based research as art practice. On the other hand, he sees an advantage in this tension. For him especially the reflexive and theoretical work of the other project members is interesting because it opens also new perspectives for him, which can potentially be included in his future projects.

Reflection as Joint Practice and Shared Criteria of Observation

The second problem is based on epistemic considerations and related to what the sociologist David Stark has written about the "boundary object" (Star and Griesemer 1989). Describing it as an approach that can be understood as a *"theory of misunderstanding"* (Stark 2009: 19), he highlights that the boundary object is positioned in the middle of a heterogeneous world, and that different actors can work on one boundary object, without getting in touch with the world of the other actor.

Although that is partly true for my case, it would feel wrong to reduce the (St)Age of Participation project to a bunch of people misunderstanding each other. What I want to highlight is that apart of the individual reflections on research practices, all of the interviewed team members have described another research practice which I have not analysed yet: the practice of joint reflection. Conducted right after the Microperformance/Dramaturgical Experiment, the project crew came after each performance together and reflected on it as a group. The process of reflection itself was described in such a way that the writer and social scientist asked the people questions about the performance; what they liked and disliked about it and what worked for them and what not. The answers were recorded at

the same time.

These reflections were guided by two structures. First, the questions were asked along the separate categories of art, technology and social aspects and the people were approached to talk about the performance from the perspective of the specific role they had in it. Second, there was a set of criteria which allowed the different members to orient their reflections along a shared perspective. And exactly these criteria made it possible to produce knowledge about the participatory aspects of the performance and on what worked well and what not. In order to give the reader an impression of those criteria I have summarised them as follows:

- Firstly, there has to be a balance between Challenge and Skill. The participants in the performance should feel challenged and motivated to do something, and at the same time the given challenges have to be built so that they fit the skills of the individual participants. In the context of the project that means for example only using interactive technologies which are intuitively understandable for the audience members because otherwise the audience would be challenged by finding out how the technology works and could not concentrate on the actual performance. In regard to the observation of the performance this means to reflect if the right technologies got chosen and if the challenges and skills were balanced.

- Secondly, it is important that the participants understand Cause and Effect of their participation. If that does not happen, the participants cannot recognize their own contribution, which is understood to be demotivating. In regard to the performance it means that the participants should recognize what they have done and the effects their activities have on the performance. In how far that has happened can again be observed by the project members

- Thirdly, it is important to observe and reflect if embarrassing situations for the participants got produced in the performance. To avoid those situations is important because this would lower the willingness to participate, and thus no one should be forced in the performance to do something in front of others he or she does not want to do.

- Fourthly, in order to enjoy taking part in the performance there should be a certain balance between activity and passivity, as the participants should have time to watch what is going on in the performance but at the same time have the chance to get active.

What the actual category means, is then again based on the individual perspective. One good example which demonstrates this is the case of the so called character keyboard.

On a general level, the members have realised through observing the performance that in the part

where the character keyboard is used, it would have been necessary to limit the number of participants. Because when too many people were using it at the same time, such a high number of characters got displayed on the projection wall that it was not possible to identify anymore who triggered what kind of outputs, and how that is related to the Microperformance. Therefore, the relation between cause and effect got lost.

Relating that back to the different positions, for the social scientist and writer this means that no flow feeling can appear because as long as there is no understanding of cause and effect of one's own activities*"(...) then it is not possible to get involved, yes. And consequently, one has of course not the feeling of creative self-expression." (Q66).*

For the artist, this means that the flow of the dramaturgy is not working as it should. From his perspective in order to make the people enjoy the performance it is necessary the give them the feeling *"(...) it is me. Not a mass of people in which I disappear, as soon as I do something and I don´t know, was that me, was that my neighbour, were that the other ten back there, no idea." (Q67)*

Lastly, for the co-director of the Futurelab it meant that using the technology in such a way will never trigger a change in perspective of the participants.

From an analytical perspective these practices of reflection are close to what Knorr Cetina (1999: 168) has described as a *"collective epistemic subject"* in high energy physics. Because unlike the boundary object, collective knowledge production practices in form of reflections along the shared criteria are present through which it is possible to reflect on and assess the involvement of the audience. The difference to Knorr Cetina´s (1999) approach is that the epistemic subject of reflection is not a part of an established epistemic culture as the members of the project do not refer to a pre-established set of practices this epistemic subject could be part of. Instead, they created the collective epistemic subject out of the collaboration of the different individuals and the combination of their different approaches.

Understood from that emergent perspective, it is no surprise that the first written output of the project, a publication in which the structure of the first Microperformance/Dramaturgical Experiment got related to the shared criteria, did not get published, for example, in a journal for social psychology or in an art magazine. Where the paper was submitted, was a journal which is according to the interviewees focused on the topics of creativity and technology and open for approaches to research not based on one discipline. Furthermore although the writing work was mainly done by the author and social scientist, the paper was seen as a joint achievement, and all the contributors to the Microperformance/Dramaturgical Experiment got mentioned as authors.

6. Conclusion

6.1 (St)Age of Participation. An Emergent Culture of Knowledge Production

This thesis had two interconnected aims. The first one was to relate STS concepts[13] to the new closeness of art and research[14] and to find out how knowledge production in art and research can be understood and analysed as culture and practice as well as related to bigger societal developments. The second aim was to use the STS concepts as an analytical background and to conduct a first empirical case study on one art and research project. In this case study I have investigated the (St)Age of Participation project in which research is done on interactive stage performances. This project[15] is currently financed by the Austrian Science Fund´s programme for arts-based research and conducted by an independent artist and members of the art and research laboratory Ars Electronica Futurelab. Interviewing the different members of (St)Age of Participation, the aim of this research was to understand knowing and living in this particular project from the perspective of the practitioners, and how their considerations are tied to the local context as well as the discourse on arts-based research. The outcomes of this investigation have shown that everyone narrates his or her involvement in the project differently. Based on the different backgrounds, identities, and relations to the local context every project member described his or her motivations to work on the project, to practice research and to produce knowledge as well as to do arts-based research in an other way. But the study also showed that despite these differences the members of (St)Age of Participation managed to do a project as collaborative effort, that they created the central elements of the project, the so called Microperformances/Dramaturgical Experiments together, and that these activities lead also to forms of knowledge production that cannot be reduced to the individual perspectives.

Looking back at the moment when I have started to analyse the interviews, these results came as a surprise to me. The literature on arts-based research[16] and the rather disciplinary descriptions of it, and also the STS literature on densely ordered epistemic cultures (Knorr Cetina 1999) or established settings such as natural science laboratories (Latour and Woolgar 1986 [1979]; Knorr Cetina 1981) let me to expect coherent reflections on arts-based research, which are shared among the members and regarded as typical for doing arts-based research. But instead of coherent narrations on similar position, knowledge production practices and aims associated with the project as well as with arts-based research, I was told four individual and rather personal stories on what it means to be part of and do research in the (St)Age of Participation project.

13 For an overview of the used concepts see chapter 3 of this thesis
14 See chapter 2 of this thesis
15 For an overview of the case and its contexts see chapter 4.1.1
16 See chapter 1 of this thesis

For the co-director of the Futurelab doing research in St(Age) of Participation meant to do what the Futurelab has always been doing; to apply creativity, to achieve effects through artistic/creative practice, to define methods for achieving these effects, to reflect on the effects and through doing so, to make a contribution to society. For the artist, doing research in an arts-based research project meant to do research through art practice; to produce art, to make new experiences in regard to interactive stage performances, to develop tools, which can be used in future projects and to observe how the produced art pieces are experienced by the audience and art critics. Furthermore, it also meant to him to work together with others who do research based on theorising and reflecting art practice instead of actually producing art. The social scientist and author, described doing research in the project as doing research in the open and heterogeneous environment of the Futurelab, which she understands as an original breeding ground of arts-based research. In this environment she uses parts of the epistemic culture she is working in as a PhD, in order to do social psychological research on the interactive aspects of the project. She understands that as a contribution to the local context, the world of art as well to her own interest in technology-society relations. Finally, for the technician it meant to be not in the centre of the research process as in arts-based research the scientist and the artist are the actual core of the research process, but to support the realisation of the project.

As can be seen, opposite to a single structure guiding the reflections, each member narrated their involvement in the project, the used research practices and what it means to do arts-based research differently, and thus for everyone a different epistemic living space (Felt 2009) opened up from which unknown fields can be explored. Comparing the reflections of my interviewees with knowledge production activities in laboratories or the clearly circumscribed epistemic cultures, (St)Age of Participation has a distinctive cultural form. On the one hand, what separates it from the knowledge production culture of the natural science laboratory described by Latour and Woolgar (1986 [1979]) is that the aims of the practitioners in St(Age) of Participation cannot be reduced to the desire to create order out of disorder, leading to the production of facts, and the motivations of the project members to making a career in a scientific field. On the other hand, the narrations of the interviewees cannot be summarised under the umbrella of a clearly circumscribed epistemic culture (Knorr Cetina 1999) and driven by the dense *"machineries of knowledge construction"* (op.cit.: 3). This is because instead of a clearly distinguishable and densely ordered processes of knowledge production, different research approaches meet in (St)Age of Participation that are tied to the experience and background of the person articulating it and related to the shared aim of doing the Microperformances/Dramaturgical Experiments. Thus these reflections show almost no external reference points to for example established epistemic subjects or an *"object relations regime"* (Knorr Cetina 2007: 366) that could be accounted for as being part of an already established epistemic culture.

Having the heterogeneity of the individual approaches to knowledge production mind, it is not

surprising that exactly the Microperformance/Dramaturgical Experiment got established as a trading zone (Galison 1997: 781ff) in which the members can work together, and relate their different interests and understandings of practising research to each other.

Furthermore, through working on the Microperformance/Dramaturgical Experiment the members of that project established the trading zone out as an object of observation, that servers as a boundary object (Star and Griesemer 1989), being the central object the different research approaches can get focused on. Nevertheless, as I have showed in the analysis, neither the trading zone nor the boundary object are satisfying concepts in order to account for the research activities of the project as my interviewees described them. Although both of them help to analyse certain characteristics of the project, they cannot account for the full complexity of the (St)Age of Participation project and the way my interviewees imagined knowledge production in the project.

The problem with trading zone is that, as described by Galison, in a trading zone the members of different sub-cultures of a scientific discipline come together. However, the members of St(Age) of Participation do not come from different sub-cultures within on scientific discipline but have professional backgrounds in all different kinds of contexts. These backgrounds can furthermore not be reduced to established areas like art or science. Except of the artists, my interviewees described their identities, and the world they belong to, as heterogeneous. The co-director of the Futurelab for example saw himself as a member of an art and research laboratory working on the borders of art, science and technology and the social scientists and author as a mediator between science and society. Related to the different self-understandings also the research practices imagined by the interviewees cannot be reduced to different established cultures or sub-cultures of knowledge production. Other than that the imaginations are based on an understanding how research is done in the local context of the Futurelab, taken from an established epistemic culture and transformed in engagement with the project, or related to descriptions of art practices as research practices. Furthermore, according to Galison to work in a trading zone means that the members of different sub-cultures meet in this zone but can after the meeting `go back´ to their sub-culture of origin, in order to continue working there. In my case although this is partly true, participating in the (St)Age of Participation project means for the project members that they have to adapt their practices to the Microperformance/Dramaturgical Experiment and to develop ways of doing research in close engagement with this performance experiment. Thus this performance/experiment is not just a place to meet and to exchange, but is also shaping practices and imagination how research can be done.

The problem I have identified with the boundary object is on the one hand similar to the trading zone. Instead of an object that serves for different groups as the central knot in coordinating different research activities, developing the object together and working on it means also to adapt to it. This means that the object does not just serve as an object for the different research activities, but that the members are changing their research practices through engagement with the object. Apart from that,

the theory of the boundary object cannot account for knowledge production practices that are shared among the members of the project and cannot be reduced to the different approaches. Thus what cannot be understood by using this concept is that the Microperformance/Dramaturgical Experiment did not just serve as a boundary object, but also as an object that triggered reflective practices as joint epistemic practices. These reflective practices of knowledge production are shaped by shared criteria, which allow the individual members to generate knowledge together, and at the same time to relate the research outputs back to their individual perspectives.

In order to account for these epistemic practices the "collective epistemic subject" (Knorr Cetina 1999: 168) can serve as analytical concept as the categories are shared by the project members and the reflective practices done together, and not just used by a single individual.

However, in regard to the collective epistemic subject another problem arises. While Knorr Cetina describes this subject as part of a densely ordered epistemic culture, the narrations of the different members of St(Age) of Participation were not shaped by reflections on a common and densely ordered set of practices. Thus, what I have termed `shared criteria of observation´ cannot be understood as an indicator for an epistemic culture but as a product of the collaborative activities of the different project members and their active engagement in the creation of the Microperformance/Dramaturgical Experiment.

Summarizing these findings, compared to the understanding of knowledge production as culture in singular as maintained by the laboratory studies (Latour and Woolgard 1986 [1979], Knorr Cetina 1981), cultures as clearly separable epistemic cultures (Knorr Cetina 1999), and also other than the heterogeneous cultures within one discipline (Galison 1997), a different, an emergent form of culture is present in (St)Age of Participation. This emergent culture is shaping practices and bringing forth new forms of producing knowledge, and is thus not reducible to the individual members of the project. At the same time the culture would be different if other people would have joined the project. Consequently, the shared object as well the reflexive practices and categories can be seen as a product of the collaboration of the different individuals that got drawn together as well as a product of a form of culture that emerged out of the coordinated activities.

(St)Age of Participation as Mode 2 Phenomenon?

Relating now this rather hybrid project, in which different approaches and logics meet and social scientific as well as artistic concerns are close to each other, to the "Mode 2" (Nowotny et al. 2001; Gibbons et al. 1994) approach, I want to raise the question if this emergent culture could be understood as an instantiation of Mode 2 structures?

Given all the details of the project, from my perspective the answer is no, for sure not in all its details. Unlike argued by Nowotny et. al (2001) and Gibbons et al. (1994), the activities of the project members cannot be reduced to the contextualisation of scientific knowledge production. Although

there are parts of a scientific epistemic culture (Knorr Cetina 1999) integrated into the project in the form of a social psychological approach, the activities of the project members cannot be reduced to adding a new context to the discipline of social psychology. Instead, the activities in (St)Age of Participation are similar to what Born and Barry (2010) have written about Beatrize da Costa´s project. Instead of a straight development towards a more contextualised science, in the project, different trajectories meet, which are brought into the project through the different members and their approaches to doing research. Considering the many heterogeneous narrations of my interviewees and the way they reflected on the boundaries between their own and other practices, the way these trajectories meet cannot be reduced to a general tendency towards Mode 2 knowledge production. Furthermore, the analysis showed that some of the members see still strong separations between art and science, whereas others understand doing research in (St)Age of Participation in a very open way. This also shows that relating different approaches to each other does not necessarily lead to blurring borders of different societal spheres as claimed in Mode 2, but that the people related the different spheres differently to each other.

On the other hand, there are aspects of blurring societal borders and a tendency towards hybridisation of different approaches present, as well as an increasing orientation towards the application and social impact of research. Given this, there are some Mode 2 elements in the project. For example the co-director of the Futurelab saw it important to do research which can be accounted for in terms of its contribution to society and the social scientist and author stated not simply wanting to do research in an established epistemic culture but in a more open way in which different considerations are seen important. Furthermore, new forms of knowledge production in which different research approaches and rationales meet got created through the collaborative work of all of the interviewed members in one project. Thus, similar as described in Mode 2 different logics are related to each other and lead to knowledge that probably would not have been produced in that way within a closed scientific discipline. Although I think that these elements can be interpreted as `Mode 2 tendencies´, it is important to take into account that the hybridisation does not work in front of a background of the blurring borders of science and society. As already shown in the context of the trading zone (Galison 199: 7781ff) not only members from different established cultures meet in the St(Age) of Participation project, who are relating the practices of a clearly circumscribed culture of origin to each other. Instead, the project brings together a lot of people who are already working in contexts not reducible to clear borders of for example art and science and who have already identities not equitable with being a scientist or being an artist.

Except of the artist, the members of (St)Age of Participation have different identities, ranging from working on the interface of science and society to member of an institution which defines itself through transdisciplinarity and creativity. The same is true for the cultural settings, in which the people position themselves. The social scientist and author has as a background already a mixture of different

activities and relations to fields ranging from academia to journalism. Also the members of the Futurelab are, although relating themselves to this institution, in an in-between situation as they are working in a space which they define as open, based on various research and development activities, and at the same time as not belonging to an established academic research culture.

Therefore, instead of understanding (St)Age of Participation as an outcome of blurring societal borders, the different identities and relations to the heterogeneous contexts show that the blurring borders have arrived on the level of individual identities and within institutions. Taking that into account is crucial to understand the dynamics of the project. Would for example the social scientist and author have worked according to the structures of the epistemic culture of social psychology, would her identity be the one of a social scientist, who wants to make career within academia, her involvement had been different. Probably she would have acted in a much more distanced way and been less involved in the creation of the whole project, or if so, the project would have been shaped in a way she could use the research results for publications which get accepted in social scientific journals. If on the other hand, the Futurelab would not be understood as an open context, in which different approaches are not just accepted but even welcomed, probably the way how the co-director of this institution had described the research practices would have been different. Consequently, he would have opened up another space for action. In that sense, what is present in this project is that research and knowledge production is not just shaped and driven by blurring borders, and an increased contextualisation of science, but already driven by individuals and institutions which have hybrid identities.

6.2 The Discourse on Arts-based Research as Performative Element

Apart from the Microperformance/Dramaturgical Experiment, the reflections of my interviewees had also something else in common; they were all related to arts-based research. The analysis showed that being part of a project funded within an arts-based research framework does something to the practitioners. In their narrations the project members had reacted to the imaginations and demands of how arts-based research has to be done as they are articulated on a theoretical level[17] and in the context of the funding programme[18].

Again, the way the discourse on arts-based research structured the narrations of the project members cannot be reduced to one straight line. Instead, the project members are all integrating it into their approaches and interpreting it in a different way. For the artist, to do arts-based research in a project funded by the FWF means that he is confronted with a concept of research that is belonging to the

[17] For examples see chapter 2.2 in this thesis

[18] For examples see chapter 4.1.2 "*Arts-based Research in Austria and PEEK"*

academic world and with research practices such as theorising, reflecting and asking research questions. In relation to that he positions his research approach, which is based on practising art. Being part of an arts-based research project puts the social scientist and author in a difficult position. Understanding arts-based research on the one hand as knowledge production through art practice, the research practices she is using in the project and describing as belonging to the social sciences are for her not arts-based research, and thus she is in a situation in which she is part of an arts-based research project but at the same time not actually doing arts-based research. On the other hand, she can be part of (St)Age of Participation through working in a context that naturally practices arts-based research and through being part of the creative process happening there as well as through producing insights leading to the development of artistic methods. For the co-director of the Futurelab to be part of an arts-based research project meant to receive funding and academic recognition for the creative and social effect-driven research work of the Futurelab, whereas in relation to arts-based research he understood doing art as creative practice producing effects. Through this arts-based research funding it is also possible to inscribe the Futurelab in a new research field in which outputs are more valued through their social impact and not through disciplinary norms of science. Furthermore, the form of funding opens up a space for him where it is possible to reflect more, to ask more questions and do better planning work. Lastly, for the technical head, working on an arts-based research project means that the central research activities of the project are based on the practices of the artist and the social scientist and not on his own.

Related to the theoretical frame this means that in the project the discourse on arts-based research got integrated in an idiosyncratic way into the individual epistemic living spaces. Similar as described by Knorr Cetina (1981: 37ff), who drew attention to the local meaning of methods and theories in laboratories, the discourse on arts-based research got a local meaning, whereas local means a particular meaning for the individual members, and consequently for the design of the whole project and the culture that emerged out of it. But compared to what Knorr Cetina (1981) and also Latour and Woolgar (1986 [1979]) have shown in the lab studies, my case shows a different relation between theories about doing research and the research practices. While the STS scholars argue that there are on the one hand theories and common assumptions of what science is, and on the other hand, there is the world of science as practice which does not have to do much with the theories, in my case the theories and assumptions shape the emergent research culture.

Thus compared to the theoretical descriptions, introduced in the sub-chapter on arts-based research and in the summary of the situation of arts-based research in Austria, this analysis has also shown that rather than mirroring or describing the ongoing activities in arts-based research, this theories frame the activities of the practitioners and open up certain spaces for research as well as close down others. In that sense, the discourse of arts-based research is part of (St)Age of participation as it makes the members to reflect about their own practices, to position themselves to it as well as find ways how

their practices can be integrated into their understanding of doing arts-based research.

Tensions, Problems, Uncertainties:

This influence of the arts-based research discourse can also produce tensions, problems and uncertainties. Writing that, I do not want to argue that being part of this project just means to experience disadvantages, the case is rather the opposite. As I have tried to show, all of the members have good reasons to participate and expect profit from the project. Nevertheless, there are especially two components, which make the lives of the project members complicated.

The first component is the absence of a discourse on practice of arts-based research. While all the members had some ideas how arts-based research is or is not to be done, at the same time, they complained about the funding institution not providing them with examples of how good arts-based research should look like. This indicates that there is a lack of concepts and examples of how the rather theoretical considerations about arts-based research could be integrated into local practices. So what is missing is a discourse on practice. Consequently, if arts-based research should be positioned as a distinguishable field, it is necessary to start to talk about practices and outputs and to come up with examples how arts-based research can look like.

Secondly, the sometimes problematic relation the members articulated to arts-based research, in terms of being not sure if one does arts-based research or not, of perceiving limitations, or of not being part of arts-based research at all, shows that the current discourse on arts-based research makes it for some of the project members difficult to relate their own practices to it. On one hand, this shows that in a context in which identities become fuzzy, creativity and art are close to each other, and art is not perceived as closed system in which only artists can participate, the introduction of a notion of research that is related to rather distinct ideas of practising art and doing research in a disciplinary way makes it difficult for the practitioners in hybrid contexts to relate their identities and practices to this understanding or research.

On the other hand, the closeness of arts-based research to academia also meant for the artist that, research practices, which he does not perceive as his own, become suddenly necessary in doing arts-based research, and that he is confronted with limitations, as resources have to be invested in the realisation of these other practices.

6.3 Arts-based Research as Emergent Culture of Knowledge Production? Two different Scenarios and many open Questions

I want to dedicate this last sub-chapter of my conclusion to the question what I can say about arts-based research on a more general level.

Is it for example possible to conclude that arts-based research is to be understood as an emergent culture of knowledge production because that is the case for (St)Age of Participation? Are Dramaturgical Experiments and Microperformances typical for an arts-based research project? Can I assume other projects funded by PEEK showing a similar degree of emergence in regard to knowledge production cultures? Is the discourse on arts-based research shaping the conduct of research in a similar way also in other projects?

From everything I have learned about STS and the importance of identities, practices and their relation to contexts, as well as taking into account that arts-based research is in a lot of countries still a young phenomenon, I assume that in other contexts arts-based research takes other forms, produces other outputs, and that different project members imagine knowing and living in arts-based research differently. At the same time, I think that although no Microperformances/Dramaturgical Experiments are to be found in other projects and maybe also not the same degree of emergence is present, the openness, heterogeneity, the uncertainties and tensions as well as reactions to the discourse on arts-based research are very likely to be not only part of (St)Age of Participation.

Taking that as a background, it is interesting to think about potential developments of arts-based research and what they mean for practitioners and actors such as funding institutions. Doing that I do not want to give suggestions in which direction the development should go, but think about two possible scenarios and related questions. In the first scenario I imagine that arts-based research works, as described in my case study, as an emergent culture of knowledge production, discuss what such a culture allows for but also what the related difficulties might be and raise open questions connected to this development. In the second scenario I imagine that `closing mechanisms´ occur in which boundaries are set and in which doing arts-based research is more narrowly defined. In this regard I will raise again open questions that come a long with a more `defined´ version of arts-based research.

Taking my findings on (St)Age of Participation as point of departure for the first scenario, I would like to ask the question what if what I have observed in (St)Age of Participation is also true for other arts-based research projects, and what if the condition of arts-based research is like that.

In this first scenario, arts-based research would work as an emergent culture, as (a) space(s) in which people with different backgrounds form trading zones, boundary objects and cultures of knowledge production that emerge in these collaborations. Furthermore, this would be a space in which very much is possible, a lot of different approaches can take place, heterogeneous projects and new forms of knowledge production become invented on large scale. Arts-based research would be also similar to what Born and Barry (2010) have shown for art-science, a category that is present for funding institutions, policy makers and practitioners, but that is in its constitution very heterogeneous and in which different trajectories meet. Furthermore, it would be probably also a space in which the uncertainty does not disappear, in which it would still be hard to get an idea how arts-based research

should be realised in practice, and in which questions will remain, such as: What can be accounted for as arts-based research and what not? How to realise arts-based research projects in practical terms? How can the participants create attachments to arts-based research and how could possible outputs look like? In this regard a second set of open questions would probably be related to the quality of the work done in arts-based research: If there is a lot of freedom and heterogeneity, what does it mean to do good arts-based research? How can different research projects be related to each other? This goes down to questions such as: How to judge the quality of a project application in order to award funding, and how is it possible to evaluate the quality of the outcomes of a project?

Thus the big challenge in this first scenario is that every project has to be judged against its own criteria, but at the same time there needs to be found a way to talk about practices, quality and relations of research projects, in order to provide orientation for the practitioners and to make decisions about funding possible.

The second scenario is that `closing mechanisms´ start to emerge, setting boundaries for arts-based research and developing criteria of what it means to do good arts-based research. The consequence of this development would be that the practitioners have to adapt to the boundaries and criteria in order to get access to arts-based research. Furthermore, arts-based research would probably work in a more structured and focused way, which would make it easier for practitioners to find orientation and ways to realise arts-based research in practice as well as to create attachments to it.

Due to the closeness of arts-based research to academia, art universities are the likely institutions to define the boundaries and criteria for arts-based research. This could mean that in art universities, arts-based research approaches become developed, taught to students, and practised in projects. Furthermore, funding institutions providing the financial resources such as the FWF will play in this regard a role and be important actors in making certain forms of knowledge production possible.

In this second scenario the open questions are: How will the boundaries of arts-based research look like and when is something accepted as arts-based research and when not? Who can do that? Is it understood as an *"(...) academic research form on its own"* (Borgdorff 2012 [2010]: 53), in which methods and theories are defined in a disciplined way and as belonging to art fields like painting, sculpturing, etc.? If so, how are they defined? Are community structures present, in which one's work is judged as well as accepted or rejected by the respective community? Are there also education structures present, in which people have to attend arts-based research master and PhD programmes in order to become accepted as arts-based researcher? If arts-based research works in a disciplined way, what is the position of more heterogeneous contexts such as art and research laboratories? As in these labs art and creativity are close to each other, disciplinary boundaries are actually not that important, and identities cannot be reduced anymore to single definitions, such as art-based researcher, can they still be part of arts-based research?

All these open questions show that it is hard to say in which direction arts-based research will develop. Taking furthermore into account that these questions stem from two possible scenarios, and that the development of arts-based research can take different routes, it is impossible to make predictions. However, what those scenarios should highlight is that the definition and content of what arts-based research is is not carved in stone. Furthermore the scenarios should show that different developments open up different spaces for research, but close down others, and produce challenges as well as possibilities. From the perspective of STS it is important to be aware of the different contexts, identities, practices and meanings related to arts-based research by the practitioners.

Taking now my case study again as an example, analysing the project members narrations showed that knowing and living in arts-based research is imagined in various heterogeneous ways and also that the discourse on arts-based research, as it is articulated in books and in the context of funding programmes, got included in these imaginations. Thus, theories do not necessarily mirror the realities and practices of the people living and knowing in an arts-based research project. Instead, they become part of the research spaces inhabited by the practitioners and shape their possibilities for action. Thinking about the future development of arts-based research, it is important to be reflective about the ways of theorising arts-based research, and the assumptions that are part of these theories, as this influences the way how knowing and living in arts-based research is made possible, and thus is part of the lived research culture(s).

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8. Abstract/Zusammenfassung

Abstract:

Since the late 1960s a growing number of initiatives have related art and research in various ways to each other. In the context of art-science, artists and scientists are supposed to exchange viewpoints, develop projects together or work on a better public communication of science; in art and research laboratories innovative products and new forms of knowledge should be produced; whereas in arts-based research, art practices are understood as knowledge production practices and an academic form of research.

Although all these developments are accompanied by theories and debates about potentials, dangers and possible outcomes, what remained rather unclear and under-researched so far are the lived realities of the practitioners working in art and research.

To address this gap, the present thesis draws on the results of a case study on an arts-based research project currently financed by the Austrian Science Fund and conducted by an independent artist and members of a transdisciplinary art and research laboratory.

The analytical background of this investigation is based on theories and concepts of Science and Technology Studies (STS), an interdisciplinary field analysing the multiple relations of science, technology and society, which are adapted to the context of art and research in this thesis. Using a person centred approach, the case study focused in particular on the *"epistemic living spaces"* (Felt 2009) inhabited by the practitioners, analysing how the project members imagine their personal relation to the project, its social organisation and how they can produce knowledge in such a context and the possible spaces for doing research these imaginations open up. Furthermore, this approach is interested in how these considerations are related to the local context of the transdisciplinary art and research laboratory as well as to the discourse on arts-based research.

The outcomes of this investigation show that a lot of heterogeneous identities, aims and imaginations of doing (arts-based) research as well as uncertainties are guiding the practitioners understanding of knowing and living in that particular arts-based research project. Additionally will be shown in this thesis how out of this heterogeneity a local research culture emerges that can neither be reduced to the individual perspectives and nor be explained though the existence of an established knowledge culture in arts-based research.

Zusammenfassung:

Seit den 1960er Jahren hat eine wachsende Anzahl an Initiativen Kunst und Forschung auf die unterschiedlichste Art und Weise zusammengeführt. Im Kontext von art-science sollen KünstlerInnen und WissenschaftlerInnen gemeinsam unterschiedliche Blickwinkel austauschen, Projekte gemeinsam Entwickeln oder an einer verbesserten öffentlichen Kommunikation von Wissenschaft arbeiten; in Kunst- und Forschungslaboratorien sollen innovative Produkte und neue Wissensformen generiert werden; und im Rahmen von künstlerischer Forschung werden Kunstpraktiken als Wissensproduktionspraktiken und akademische Form der Forschung verstanden. Obwohl diese Entwicklungen von Theorien und Debatten über Potentiale, Gefahren als zu auch erwartende Resultate begleitet werden, sind die Erfahrungen derer die in diesen Bereichen Arbeiten bisher nur sehr spärliche erforscht worden.

Die vorliegende Masterarbeit versucht einen ersten Beitrag zu einem besseren Verständnis der gelebten Realitäten der PraktikerInnen in diesem Bereich zu leisten und präsentiert die Resultate einer Fallstudie über ein künstlerisches Forschungsprojekt, das zur Zeit vom österreichischn Fonds zur Förderung der wissenschaftlichen Forschung finanziert wird und von einem freischaffenden Künstler und Mitgliedern eines transdisziplinären Kunst- und Forschungslabors durchgeführt wird.

Der analytische Hintergrund dieser Forschung basiert auf Theorien und Konzepten der Wissenschafts- und Technikforschung (Science and Technology Studies – STS), einem interdisziplinären Feld das die vielfältigen Beziehungen von Wissenschaft, Technologie und Gesellschaft analysiert, die an den spezifischen Kunst und Forschungskontext dieser Arbeit angepasst wurden. Durch einen personenzentrieten Ansatz fokussiert diese Arbeit auf die „epistemic living spaces“ (epistemischen Lebensräume) (Felt 2009) der MitarbeiterInnen in diesem Projekt und analysiert wie diese ihre Identität, Wissensproduktionspraktiken und Vorstellungen über Zusammenarbeit in Bezug zu dem Projekt beschreiben und welche Möglichkeitsräume der Forschung diese Reflektionen eröffnen. Darüber hinaus interessiert sich diese Arbeit dafür wie diese Überlegungen zu dem lokalen Umfeld des Projekts als auch zu dem Diskurs über künstlerische Forschung in Beziehung gesetzt werden.

Die Resultate dieser Untersuchung zeigen, dass viele heterogene Identitäten, Ziele und Beschreibungen der (künstlerischen-) Forschungspraxis als auch Unsicherheiten das Verständnis vom Leben und Wissen in dem untersuchten Projekt anleiten. Darüber hinaus wird gezeigt wie aus der Heterogenität der unterschiedlichen Zugänge heraus eine lokale Forschungskultur entsteht, die nicht auf die individuellen Perspektiven reduziert werden kann, aber auch nicht durch das Bestehen einer etablierten Wissenskultur der künstlerischen Forschung zu erklären ist.

Annex I: Original Quotations[19]

“sehr prägender Moment” (Q13)

“... dass man mit Technologie so was simples machen kann, aber so eine riesen Masse bewegen kann” (Q 14)

“..wo ich angefangen habe meinen Kunstbegriff zu hinterfragen”. (Q15)

“...so viele unterschiedliche Dinge stattfinden” (Q16)

“...Labor oder Stätte an dem Neues geschaffen werden soll” (Q17)

“Experte ist jemand der, exportare: hinaustragen, ist halt jemand der aus einer Disziplin kommt, dort ein starkes Standing hat und mit seinem Wissen andere Disziplinen befruchtet, bzw. vice versa. “ (Q19)

“zu einem großen Ganzen und soll kein Selbstzweck sein” (Q21).

“...was ist die Ausgangsbedingung, was ist der Startpunkt und was will ich eigentlich erreichen” (Q22)

“...deine Richtungen, deine Ansätze” (Q23)

“wissenschaftliche Disziplinen” (Q24)

“Validierungsprozess” (Q25)

“methodenhörig”(Q26)

“...aus dem Autismus ausbrechen” (Q27)

“...sehr ähnlich an den Prozessen ist die wir eigentlich im Futurelab sehr gelebt haben, in dem Ganzen” (Q28)

“Die Kraft der Perspektivenverschiebung, das war immer das Wesentlichste und ich habe für mich mal so die Frage gestellt: welche Perspektivenverschiebung und da gibts halt mehrere: ästhetisch, intellektuell, emotional. Und ich habe mir immer gedacht, dass das die Kraft der Kunstwerke ist, also die wesentliche Kraft.”, (Q29)

“...von dem Selbstverständnis der Leute die das tun, ist jetzt nicht eine Publikation zu machen, ist jetzt nicht einen Track Record zu machen.” (Q30)

“...dass du dich in einer sehr neuen Disziplin sehr gut positionieren kannst, als Mitgestalter dieser Disziplin” (Q31)

“...ich möchte wissen wie das geht und ich möchte es auch selber tun, egal in welcher Beziehung das ist” (Q32)

“...wo es große Ressourcen gibt”, (Q33)

“...wo noch wirklich fast nicht passiert.” (Q34)

19 Quotations of the project application are not included as it was written in English. The same holds true for quotes that got already narrated by my interviewees in english.

“...dass ich Grundlagen schaffe für andere Performances die ich später machen kann” (Q35)

”...in der Kunst ist das immer ein Research, das ist überhaupt keine Debatte. Du probierst ein Material aus, du probierst Technologie aus, du probierst neue Bewegungen aus, du probierst hundert Sachen. Und du machst immer einen Research in dem du schaust was für Möglichkeiten gibt es, was ist schon da, was kann ich machen usw. Das ist systeminhärent wenn du irgendwas machst, es geht eigentlich gar nicht anders” (Q36).

“Also ich will absolut immer nur eines haben, dass diese speziellen Sprachen die Kunst hat, also wann ich das jetzt gerade bei mir nehme, wann ich mit Tänzern arbeite, dann will ich damit was sagen was ich nicht sagen kann. Also was ich nicht niederschreiben kann, was ich nicht erklären kann warum das so ist.” (Q37)

“Also es muss sozusagen wann das Publikum was beisteuert dann muss es so beigesteuert sein, dass die Performer in der Zeit sollen was interessantes zu tun haben in derselben Zeit. Und gefordert sein. Und nicht eher gelangweilt sein, weil der Input vom Publikum kommt, also nicht sozusagen von den Profis auf der Bühne. Und das muss man halt so verweben in eine Performance, dass es dann auch funktioniert. Das heißt man muss sich immer überlegen, was macht zu einem gewissen Zeitpunkt überhaupt Sinn, dass das Publikum täte.” (Q38)

“...was ich daraus gelernt habe” (Q39)

“....da ein bisschen zwei Weilten aufeinander getroffen sind. Sozusagen diese praxisorientierte Kunstwelt, denn die ist meistens praxisorientiert. Also du brauchst nachher ein Ergebnis, wenn du auf die Bühne gehen musst, muss auf der Bühne jemand sein und so weiter. Und die wissenschaftliche, rein wissenschaftliche research, wo man eigentlich nur darüber redet, dass jemand auf der Bühne sein muss.” (Q40)

“Mediatorin zwischen Wissenschaft und Gesellschaft”(Q41)

“Salondame in dem Schnittbereich” (Q42)

“....auf einer Uni bist du teilweise schon recht in einer Disziplin verhaftet und auch die Leute die rund um dich sitzen machen normal auch ähnliche Sachen, oder kommen aus einem ähnlichen Erfahrungshorizont oder Wissenshorizont.” (Q43)

“...man muss nicht immer Sachen machen die jetzt auf einer quantitativen Ebene zum Beispiel total klaren Output bringen.” (Q44)

“... es geht darum herauszufinden wie man in Zukunft Publikum besser einbinden kann, in Bühnenperformances, die ziemlich stark mit Technologie verbunden sind. Also für mich steht dieser partizipative Ansatz wirklich stark im Vordergrund.” (Q44)

“...total interessant” und “..wahnsinnig zeitgemäß” (Q45)

“(...) eine recht eine sozialwissenschaftliche Komponente.” (Q46)

“eines kreativen Selbstausdrucks”(47)

“Gibt es Zusammenhänge zwischen Partizipationsgrad und Flowerleben?” (Q48)

“Ich schummle schon teilweise ein bisschen weil ich dann wieder mit meinen Fragebögen und so hineinkomme, ja. Aber an sich sollte es so sein, dass irgendwie, wenn man sichs jetzt ganz basal

vorstellt, dass der Maler durch das Malen eines Bilder, im Prozess, plötzlich zu Erkenntnissen kommt die aber auch für andere Menschen relevant sind." (Q49)

"natürlicher Kontext" (Q50)

"...was mich ein bisschen mehr auf den Boden holt, für mich persönlich ist, vielleicht sind diese Erkenntnisse oft auch so etwas wie Methoden für die künstlerische Disziplin. Dinge die dann wieder weiterverarbeitet und angewandt werden können, von Leuten die so ähnliche Dinge machen, die sich in ähnlichen Kunstfeldern aufhalten." (Q51)

"...mit klassischer wissenschaftlicher Forschung wären wir da nie hingekommen" (Q52)

"...in die Hände eines Künstlers der subjektiv diese Fragen reflektiert." (Q53)

"Werkstoff" (Q54)

"Weil, also das Lustige ist ja irgendwie bei diesen Förderinstitutionen... Ich war halt ein paar Mal dabei wenn jetzt da irgendwie von offizieller Seite über künstlerische Forschung gesprochen worden ist, is ja auch ein bisschen ein Modethema, und wann du die Leute dann fragst: was ist denn jetzt ein prototypisches Projekt dafür, dann wissen die meistens nichts zu nennen, oder es ist schwierig auf jeden Fall." (Q55)

"Die Konzeptphasen sind wirklich relativ... Also kann man sich so vorstellen, da sitzen alle Leute die Zeit haben an dem Termin an einem Tisch herum und dann wird einfach diskutiert, was könnten wir machen, was ist interessant, auch auf Basis der Fragestellungen." (Q56)

"Ausgangs- und Startbedingung" (Q57)

"...und du fangst auf einmal an dich mit diesen Forschungsfragen, einfach, du stellst quasi dieser Microperformance stellst du die Frage und dadurch, dass du sie beobachtest oder die Frage stellst, dieser Microperformance, dadurch veränderst du sie. Und dann wird diese Microperformance ein Stück weit ist sie dann nicht mehr das künstlerische Werk, sondern ist eigentlich, ich weiß nicht, Reagenzglas. Wo du einfach Sachen machen kannst, wo du einfach Analyse machen kannst, oder wo du gewisse Sachen dir anschauen kannst: funktioniert das, funktioniert das nicht? Ist das aussagekräftig, ist das nicht aussagekräftig, gibts den Punkt oder gibts den nicht?" (Q58)

"Bühnenkunst ist ein ganz ein wesentlicher Punkt im Alltagsleben der Menschen heute." (Q59)

"Wie schaut das aus? Was für ein Licht brauchen wir? Wo stellen wir das Zeug hin? Wo steht die Kinect? Wie benutzen wir den Raum? Was tanzen die Tänzer, was tun die?" (Q60)

"Ich meine jede Performance ist ein Experiment für mich, verstehst? Ahm, es ist insofern ein Experiment weil es immer nur eine Möglichkeit darstellt von vielen Möglichkeiten. Und auf eine musst du dich aber festlegen. Es ist ein Experiment weil du zwar daran glaubst das es funktioniert, aber erst den Beweis antrittst wenn du wirklich vor das Publikum gehst und eine Feedback kriegst, oder vor die Kritiker gehst und so weiter." (Q61)

"...wenn du halt an drei Abenden so eine Performance hast, mit insgesamt über 100 Besuchern, dann kann man das natürlich auch gut mit einem Fragebogen sich anschauen: Okay, gibts jetzt Zusammenhänge zwischen Partizipationsgrad und Flowerleben, zum Beispiel?" (Q62)

"...wenn du sozusagen da mehr erproben kannst und auch diesen Luxus des, vor allem des validierens, des reflektierens, des darüber diskutierens, des recherchierens, nehmen kannst. Ich meine normalerweise sind einfach Projekte, das hat jetzt nichts mit dem Budgetvolumen zu tun, aber es ist

einfach so, irgendwann heißt es einfach: Performance in drei Monaten, und du bist so zielgerichtet auf das hin, dass du dir diesen Luxus nicht leisten kannst. Aber wenn du auf einmal die Möglichkeit hast du kannst drei Jahre an etwas arbeiten, an einer Fragestellung arbeiten und du hast, also du weißt es auch. (Q63)

“Ja da gibt es viele Unterschiede, was willst du jetzt hören? Die Leute werden nicht randomisiert, Bedingungen zugeteilt, die können einfach kommen und teilnehmen. Nein, natürlich, wir haben, also wenn du mit dem anfangen willst, als wir haben nicht mit Hypothesen gearbeitet, ich komme aus einem sehr quantitativen Kontext in meiner anderen Forschung. Also das kann man echt nicht vergleichen.” (Q64)

“...manchmal brauchst du dann diese Abende die du miterlebst: wie ist das eigentlich und dann kommen erst neue Wege wie man das überhaupt alles denken kann.” (Q65)

“...dann kann man nicht da hineingezogen werden, ja. Und dann hat man auch überhaupt nicht das Gefühl des kreativen Selbstausdrucks.” (Q66)

“...ich bin es. Nicht irgendeine Masse in der ich untertauche, wann ich irgendetwas tue weiß ich gar nicht war das ich, war das mein Nachbar, waren das die Anderen zehn da drüben, keine Ahnung.” (Q72)

Lebenslauf Bernhard Böhm

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