

Cathrine Hasse

An Anthropology of Learning

On Nested Frictions in Cultural Ecologies

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Cathrine Hasse
Department of Education
Aarhus University
Copenhagen
Denmark

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Foreword

This book opens the discussion of what anthropologists do before they write their texts: they learn to engage with other people's cultural ecologies. In the wake of the new materialism approach in social sciences, we need a reconfigured conceptualization of how materials, culture and learning are connected. This will be dealt with in the following pages. The dynamic concept of cultural ecology that I present here involves following my own lines of anthropological becoming with a group of villagers engaged in a local tourist company at the Italian Island of Sardinia, a Fon kingdom in Cameroon, a Danish nursing home using a social robot, an educational institution teaching physics and the vast complex organization of thousands of physicists working together on a particle collider test site at CERN laboratory in Switzerland – as well as the work of Edwin Ardener, Lev Vygotsky, Gregory Bateson, Margaret Mead and Merleau-Ponty and all their living intellectual off-springs.

The stories I tell and the diffracted readings I make are not an attempt at making up a coherent whole. Rather, my style of writing enacts the theme of the book, which is to discuss learning materials and culture as intertwined and constantly developing phenomena; as entangled, engaged connections pointing in all directions, yet held together by a sense of direction and future frictions. The text does not depict a linear journey through an Euclidian (geometrical) space, and there is no fixed beginning or end taking us from here to there. I do not present a formal model or grand theory. Rather, I present a multifarious investigation of a complex entanglement of fibres, strings and threads forming a pile of connections and vectors pointing in many, and sometimes unexpected, directions. These entangled connections might look like a serendipitous meshwork of lines, but they refer to a special type of contingency, i.e. my own learning process as a researcher among mattering materials, dead and living research colleagues in the analytical field and the many different people who have accepted my presence as a learner in their everyday life in the empirical field. Fibres and strings may, in fact, be too stable metaphors. The type of connections I discuss are perhaps better described as waves moving through an energized force field – being bended by some materials while passing through, affecting and reflecting others. With this, I claim that a collective consciousness is

formed in me and in my texts. As this process is ongoing, the text is not trying to capture what is already transformed but the principles of learning behind transformations in cultural ecologies.

Though I present a theory of cultural materials, my focus is on the human as a learner in organizations of complex matter. Human beings open (and close) doors to let newcomers access the physical, and sometimes virtual, spaces they share in the way they organize their everyday life. Sometimes they shut them out instead of letting them in. This book is a result of many people letting me into their lives. It is their human capacity for caring about, creating, transforming and sustaining my learning of culture in their organizations which has guided my search for a comprehensive understanding of the relation between anthropology as a discipline, with learning as its methodology and culture as its analytical outcome. This is my contribution to the future potential of anthropological analysis.

Since this book has been underway for more than 5 years and builds on what seems to be a lifetime of empirical research, there are more people, dead and alive, who must be mentioned than I have space to thank here. I thank all the varied groups of researchers including all the physics students and physicists that helped me develop my analysis in the empirical field of physics, hospitals, nursing homes, schools and tourist organizations. I owe so much to my colleagues in Emdrup, Aarhus University, and my colleagues from other Danish research institutions (the PPUK-group, Mariane Hedegaard and Seth Chaiklin in particular but also the group behind the KIA-project and the Danish Institute for Advanced Studies in the Humanities), the UPGEM project, University of Oxford (the OSAT group with Anne Edwards and Harry Daniels in particular), University of Helsinki (the CRADLE- group with Yrjö Engeström in particular), University of UCSD (Michael Cole in particular) and the group of postphenomenologists who are affiliated with the now retired SUNY professor Don Ihde, as well as the anthropologists Tim Ingold, Sharon Traweek and Dorothy Holland. Also my brief meetings with Lucy Suchman and Anna Tsing have been of importance for my work. As for the rest of the analytical field I draw on (i.e. STS, feminist science studies and anthropology in general), the list is too long to mention all, but I am particularly grateful for the way my former supervisor Professor of Anthropology Kirsten Hastrup opened up my engagement with anthropology. My long time companions, students and researchers at DPU (the Department of Education at Aarhus University), who have followed and formed my work for a very long time in or around the research program for Future Technologies, Culture and Learning, give me new inspiration daily. I want to give a special thanks to Stine Trentemøller for good comments and a thorough language revision.

In addition to this varied and intermeshed lot, let me also thank my family and closest friends the most. My wise mother and father, who are always curious and positive towards my projects, my wonderful discussion partners including my friends and in particular my brothers Morten and Christian and my 'sisters' Nina and Charlotte. Last but not least, special thanks to my daughter Stina and long time companion Thomas.

Cultures emerge and remerge in ways that can never be static or isolated. Likewise, texts about them must lead their own vibrant lives.

Aarhus University, Denmark

Cathrine Hasse

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Chapter 1

Introducing the Engaged Anthropologist

This book explores the relationship between anthropology and cultural ecologies. It is a methodology of participant observation as a learning process. Moreover, it is a theory of how learning changes the way the anthropologist, or any other participant, engages in increasingly entangled relationships of materials and humans in certain habitats.

Most scientists, like the physicists I have followed, explore the material world. Some researchers concentrate on living matter. In the group of scientists dealing with living matter, we find researchers who study humans – either parts of humans (like cells or organs) or human psyche or humans in a historical, societal, archaeological or philosophical perspective. Within the group of social scientists, a relatively small community of researchers studies humans in their everyday environments through participant observation. Anthropologists belong to this group, just as some feminists, cultural psychologists, sociologists and researchers who engage in Science and Technology Studies (STS). I address how anthropologists, and other social scientists, learn how cultural materials attain meaning in the local everyday life when they, for a while, visit other people in their Euclidean space, which then becomes an anthropological space filled with vibrant and frictioned materials.

Although this book offers a methodology of participant observation as a learning process, it is *not* a handbook of good advises on how to do research. There are no recommendations for how to set up an interview guide or ethical considerations in participant observation. Good advises on observation methods and note-taking can be found in books on research methods. In many handbooks of methods, it is underlined that ethnography is a craft:

Research is a craft. I'm not talking analogy here. Research is not like a craft. It is a craft. If you know what people have to go through to become skilled carpenters or makers of clothes, you have some idea of what it takes to learn the skills for doing research. It takes practice, practice, and more practice. (Bernard 2006: 1)

Anthropologists may present elaborate ethnographies and new theories of ‘multiple ontologies’ (Mol 2002) and describe how facts emerge in the sciences (Latour 1987) and how Arapesh mountain people live in peace with their neighbours (Mead 2002/1935) or how tailors handle scissors and cloth in Liberia (Lave 2011). Yet, as also noted by Tim Ingold, anthropologists have rarely ‘sought to spell out exactly what craftsmanship entails’ (Ingold 2011b: 239).

In this book I am concerned with the craftsmanship of participant observation as the anchor of the anthropological discipline, which may open the ‘circumstances of real human beings, in specific places, and embedded in the wider ecology of life’ (Ingold 2011b: 239) for our fellow human beings.

It is participation in a ‘world-in-formation’, not ‘opposed to observation but (. . .) a condition for it, just as light is a condition for seeing things, sound for hearing them, and feeling for touching them’ (Ingold 2011b: 148). Yet, because the concept of how anthropologists learn is rarely an object of inquiry in itself, the craft of participant observation is not explicated in depth. We still lack a discussion of the basic processes behind a method claiming to study other people’s everyday life – and the new theories emerging in the process.

1.1 The Chair

Most people can recognise the feeling of being cultural newcomers. Let me begin with a very simple example of frictions encountered by a newcoming participant in an organisation.

Some years ago on a hot sunny day I entered the swing door to my new workplace: a teachers’ union. One of the two men who had been present at my employment interview waited in the reception to greet me welcome. I felt nervous yet full of expectations.

My new boss immediately began to show me around in the geometrical space in which I was to practise as a consultant. The rooms were full of artefacts like computers, tables, paintings, coffee cups, doors and people. I was handed a staff directory in which, I was assured, I could find ‘everything about the workplace’ and the ‘way we do things around here’. Then we began the tour up and down of stairs, trotting through hallways, knocking on doors, shaking hands with my new colleagues. One hour later I left through the swing door filled with impressions. Coming home that day I could not understand why I was so tired. After all, I had done nothing but going around shaking hands. Inside, however, I was filled with new impressions, smells, memories of new faces smiling or sometime more preoccupied faces, small and big desks, computers, and high voices, weak or hard handshakes, open and closed doors to unknown worlds. ‘In this organisation we are like one big family’, my new boss had said. ‘We are all equal and you can address anyone if you have any questions – even if we do not work in the same

areas. Do not hesitate to ask if there are things you are not sure about'. The same message was conveyed in the staff directory.

This was my first day. Already the next day (far from rested and restored when I entered the swing door again), I made my first mistake. In the staff directory I had read about all the many collective goods following a good job in a Danish company, such as available parking spaces, opening hours of the reception and about the company's rules and regulations; but I soon found out I had to learn many other new things, which were not mentioned in the directory.

I had been shown the staff canteen, and around lunchtime I noticed colleagues across the hallway leaving their office, so I assumed they were on their way for lunch. I tried to follow them but got a bit lost on the way and asked another colleague for way and trotted along up and down the stairs.

When I made it to the canteen, my colleagues were not there yet and the place was rather empty. I took a tray, bought a salad and mineral water and looked for a place to sit. No one else from my department had arrived yet, so I began to be a bit worried. Had I misunderstood their disappearance from the office opposite mine? Would they think I had been too eager to go to lunch? I placed my tray at one end of one of the eight long tables in the canteen and sat on one of the simple black chairs next to the window. Shortly after my new colleagues entered the room, and then I really became worried. Although they nodded and smiled at me, they did *not* carry their trays to my table, when they had bought their lunch. Had I already made such a fool of myself that they would not sit next to me? Then one of them signalled with his arm that I should join their table at the other end of the canteen. Surprised, but also relieved, I picked up my tray and placed myself among the colleagues. 'Well, of course you could not know that', one of the secretaries said, 'but you took one of the seats where the bosses normally eat. In fact, you had placed your tray where the head of the organisation normally eats her lunch'.

This small anecdote did not come about as a result of ethnographic research. It is a remembrance of the kind most of us carry around after the first days of confusion in a new workplace. The many fuzzy impressions, our sense of the others and the many evaluations of how we behave along with our guesswork about how and why other people behave as they do, our surprises when we make mistakes and are reacted to – and the many unknown attributions of new meanings connected to physical artefacts. In all, they make up the subtle processes through which we learn organisational culture. It is not easy for newcomers to act in established yet movable cultures. Well-known material artefacts, like tables and chairs, might suddenly be connected with hitherto unimagined expectations of how we are supposed to act.

As newcoming participants we gradually learn what has theoretically been named the unspoken cultural codes of how to behave in the everyday life we share with other people (Bernstein 1971). These cultural codes of conduct rarely find their way to staff directories. We learn them the hard way by making mistakes. And *code* is not the right word to describe the process, as no decoding is going on –

only learning. After a while, we experience less friction when we more comfortably move around in the geometrical space. Both humans and materials show us the way through their actions and reactions (doors may be locked and humans may open them). We gradually adjust to the conditions in the new habitat and make adjustments to the material surroundings, as we find and rearrange our niches. Self-evident expectations of reactions are, over time, sedimented in our bodies and become the new internal and implicit measuring stick we use to evaluate our own and other people's acts and appearances.

Over time we learn to see the world around us in self-evident ways. 'Ontology is not given in the order of things, . . . instead, *ontologies* are brought into being, sustained, or allowed to wither away in common, day-to-day, sociomaterial practices' (Mol 2002: 6). Yet, how ethnographers learn these ontologies is still a black box that I believe *the concept of learning* can help us open.

In my first learning process at work, the black chair, looking like any other black chair in the canteen, became a marker teaching me more about the organisational culture than any staff directory or explicit statement about 'being one family'. I learned that my colleagues' reactions directly countered the written statement that 'here we are all equal'. What I learned from my colleagues' reactions was: 'We are not equal with the bosses after all' and 'don't take anything you read at face value'. Sitting on this particular black chair was, in this context, a provocative act disturbing the local order of the habitat. Even though the materiality, the chairs, was all black and presumably alike, they were in fact imbued with meaning which made a difference to my colleagues. This kind of invisible meaning-making practices are valuable to know for newcomers in organisations. For the newcomer to a habitat, the reactions of the experienced become cultural resources which teach us how to act and scheme intelligibly when engaging with a collectively shared cultural place of meaning-making.

For the newcomer, learning is not just about learning how to handle new *matter*. An anthropology of learning is learning to learn *what and how matter* matters to the humans in cultural ecologies and how socially and collectively formed frictions arise from engagement with materials emerging as phenomena. Expert ethnographers have to become expert learners in this basic anthropological sense.

1.2 Expert Ethnographers

There are many different ways of being a newcomer in established cultural organisations in a globalised world. In anthropology, culture was formerly believed to be 'too grounded to be moved'. Today, anthropologists believe globalisation to be concomitant with cultural diversity, yet culture must also be conceptualised as something that may 'move out of place' (Tsing 2000: 339). In a world of mobility, we are increasingly becoming newcomers to established cultural ecologies. Some newcomers are babies learning about the world for the first time. Others are immigrants who arrive in refugee camps, tourist on their first trip to a destination,

businessmen who relocate in new countries and adopted children moving to new homes. The experience of being a newcomer is increasingly a condition for grown-up humans. Most of the places newcomers arrive at are habitats for other humans, material artefacts, animals, plants and other organisms.

Ethnographers are professional newcomers to such established habitats. Through their professional engagement, they end up producing ethnographic texts, but anthropology is not ethnography (Ingold 2011b: 129). Anthropology combines an ethnographic study of particular people in certain places with a theorising about mankind, including human beings as a cultural species (see, e.g. Ingold 2011a and Astuti and Bloch 2012 for further discussions). Ethnography is often considered a particular data collection method employed in many humanistic disciplines, where the researcher studies other people's everyday life and material culture in situ through participant observation and more or less formal interviews. Anthropology is seen as theorising the gathered data material. Like Ingold, I disagree with this distinction (Ingold 2011b: 229). Ethnography is, as the word indicates, about *writing* (Fabian 1990). Anthropology is a way of embodied being-in-the-world. It demands a processual presence in a field of lived life. Yet, while ethnography points to the writing done by anthropologists and other social scientists, I see the ethnographer as any researcher engaging in fieldwork through participant observation learning in a basic anthropological way. Participation is the foundation of all ethnographic work, whether the ethnographer makes use of different kinds of observational approaches, note-taking, interviews, etc. When I speak about *the ethnographer*, I refer to the ethnographer as an observant participant that will (eventually) write something based on that participation. Participant observation is not a method 'setting a theoretical agenda, and then test it empirically by means of data collected in accordance with standard protocols' (Ingold 2011b: 240). And it is not reserved for anthropologists. As a participant observer the ethnographer, from whatever discipline, invests an embodied being in places inhabited by humans they would not otherwise engage with. In this sense, participant observation *is* a method in so far it differs from other methods that only rely on analysis of written material or other kinds of material artefacts. Anthropologists, like other researchers, may also employ other methods such as analysis of cultural products like movies, commercials, pictures, poems, virtual realities, chairs and the like. In my discussion of participant observation, these materials are only of interest if they can be argued to be entangled in the circumstances of real human beings, in specific places.

Anthropology is an entanglement of changes of what ethnographers were before and after learning in new cultural organisations with new implications for understanding processes of human change in a material world. Many have attempted to define this process as a scientific process in which the anthropologist, for instance, constructs systems of comparisons minutely documented on discrete slips of paper, which may then be used for comparative analysis (Mead 2002/1935: 214). These manoeuvres largely seem to be invented for reasons of explaining an inchoate process, which can never be fully documented to sceptics and research councils. As ethnographers, we experience processes of what is *given* to experience, which is not individual data on paper slips but the world itself. So ethnography is not a data

collection opposed to an anthropology done with comparative theory. The anthropological craft cannot be spelled out in elements, like it is done in books on methods. Instead, anthropology should be understood as a theorising based on an ethnographic methodology of how we, the anthropologists, are changed by our learning experiences from engaging with others. Tim Ingold puts it poetically: ‘To do anthropology, I venture, is to dream like an Ojibwa’ (Ingold 2011b: 239).

Anthropologists do not make studies *of* people. The anthropological craft lies in the ability to change *with* people without losing the inherently culture contrasting perspective that may follow from our anthropological transformations. We may learn to dream like an Ojibwa, but we do not continue to be and live as an Ojibwa.

What truly distinguishes anthropology [as a craft – *author’s addition*] is that it is not a study *of* at all, but a study *with*. Anthropologists work and study *with* people. Immersed with them in an environment of joint activity, they learn to see things (or hear them, or touch them) in the ways their teachers and companions do. An education in anthropology, therefore, does more than furnish us with knowledge about the world – about people and their societies. It rather educates our perception of the world, and opens our eyes and minds to other possibilities of being. The questions we address are philosophical ones: of what it means to be a human being or a person, of moral conduct and the balance of freedom and constraint in people’s relations with others, of trust and responsibility, of the exercise of power, of the connections between language and thought, between words and things, and between what people say and what they do, of perception and representation, of learning and memory, of life and death and the passage of time, and so on and so forth. (Ingold 2011b: 238)

The ethnographer’s craft is, in this perspective, one of being trained to learn with people in order to write about them, and the anthropologist’s craft is to make this learning a foundation for asking new basic (and philosophical) anthropological questions. To be good anthropologists we need expertise in doing research on other people’s expertise in what matters to them. The deep question becomes how we methodologically understand their and our own evolving expertise in everyday practices – without detaching the methodological theories from the theories we use to analyse our data on our ethnographic subjects’ expertise.

Life is a continuum, and the distinction between ethnographers and anthropologists is as discrete as the distinction between two fields of attention: an analytical and an empirical field. Learning deep philosophical insights from ethnographic subjects has always been part of the ethnographer’s learning process in the empirical field. Yet, discussing with anthropological colleagues at a university seminar is distinctly different than learning to dream like an Ojibwa. Even if a native Ojibwa anthropologist is present in the seminar room, the field of attention has shifted from Ojibwa life to one of anthropology. It is in the process of moving between an ethnographic presence in the cultural ecology of Italian physics departments, Sardinian and Grassland villages, Danish hospital wards *and* anthropological presence at Danish, British or Argentinean conferences on psychological, anthropological and Science and Technology (STS) theory that my anthropological concept of learning takes shape.

I anchor my discussion of the newcomer's cultural learning process in the cultural–historical theories of learning based on the neo-Vygotskian view of learning as a process of

... internalisation and externalisation, during which people reconfigure their relationships with the practices they inhabit. Importantly, learning or developing expertise in a practice is not a neutral process: it involves a dialectical engagement in activities where what matters for people as individuals is highlighted by them as they interpret and respond to the tasks they encounter. (Edwards 2012: 23)

Anthropologists study many kinds of expertise from how to become a skilled canoe builder (Mead 2002/1935), a skilled tailor (Lave 2011) or a skilled molecular biologist (Latour 1987) without becoming an expert canoe builder or molecular biologist themselves. In Harry Collins' fieldwork, the studied expertise is, like in some of my own cases, the expertise of physicists. Collins has made an argument for how he can obtain interactional expertise but not contributory expertise when studying physicists by immersing himself in 'the linguistic culture pertaining to a practical domain rather than the practice itself' (Collins 2004: 127). Collins' argument builds on a reinstated Cartesian split between mind and body and claims that social scientists can gain interactional expertise understood as solely a linguistic competence without a bodily engagement. I join the chorus of refutation of this claim (e.g. Schilhab 2007; Selinger and Mix 2004). Embodiment and experience go hand in hand when obtaining any kind of expertise; not least becoming a skilled ethnographer, who, like newcomers, must become able to learn to walk *with* people. I will add to this perspective the philosophy of experience presented by postphenomenology (Ihde 2002; Crease and Selinger 2006). Here, the notion of embodiment and experience is central to an understanding of how we engage with our material surroundings, especially technological artefacts. The practical and intellectual expertise of, e.g. physicists, is not completely inaccessible to others. That complex practices, like physics, are inaccessible is a 'myth' (Ihde 2006: 400). We may always learn something as our cultural and living bodies become aligned, and 'micro-perceptions' are aligned with 'macro-perceptions' (Ihde 1993: 74).

I connect the postphenomenological embodiment perspective with Anne Edwards' cultural–historical contribution to the discussion of expertise, i.e. the development of the three concepts of 'relational agency', 'common knowledge' and 'relational expertise' (Edwards 2010), which all expand cultural–historical theory of learning cultural internalisation and externalisation. Though developed for a different purpose – namely, to argue how experts from different practice domains, separated from their professional expertise, need to develop expertise in relational work – Edwards' concepts heighten an awareness of how newcomers, like ethnographers, must develop a sensitivity to what matters to others through a process of alignment. The concept of relational expertise thus adds to our understanding of how the craft of the ethnographer is tied to learning as a dialectical process of internalisation and externalisation of increasingly engaged (re)actions.

Though mainly inspired by the Vygotskian approach and the ramified cultural–historical theoretical framework, the anthropology of learning I present also

includes several diffracted readings of this framework with anthropological theories of materiality and cultural experience, material feminist theory and techno-historical postphenomenological theories of embodiment. New feminist theory of materialism, in my rendering, assumes embodied humans and that we understand the basic processes behind what is called *discourse*. Cultural–historical activity theory can help us understand word meaning as well as humans as learners. Postphenomenology can help us understand the embodied position of the learner and anthropology cultural diversity. I use all of these to explore how researchers become culturally engaged and how engagement becomes a ‘passage to anthropology’ (Hastrup 1995).

1.3 Aligned Participants

What does *learning* mean? How are fieldworkers changed when they *learn* to be engaged in the field of culturally organised practiced places? On what premise? How is the fieldworker’s learning process in cultural ecologies different or similar to that of other participants in the organisations, institutions, villages, webs or network paths we study? To understand the processes of cultural learning processes, one particular theoretical framework is preferred over the many other available: cultural–historical activity theory. Learning at the core of this framework is not cognitive or material, nor personal or collective. It is not learning about stable materials or learning about movable cultural resources, but all of these evolving in a dialectical process. This theoretical framework is developed by the cultural psychologist Lev Vygotsky and his followers from the 1920s and onwards.

In the cultural–historical activity-based approach (often referred to in the analytical field as CHAT – cultural–historical activity theory), we find many internal disagreements in the analytical field, e.g. how to understand central concepts like *practice* (e.g. Edwards 2010; Lave 1993; Hedegaard and Chaiklin 2005; Chaiklin 2009; Hedegaard 2008: 16; Engeström 1987; Kerosuo 2006: 9) and whether *activity* is best understood as a system or not (Engeström 1987; Kerosuo 2006; Edwards 2010).

What is agreed upon, however, is the importance of Vygotsky’s original discussion of how tools and signs mediate human existence (Vygotsky 1978: 40; Daniels 2008: 7; Cole 1996: 116–118; Engeström 1987).

The concept of mediation has been expanded by Yrjö Engeström in a way which is very important for understanding the work of the expert ethnographer; mediation is not just social but collective in relation to activities (Engeström and Miettinen 1999: 4) (see also Chap. 5). This is an expansion of Vygotsky’s own underlining that mediation is the key process in order:

to understanding how human mental functioning is tied to cultural, institutional, and historical settings since these settings shape and provide the cultural tools that are mastered by individuals to form this functioning. In this approach, the mediational means are what

might be termed the ‘carriers’ of sociocultural patterns and knowledge. (Wertsch 1994: 204)

Throughout this book I discuss the notion of mediation, but also challenge the widespread notion in the analytical field that materials, seen as mediational means, as stand-alone objects, are *carriers* of culture and collective consciousness. It is precisely because mediational means are not simply abstract *cultural tools* but emerge in specific activities that mediation is complex, situated, embodied and intra-active. Artefacts are *relata-within-phenomena* (Barad 2007). It is with this definition of mediation in mind that ethnographers are in need of relational expertise.¹

In most studies on mediational means that draw on the Vygotskian framework (further explicated in Chap. 3), practitioners have engaged in activities in institutional settings like schools, shipyards or hospitals. Edwards has developed a framework for understanding expertise as it develops across different professional activities, which may help to understand how practitioners may become engaged in other’s work without engaging in exactly the same activities.

Though intended for analysing interprofessional work, Edwards’ theoretical framework of ‘relational expertise’, ‘relational agency’ and ‘common knowledge’ (Edwards 2010, 2012) may also help explain the ethnographers’ learning process in becoming engaged in other people’s practices. I will unfold these perspectives (especially in Chap. 7) and relate them to how ethnographers become nested in new practices in the empirical field.

When we learn as ethnographers, we sometimes, as in interprofessional work, develop a common knowledge with our ethnographic subjects as well as a relational expertise understood as ‘a matter of recognising what others can offer a shared enterprise and why they offer it; and being able to work with what others offer while also making visible and accessible what matters for you’ (Edwards 2012: 26).

Ethnographic subjects are no longer understood as *informants* but as people we may name ‘ethnographic subjects’ (e.g. Lassiter 2005: 61), with whom ethnographers work to produce something in collaboration. In the kind of research on activities in practices conducted by Edwards and her colleagues, the ethnographer shares a geometrical space with the ethnographic subjects. Like many anthropologists they also come to share an *engaged practice*. In anthropology, being engaged often refers to the way an ethnographer builds on a commitment to support the communities with which they work in collaboration, advocacy and even activism (Low and Merry 2010). ‘Most anthropologists share not only social and political commitments with the people they work with or study but also their housing, food, medicine, automobile, and other economic, material, and social resources, both at home and in the field’ (Low and Merry 2010: 208).

¹ As noted by Cathrene Connery in her study on how Vygotsky can be used to explore visual language, Vygotsky himself changes his position away from formal linguistics as he began noting that humans can change signs and still retain meaning (Connery et al. 2010: 87).

Edward's concept of *relational expertise* is helpful in understanding how ethnographers can become engaged without *going native*, because it underlines that engagement does not involve a total immersion, nor does it necessarily involve the capability to perform the work of another.

Even when ethnographers do not engage in interprofessional collaborations, their work calls for a development of relational agency, which can be defined as:

A capacity that can emerge in a two stage process within a constant dynamic as people engage together in activities. It involves:

- (i) working with others to expand the object of activity so that its complexity is revealed, by recognising the motives and the resources that others bring to bear as they too interpret it.
- (ii) aligning one's own responses to the newly enhanced interpretations, with the responses being made by the other professionals as they act on the expanded object. (Edwards 2012: 26)

Though ethnographers may not exactly deliver the contributory expertise referred to by Collins (2004), and may not even work *with* their ethnographic subjects but have to make do with an embodied participation, they still need expertise in finding out what matters to others. In cultural–historical approaches, this means understanding the activity (whether it is understood as activity settings or systems) that engages others so much that frictions arise when expectations are not met.

Edwards refers to Charles Taylor's discussion of tensions in modern life that 'arise from our being simultaneously agentic by acting on and shaping the world and conventionally engaged with what matters for others' (Edwards 2012: 26). These tensions or frictions emerge in the interaction between creativity and moral purpose that we find at the core of how not just professionals but also ethnographers exercise agency when they participate in other people's engaged activities. Ethnographers do not necessarily share their own analytical activities with those of the other practitioners (who have other concerns than making ethnographic research). They work alongside them, create their own lines and contribute to building social and material environments as they learn to align their perspectives with others. They are not totally immersed in the empirical field but become engaged with the real problems of practice as they come to understand them better. Karin Knorr Cetina describes such engagement as a form of 'engrossment and excitement' (2001: 175) and Edwards use this definition to clarify engagement.

Anthropology is shaped in learning to join the excitement of others, and this engagement is more often found in letters from the field than the officially presented monographs. As when Margaret Mead notices in a letter from an Arapesh village: 'Then they brought the Tambaran into the village and all of us mere females and children ran away to the end of the village and repeated solemnly: "If we see it we will die"' (Mead 2001: 122). She has, however, already learned that the sacred Tambaran is a double set of flutes, which begets children in the shape of flutes that may be sold to neighbouring villages. She has also learned that she is considered a woman in the terms of local culture and that to perform woman in the Arapesh

village she has to run with the women to hide from the Tambaran. So much learning has already been going on that it cannot possibly fit into a small slip of paper as *data*. Is this mere factual description? Or has Margaret learned to think with the material and cultural resources of the Arapesh? Is she *engaged* in avoiding the Tambaran or is she merely following suit?

Lucy Suchman's work on plans and situated actions has been a source of inspiration for my work on cultural resources. Suchman uses the phrase 'communicative resources' (2007: 85ff). She draws on ethnomethodology where communication and sense-making is the central focus (following Harold Garfinkel). This approach, however, just like the Geertzian interpretation scheme tends to overlook the learning process before the facts. Suchman writes that: 'The organization of situated action is an emergent property of moment-by-moment interactions between actors, and between actors and the environments of their action' (Suchman 2007: 177).

Following physicist and feminist Karen Barad's work, we should rather speak of the moment-to-moment 'intra-actions' (2007: x) through which material worlds come into being. But for these processes to be intelligible, we have to learn (and remember) what kind of mediating cultural artefacts are available as resources in the particular practiced place. What constitute cultural resources in relation to actions has to be learned by engaging (discussed in Chap. 5).

Mark Risjord has raised the problem of how 'ethnography can rise above the description of individual experiences' in what he calls an 'interactionalist approach' (Risjord 2007: 424), and he opposes this approach to anthropological practice theory. I believe a diffracted reading of postphenomenology, feminist materialism and cultural-historical activity theory provides a new framework, which combines an interactionalist approach with practice theory in a new practice-based *intra-actionalist* approach. Though anthropological texts contain descriptions, ethnographic production is not merely *description, representation* or *facts*. Any description is based on learning how materials matter to other people.

The methodology of diffracted readings is thus not one of contrasting cultural *representations* nor *symbols*. Language, including academic, is not a medium but an anchor for thinking just like other material artefacts nest thinking in cultural ecologies. Representationalism is concerned with 'representations' in relation to the 'real' world possibly misrepresented by cultural language (Barad 2003). In my approach I am not concerned (contrary to physicists) with the world as it 'really is' but the world as continuously learned and thus emerging as a processual phenomena. What makes a difference is not how cultural representations differ in relation to how the world 'really' is, but the cultural diversity in the ways humans anchor their thoughts in material surroundings and the way we, through cultural learning processes, come to align productive intelligible becomings.

In order to understand the participant observer's learning process, we need to understand how humans in general learn from each other, in ways which can be analysed as cultural. An anthropology of learning combines the ethnographer's learning with a general anthropology of learning understood as a general human processes of cultural learning. Written ethnography is based on an ethnographer's

learning in the empirical field as participant observer, interviewer, etc. Through ethnography a wider audience can learn about human diversity and how materials help constitute diversity through the emergence of cultural resources. Anthropology is the basic learning process transforming expert ethnographers across field sites.

The ethnographer's task of building relational expertise is as complex as explaining how newcomers become experienced engaged practitioners. To disclose the complexity of other people's practices and recognise the motives and the cultural resources that others bring to bear while trying to interpret the collective motive, e.g. for running away from a Tambaran, requires both a common knowledge and a common perception of material artefacts. The phenomenon of the Tambaran is simultaneously material and discursive and learned. The process of alignment is a process of increasing engrossment originating with an engaged mediated cultural learning which for the expert ethnographer can be described as a process developing from positioned access, which opens for particular social designations, actions and reactions and a continuously evolving culture contrasts (discussed in Chaps. 4, 5 and 6).

1.4 Materials with Meaning

Expert ethnographers make more or less engaged descriptions of other people's meaningful and material organisations. Definitions of the relation between meaning (i.e. the boss' chair) and material (the chair) will be spelled out throughout the book – but here is a brief version:

Many other theoretical approaches than the cultural–historical perspective (see e.g. Fenwick et al. 2011) are concerned with meaningful materiality. In many of these perspectives, we do not find an interest in the observer participating in a grounded yet moving place.

Following the Jesuit philosopher Michel de Certeau, we can begin with the materiality of the rooms we move in to make a distinction between space (espace) and place [lieu].

A place (lieu) is the order (of whatever kind) in accord with which the elements are distributed in relationships of co-existence. It thus excludes the possibility of two things being in the same location (place).

A space [espace] exists when one takes into consideration vectors of direction, velocities and time variables. Thus space is composed of intersections of mobile elements. In short, space is a practiced place. (de Certeau 1984: 117)

A practiced place is a habitat where materials and meanings continuously emerge and affect the cultural ecology.²

²This conception of cultural ecology differs from the one proposed by Urie Bronfenbrenner (1979) in psychological ecology, where the ecology is cut up in systems (macro, meso, exo, micro, crono) and is closer to the one proposed by my colleague Jytte Bang, who perceives a cultural–ecological

Science and Technology Studies have for a long time shown a keen interest in following material artefacts, especially technologies, around the globe. Though it has been noted that technologies may affect people's psyche, e.g. their sense of self (Winner 1993: 368), and though feminist studies have been the first to understand technological artefacts as 'integral to the constitution of subjectivity for both sexes' (Wajzman 2010: 145), these studies have focused on materialised 'tropic' figurations (Haraway 1997: 11), re-configurations (Suchman 2007) or processes of ethical onto-epistemology (Barad 2007), but not on following anthropological learning processes. The psychological consequences of the introduction of new artefacts into practiced places have only briefly been touched upon (e.g. Winner 1993), and the effect of practiced places on newcomers has not received much attention. There has been even less discussion about how a material space becomes meaningful from an expert newcomer researcher's point of view. These studies often build on empirical descriptions of what the American feminist and physicist Karen Barad has discussed as *matter*: 'Mattering is simultaneously a matter of substance and significance' (Barad 2007: 3). Mattering for whom and why, and how ethnographers come to care should, however, also be a concern for new materialism.

The special thing about humans is that we live in a material world (our environment are materials like iron, stone, plastic), which to a large extent is man-made, and simultaneously in a collective thought world in which we assume we can communicate in recognisable mutually intelligible ways. We can do this to a certain extent because we have learned to attach the same meanings to the outside world of materials (including words) when the environment is familiar to us. But what if it is unfamiliar? It is a general condition for anthropologists that they use ethnographic methods of participant observation. Anthropologists seek out material worlds unfamiliar (to them), worlds that both consist of (to them) unknown materials (new types of plants, trees, iboga bark, minerals, etc.) and material artefacts (masks, totem poles, house constructions) with (to them) unknown meanings (agential knowledge of how to handle masks, make totem poles and build houses) and (to them) unknown emotional (re)actions (getting angry when a particular mask is touched in a particular way by certain persons).

Not everything in our cultural ecologies matters to us. If the craft of expert ethnographers includes how to make good descriptions of how material matters and gains significance, our own descriptions of *matter* must also explain how *matter* comes to matter to us as researchers. How does *matter* come to matter? It is a question that addresses the process behind all ethnographic description from the ones presented by Margaret Mead on the Arapesh people of Papua New Guinea (2002/1935) to the ones presented by Anna Tsing on the Meratus Dayak people of Indonesia (2005) to Dorothy Holland and Margaret Eisenhart's studies on college students in the USA (1990).

point of view as 'analyzing how people live, what they consider important and worth preserving, what must be changed, what are their core values and how do institutional arrangements contribute to keeping up that which is valued or to changing that which is not' (Bang 2009).

Though inspired by the ethnographic challenges posed by Bruno Latour and the postmodern dissolution of the subject–object distinction and the decentred human (e.g. Latour 2005; Verbeek 2007), I get the sense that posthuman descriptions of materials are rarely ethnographic enough; that is, they rarely include the positioned learning process of the human making the description. Posthumanism has been criticised for not acknowledging humans as embodied beings (Hayles 1999). Many ethnographic descriptions seem to build on what Gibson has called ‘direct perception’ (1979), but do not take into account the shifting complex positions in Euclidian space of an ethnographer engaging in a process of description. It seems we in perspectivism (sometimes referred to as perspectivalism) have focused more on meanings and interpretations than matter: ‘In a world of meaning alone, words are related to the places from where they are spoken. Whatever it is they are spoken about fades away’ (Mol 2002: 11–12).

In ethnography, mattering matter is, however, inseparable from positioned learning processes because most of what we perceive in practiced place is invisible in geometrical space (see Chaps. 3 and 4). By considering embodied and collective, but invisible, forces that move people and things about, ethnographers must learn how to make culturally meaningful descriptions of materials.

Materiality is made of materials and materials can, with reference to Gibson, be understood as medium, substance and surface. Gibson describes the three components of material environment in his book *The Ecological Approach to Visual Perception* (Gibson 1979: 16ff). Both Ingold’s rendering of Gibson’s distinctions and Gibson’s own work offer definitions on materiality which seem to be bridge builders between the material world as seen by a physicist and the material world as seen by an anthropologist or other practitioners. Air is, for example, a medium which, seen from the moving ethnographer’s perspective in contrast to a physicist’s description, offers little resistance to the human body (thus allows us to move through it) and allows vibrations (like words) and radiance (like light waves) or other particles and molecules to travel through it (e.g. reaching our noses as smell). Mediums, like air, afford movement and perception. Substances are more resistant to movement and not easy to percept. Substances include more or less solid stuff like rock, plastic or mud. We may lean on them, stand on them and move them about but generally we cannot see or move through them. Between the medium (like air) and the substance (like a plastic chair), we find surfaces. Surfaces come in many kinds (e.g. soft and hard) and are thus resistant to deformation or dissolution, etc.). Most of our engagements in cultural ecologies are engagements with surfaces. Surfaces are interfaces that reflect radiant energy ‘where vibrations are passed to the medium, where vaporization or diffusion into the medium occur, and what our bodies come up against in touch’ (Ingold 2011b: 22).

Anthropology has always shown an interest in what has been called ‘material culture’ and which could now be connected to discussions of new materialism. In the Arapesh region, described by Margaret Mead in the 1930s, material culture consists of, for instance, more permanent items like chairs, ornaments and walls made of wood and bones but also more perishable decorations such as flower

arrangements (2002/1935: 59). Material culture was then contrasted with non-material culture, which can be certain traits or techniques (2002/1935: 22).

Yet understanding material phenomena may not assume the world to consist of things separated from each other and from the non-material. Things have no inherent boundaries nor do words have determinate meanings (Barad 2003: 813). I follow Tim Ingold in his preference for connecting materials with the lines followed by the anthropologist, rather than understanding materials as something to be interpreted for us by the local people. Inspired by Gilles Deleuze, Henri Bergson and Alfred North Whitehead, Tim Ingold explains that living beings inhabit the earth through *wayfaring* – a human being thus has to be imagined as ‘the line of its own movement or – more realistically – as a bundle of lines’ (Ingold 2011b: 13). This line is not a line of connecting A to B but a line of flight that runs along – a processual line.

Following our own lines as wayfarers implies a dynamic understanding of how we learn the meaning ascribed to moving materials in a constantly evolving process of learning and development. Materials may offer direct perception and unmediated affordances, according to Gibson (1979), and thus unmediated description. But from the perspective of an anthropology of learning, what matters is the cultural diversity and changes in our meaningful perception of a geometrical space. An expert ethnographer may learn to describe the geometrical space of materials along some of the same invisible lines in the cultural environment as a local expert practitioner. We learn to align *relata-within-phenomena*, not representations of pre-existing things.

As an embodied being the expert ethnographer is, with a metaphor inspired by Barad (2007), a material-discursive diffraction apparatus. Barad does not use her concept to denote the fieldwork process in cultural organisations, as her discussion is directed towards deep ontological philosophical understandings of the relation between *mattering matter* and discourse in feminist and physics theory. The apparatus metaphor has, however, inspired me to see the researcher as a diffraction apparatus, moving into the bigger apparatus of already established phenomena emerging with words and meaningful materials. The apparatus of the researcher make a diffracted *reading* of the ways matter come to matter to the people already nested in their everyday practiced place. While the ethnographer may chose to focus on specific differences tied to particular theoretical perspectives thus making what Barad names ‘agential cuts’, the expert ethnographer must, as a learner, strive to become a culturally formed apparatus that learns what matters in other people’s practiced places.

Agential cuts are in Barad’s terms a constructed cut which define objects and the apparatus (agencies of observation) in particular contexts (2003: 815). This delineating of objects fits, I believe, well with Ingold’s wayfarer and line metaphor. What I add is the processual aspect of learning in what Ingold calls ‘intransitive’ processes (Ingold 2011b: 22). As we move, agential cuts are opening up the material world to us and separate us out as subjects from materials and objects and make *objectivity* possible in what Barad calls a ‘local’ way (Barad 2003: 820). Cuts refer to both the way we engage and the consequences of engagements. The

anthropologist as wayfarer is not just an engaged learner, but the agential cuts made must be responsible cuts in relation to what we have learned.

Referring to the metaphor of a scientific apparatus does not mean that the researcher is to be understood as a stand-alone instrument objectively registering and observing the temperature of a soup in a soup bowl. As a moving, flexible embodied apparatus, the researcher learns what Barad calls 'boundary-drawing practices' (Barad 2007: 140). This is the way phenomena are constituted in intra-activity, according to Barad (Barad 2003: 821). For Barad, however, there is no ethnographer, no anthropology of learning and thus no social and collective frictions involved in intra-active learning.

The way I connect with her concepts, the boundary drawing practices make a difference in developing the relational expertise of the ethnographer and align our own wayfaring with the expertise of ethnographic subjects engaged in practical activities in the cultural habitat. Thus, the expert ethnographer (i.e. a learning anthropologist) does not follow any given impulse to engage with the potential material-discursive boundaries available, but stick to those that engage the practitioners.

The black chair in the canteen could be explored through a plethora of *cuts*: the chair may have been produced in Japan or a former owner may have carved a heart on its back. However, this is not what engages the practitioners in the canteen. They are engaged in the meaning attributed to the chair, i.e. the chair as a sign of an invisible hierarchy which is contradicted by the explicit talk. Likewise the Tambaran is not just any pair of flutes, but a flute that makes women and children disappear. It has effects visible in reactions. Though the Tambaran is supposed to be invisible, it is known and visible to all but the ignorant newcomer, who may wonder why women and children start running. Learning from reactions is one way to learn engagements and boundary-making practices (Hasse 2002).

1.5 Research Apparatus

An expert ethnographer may include other boundary-drawing apparatuses in his or her work, such as cameras, binoculars and tape recorders as well as theories of gender or hierarchy or power relations. In studies of other people's cultural habitat, however, the most important instrument is the ways our bodies are set in motion, which change our own material-discursive practices. Barad offers this definition of an apparatus:

- 1) Apparatuses are specific material-discursive practices (they are not merely laboratory setups that embody human concepts and take measurements);
- 2) apparatuses produce differences that matter - they are boundary-making practices that are formative of matter and meaning, productive of, and part of, the phenomena produced;
- 3) apparatuses are material configurations/dynamic reconfigurings of the world;
- 4) apparatuses are themselves phenomena (constituted and dynamically reconstituted as part of the ongoing intra-activity of the world);
- 5) apparatuses have no intrinsic boundaries but are open-ended practices; and

6) apparatuses are not located in the world but are material configurations and reconfigurings of the world that re(con)figure spatiality and temporality as well as (the traditional notion of) dynamics (i.e. they do not exist as static structures, nor do they merely unfold or evolve in space and time). (Barad 2007: 146)

Acknowledging the researcher as engaged in material-discursive practices thus implies more than realising that a researcher cannot be separated from the mechanical apparatuses he or she uses. When the researcher is an anthropologist at work in the empirical field, he or she invests the whole body, which becomes an apparatus travelling through physical place sensing and learning. Just as with any other material apparatus, there are no stand-alone elements in this kind of research. The boundary-making practices created by the journey of the researcher are constantly moving and changing in a process that unites humans and material artefacts.

Science history is full of examples of how scientific apparatuses are created and developed in engagement that unites researcher and instrument (Ihde 2002). Using the metaphor of the researcher as a material-discursive producing apparatus is a particular way to understand the anthropological research process of embodied-material engaged intra-actions causing agential cuts, which momentarily separate subject–object. In this split, the book may write the author just as much as the author writes the book (Barad 2007: x). The human does not *decide* which meaning emerges in an agential cut.

A specific intra-action (involving a specific material configuration of the ‘apparatus of observation’) enacts an agential cut (in contrast to the Cartesian cut—an inherent distinction—between subject and object) effecting a separation between “subject” and “object.” That is, the agential cut enacts a local resolution within the phenomenon of the inherent ontological indeterminacy. In other words, *relata* do not pre-exist relations; rather, *relata* within-phenomena emerge through specific intra-actions. (Barad 2003: 815)

Though Barad does not engage in empirical fieldwork, her approach has been used in a number of studies using her notion of agential cuts. Dorte Marie Søndergaard has, for instance, used Barad’s notion of agential cuts in an analysis of children’s play in virtual space where materials emerge as performative and agentic (Søndergaard 2013). It is not an easy task to reinstate the human learner in the intra-active entanglements. In my version agential cuts make materials emerge in fluctuating and highly situated intra-actions. The intra-actions change and stabilise over time in the embodied meeting with an organisational culture of lines sensitive to frictions and commotions. Rather than being just cuts brought about by discursive-material engagements, I would like to understand these agential cuts to be cuts of social and sometimes collective dimensions. Cuts become pathways to a collective consciousness. Lines may be cut, but also opened by agential cuts.

Even for Barad the notion of the *human* is allowed as a specific agential cut, and humans have memories that enfold space–time–matter as the ‘enfolded articulations of the universe in its mattering’ (Barad 2007: ix).

Subject and object emerge in situated instances in this perspective. To avoid presentism we need to understand how agential cuts create space-time-mattering in ways that are supported by a cultural habitat, which then come to insert a certain stability in the meaning-making in a practiced place. The meaning of the black chair

or the Tambaran is stabilised as long as our movements of not sitting or running away reinforce what the newcomers have learned. When we move Barad's (or, like Søndergaard, a Barad-inspired) vocabulary into the realm of empirical research in cultures of activity in practiced places, we need to understand the process which over time align the lines of the ethnographer with the lines of other participants not sitting on particular chairs or running from Tambaran's in practiced places.

Barad does not account for cultural diversity in how matter comes to matter. Matter is already 'sedimenting historicity of practices/agencies and an agentic force in the world's differential becoming. Becoming is not an unfolding in time but the inexhaustible dynamism of the enfolding of mattering' (Barad 2007: 180).

This perspective on matter overlooks that humans may be newcomers to a material, collectively or social sedimented historical practiced place and that humans, as learners, may align the world's differential becoming over time. In order to understand how an anthropology of learning profoundly changes and aligns humans who inhabit a practiced place, I make use of two theoretical approaches: postphenomenology and cultural–historical theory. Both can be used to explore how a research apparatus may capture local meaning-making and iterative practices which stabilise space-time-mattering (ibid.: 315).

Barad's argument is in many ways close to a postphenomenological approach: both in terms of understanding materials as phenomena rather than discrete objects and in terms of how apparatuses constitute subjects and objects – and in arguing that humans are decentred and reconfigured in the process.

Postphenomenology will, however, help us escape the inherent presentism in Barad's apparatuses, which will reduce anthropology to superfluous ethnography. Postphenomenology helps us accept the importance of the embodied and positioned learning process of the boundary-creating ethnographer with 'compound eyes' (Ihde 1993: 114; Verbeek 2005: 138). Artefacts like the Tambaran and the black chair may be multistable in so far ethnographers can learn to see them with different meanings, but over time the materials and meanings find rest in ways which inform our next performances in practiced places. In the assemblages of moving materials, which seemingly never rests, we find stabilising partly determined trajectories:

The very structure of technologies is multistable, with respect to uses, to cultural embeddedness, and to politics as well. Multistability is not the same as neutrality. Within multistability there lie trajectories, not just any trajectory, but partially determined trajectories. (Ihde 2002: 106)

From the perspective of the walk-around ethnographer, we are not just subjectified into environments, we become embodied with them as they stabilise (Ihde 2002).

By adding psychology to stabilising materiality, the cultural–historical perspective does, however, to some extent reinstate the internalisation–externalisation perspective of humans, which is rejected by Barad. Humans and human activity are privileged (humans are not entirely decentred as in many posthumanist approaches), yet materials (like technologies) do not serve to facilitate mental or physical processes that would otherwise exist. They fundamentally shape and

transform them, and they do so in stabilising ways (Cole and Wertsch 1996). Artefacts (like chairs and computers) and humans come into being with each other in organisations of human activity. There are institutional effects on the social formation of not just mind but also materiality, which involve discourse and other mediating materials (Daniels 2006).

The expert anthropologist does not just momentarily experiencing a subject–object separation (relata-within-phenomena) but gradually becomes capable of expecting how and which subject–object separations will be performed when humans engage in activities. This is a learning process where material artefacts change the human learners’ perception of the world, just as material artefacts help change the world of activity. In posthuman theorising humans have often become decentred as the analytical field grew a new awareness of the importance of vibrant materiality (e.g. Latour 2005; Bennett 2010). Acknowledging this it is nevertheless impertinent for our understanding of transformations in a global world that we reinstate a human-interested approach that explores the variation of cultures through an anthropology of learning.

The world coming into being in activity is not outside our bodies but nested ‘in the entire system of organism–environment relations within which all human beings are necessarily enmeshed’ (Ingold 2011b: 236). In this line of thinking, the mind is not limited to human bodies apart from materiality, nature or materials. We, our being-in-the-world, evolve with our sensory pathways extending out and materialising meaningful materials, as formerly proposed by Bateson (1972) and now Ingold (2011b).

1.6 Nested by Frictions

In a globalised world we need ethnographies which can make us understand how human beings’ creative externalised acts upon the natural environment not only transform the conditions for living and being in the world but also transform who we are and how processes of engagements can be studied. As natural environments have increasingly been acknowledged as cultural, we not only need physicists to explore materials but also ethnographers to explain how this material world comes into being and conditions human life. Studies of entangled lines of growth, life and movements termed ‘meshwork’ by Ingold (2011b: 63ff) are in need of new studies of materiality, and these are in need of new methodologies.

Learning points to process and to a process that in the case of the expert ethnographer emerges with the human being, the learning participant observer, who moves, lives and grows in a space that is *topologically fluid* and consists of lines rather than nodes. Ingold suggests this distinction:

I return to the importance of distinguishing the network as a set of interconnected points from the meshwork as an interweaving of lines. Every such line describes a flow of material substance in a space that is topologically fluid. I conclude that the organism (animal or

human) should be understood not as a bounded entity surrounded by an environment but as an unbounded entanglement of lines in fluid space. (Ingold 2011b: 64)

This definition opens for a nesting of human activity. Nesting in the sense that rather than an ever-expanding network of nodes with many dimensions and connections, participant observers move unbounded, yet increasingly tied, to an environment shared by others.

In Ingold's discussion of differences and similarities between his *meshwork* and Labour's *network*, he underlines that while events in networks 'are the effects of an agency that is distributed around a far-flung network', meshwork 'is not really a network in this sense. Its lines do not connect; rather, they are the lines along which it perceives and acts'. From the network point of view, the world is 'an assemblage of heterogeneous bits and pieces'. In the meshwork point of view, the 'world is a tangle of threads and pathways; not a network but a meshwork. Action, then, emerges from the interplay of forces conducted along the lines of the meshwork. It is because organisms are immersed in such force fields that they are alive'. Ingold further emphasises that 'living systems are characterized by a coupling of perception and action that arises within processes of ontogenetic development. This coupling is both a condition for the exercise of agency and the foundation of skill' and that expertise or skilled practice 'involves developmentally embodied responsiveness' (Ingold 2011b: 64–65).

A nested environment is a culture of moving entanglements in which ethnographers become more and more engaged as they learn to align their fields of attention and object motives with others; they become engaged in the activities of others (Edwards 2010; Hedegaard 2012; Engeström 1987; Engeström et al. 1999).

Learning to be nested means that we engage in how lines are cut or excluded lines from being formed. It is not just something, which may be described by an unemotional detached spectator. It involves deeply engaged motivations and emotions as well as confusion and surprise when expected lines are not present. It also involves a learning process of which lines of expectancy will form a secure pathway into the future zone of development of the nested entanglements.

Developmentally embodied responsiveness involves sensitivity towards a collectively shared cultural perception, which forms particular embodied fields of attention to materials emerging in meaningful activities. Activities involve human bodies, which gradually come under the influence of cultural frictions. Friction only occurs when materials are in contact.

A wheel turns because of its encounter with the surface of the road; spinning in the air it goes nowhere. Rubbing two sticks together produces heat and light; one stick alone is just a stick. As a metaphorical image, friction reminds us that heterogeneous and unequal encounters can lead to new arrangements of culture and power. (Tsing 2005: 5)

What I add to Anna Tsing's understanding of *friction* is that these material encounters are always grounded somewhere between human bodies and collectively shared material surroundings. Though cultures are no longer too grounded to be moved, frictions occur when newcomers have to learn to operate in local cultural ecologies, wherever they form.

Participant observers' cultural learning resembles a meshwork involving expertise in responsiveness. It is this developmental responsiveness and expertise that expert ethnographers learn when visiting geometrical spaces where humans and other materials are moved by cultural forces.

The cultural psychologist Michael Cole talks about the frequency with which metaphors of weaving, threads, ropes and the like appear in conjunction with contextual concepts like culture, and he suggests that cultures are understood as a rope with discontinuous fibres that become continuous when you twist them together (Cole 1996: 135). With the metaphor of a dust ball of fibres and threads, Fredrik Fahlander does not talk about culture but seeks to distinguish between local practices and broader social elements:

To illustrate the relation between local practices and more general social elements we can employ the metaphors of fibres and threads. Threads are spun by twisting fibre on fibre. The point is that the strength or the essence of the thread does not reside in one fibre running through its whole length, but in the overlapping of many fibres. The only thing running through the whole thread is the continuous overlapping of the fibres. The metaphor of fibres and threads gives an illustration of repeated practice and how they are related, and how individuals, groups and larger collectives are interrelated over time and space. The key point is that threads are made up out of fibres of different lengths. The fibres are momentarily woven together but do not remain so forever. If some fibres suddenly cease to correspond, the thread may either dissolve or take on another form by comprising other fibres. The metaphor of the thread is, however, not to be taken literally. The relations between social practices (fibres) do not form a closed, coherent system; it is perhaps more relevant to speak of clusters of fibres, more in the shape of 'dust balls' than a straight, consistent thread. Such clusters are not absolutely determining, never-changing, structural elements in the traditional sense. They are composed of clusters of repeated practices and are usually sensitive to change in one or more practices. (Fahlander 2008: 140)

Without discarding Fahlander's metaphor, I do see *dust bunnies* as a more apt metaphor for culture than *dust balls*. I prefer dust bunnies to dust balls because *balls*, in spite of Fahlander's explanations, indicate something neatly rounded. Dust bunnies come in all kinds of shapes and sizes and consist of many different materials forming the entanglements. They form in strange places and often go unnoticed. They spread out in space and shrink again, form tubes overlaying each other and make unruly lumps which link together all kinds of materials. They may entangle organic and inorganic dust, skin cells, and house dust mites or other parasites. They are moved about by outside forces like wind, but they are also held together by forces tied into the fibres and between them in the frictions created by the relations. Physicists have actually studied these creatures of living and dead organisms organised as wholes – momentarily built but physically present, none the less. They almost seem to be alive. The plasma physicist Lorin Matthews describes dust bunnies from a physics point of view in relation to research on cosmic dust bunnies (see e.g. Matthews et al. 2007):

The forces that hold the dust bunnies together can be the entangled fibres themselves. They get matted, much like lint or felt. You can also have electrostatic forces between the dust particles that help hold the dust bunnies together. They're accumulating by very small movements of the dust particles. You have not only just dust – either skin cells or inorganic dust – [but also the] dust that rains on the earth from the micrometeorites that hit the earth

every day. Or just traffic going by outside can create dust with emissions. All of these can actually become entangled. (Matthews 2009)

The point is that dust bunnies are reinforced both by outside effects and internal frictions, and whatever connection is formed may be dissolved. It is when we move in energised practiced places and connect meaning with material that lines of fibres become culturally entangled and hold dust bunnies together.

A dust bunny is composed of many fibres that twig, surprise and twist our perceptions of material objects, but the fibres go in all directions, inwards and outwards. A dust bunny never reaches a permanent shape but remains an energised field of new potential connection lines.

Dust bunnies are a ‘meshwork, understood as a texture of interwoven threads’ (Ingold 2011b: xiii), and that meshwork includes the lines woven between theory and the empirical field, which engage the ethnographer. Meshwork entangles ‘lines of life, growth and movement. This is the world we inhabit’. Or ‘web of life’ (Ingold 2011b: 63) is precisely that: not a network of connected points, but a meshwork of interwoven lines.

The process of learning is a stabilising factor. The anthropological process of learning is the same whether Margaret Mead invests her body running away from the Tambaran in the Arapesh village or I sit on the wrong chair in the canteen. Though separated in space-time-mattering, we both learn in local cultural ecologies and that transforms how we perceive the world and its materialities.

Dust bunnies are the working field of ethnographers but descriptions of what goes on along in the entangled lines of material culture are not easily made. With the words of Anna Tsing: ‘To tell the story of this landscape requires an appreciation not only of changing landscape elements but also of the partial, tentative, and shifting ability of the storyteller to identify elements at all’ (Tsing 2000: 327).

What I argue is that engaging with an empirical field teaches us what Lev Vygotsky has called ‘word meaning’ (see Chap. 3). I will expand on this argument, which I understand as local and collectively shared cultural agential cuts that momentarily divide subject and object, but over time align and stabilise meanings with practiced place. Experienced practitioners may communicate, without much explanation, what Vygotsky calls abbreviated speech (Vygotsky 1987: 275) because we and our perceptions are embedded in our collectively shared physical environments, in Vygotsky’s words, in a collective consciousness where we not only imitate *the other* but know the other’s thinking (ibid.: 275). Collectivity is not static but evolves in a constant dynamic process of cultural learning in stabilising ways. When internalised connections are not met as expected, frictions and potentials for new learning arise. To explore why this is the case, we need to perceive the practices from the perspective of the newcoming participant observer’s embodied being. The contribution from phenomenology to an anthropology of learning is the emphasis that all learning is embodied. Developing the original notion of phenomenological *intentionality* (from Husserl and, before him, Brentano) and building on Merleau-Ponty’s notion of embodied perception, the technology philosopher Don Ihde suggests that we foreground the embodied relatedness to technological

materiality in our *life world* (2002). Perception of materials is not just cognition, but our whole sensual being and becoming with the world (Gibson 1979). Subjective consciousness and cognition do not constitute the foundation for knowledge of the world. Instead, the body is emphasised as situated in the practiced place of our life world. This existential phenomenology emphasises, in Ihde's postphenomenological rendering, the multi-perspectivalism of artefacts and the multistability of perception (Ihde 2002). Our consciousness is always of something such as objects, other humans and words. But perceptions may change and this may cause frictions. Ihde's perspective is in particular on technology in our life worlds, but much of what he and others, like Peter-Paul Verbeek (2005), have to say about technology in life worlds also applies to artefacts in organisations. In Chap. 8, I elaborate the notion of multistability and the different relations Verbeek and Ihde suggest we may have with technologies, and I discuss how these perspectives may be connected to a cultural–historical framework of activity theory and the way technologies evolve in a future perspective.

1.7 Summary

Anthropology is a study of human culture and participant observation is the core of the discipline. Participant observation is a craft though not well understood. I suggest participant observation is seen as a process of cultural learning. Through this process we learn to align out engagements with what engages others. The craftsmanship lies in how well ethnographers learn other people's cultural engagements entangled in frictioned encounters in practiced places. None of the existing theories on materiality, learning and culture make it possible to connect the ethnographer's engaged learning with that of ethnographic subjects. The anthropology of learning presented here will attempt to create a theory of learning that connects the ethnographer's learning with that of the ethnographic subjects.

We are in need of a learning theory that paves the way for a new methodology of participant observation in the empirical field because '[t]he boundaries which shape researcher's horizons often serve to severely constrain the research imagination' (Daniels 2012: 2). An anthropology of learning can open up for new imaginaries of practiced places and human–material entanglements. These entanglements demand a new vocabulary which I suggest can be formed from a diffracted reading of anthropological theory, postphenomenology, feminist materialism and cultural–historical activity theory.

This vocabulary avoids culture as representation or a fixed, stable entity, but speaks of *agential cuts*, which make *relata* emerge within phenomena. Through iterated cuts, the lines along which ethnographers walk with their ethnographic subjects are created. Lines become intermeshed, and, like fibres in dust bunnies, they become a habitat of mattering matter with constant frictioned forces of ejection and attraction at play in and out of materials. Cultural learning processes transform

the Euclidian space into an anthropological space of a cultural ecology, i.e. a practiced place teeming with vibrant and frictioned materials.

An anthropology of learning cannot solve the problems of studying material frictions in laboratory settings, nor can it address the necessity of questionnaire surveys or legitimise research by placing data on slips of paper. It only provides a new methodology for what happens when ethnographers learn to become culturally frictioned as apparatuses that pass through cultural ecologies in, at first, unfamiliar places.

An anthropology of learning is about cultural learning processes and *not* about individual learning. Nor is it about learning through unmediated direct perceptions or learning as a *spectator theory* of learning.

It is about learning in a space that is ‘topologically fluid’ (Ingold 2011b: 64) yet frictioned by expectations in organised ways.

In the following pages, I will discuss how an anthropology of cultural learning evolves in organised ways as simultaneously positioned in an analytical and an empirical field (see Chap. 2). Participant observation draws on social and sometimes collective mediating artefacts that open up the research apparatus and give access to learn new word meaning (Chap. 3). As a learner and participant observer, I cannot decide the expectations tied to social roles, structural identities or social categories in the empirical field, but I can use them as a resource for cultural analysis (Chap. 4).

The cultural learning processes can analytically be divided in four processes of learning:

- Learning through social designation, e.g. reactions (Chap. 5).
- Learning practice based (Chap. 5).
- Learning through surprising *culture contrasts* (Chap. 6).
- Learning is scalar – more or less collectively aligned mattering matter nested in cultural–historical activities (Chap. 7).

Cultural learning process open up a zone of proximal development for the cultural analysis as well as for its potential impact of anthropology (Chap. 8). All of these processes are of importance for a new methodology of participant observation – and possibly other research processes too.

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Chapter 2

Culture as Contested Field

In this chapter I look at the concept of culture and how it has been tied to organisation in what I call *the analytical field*. I also introduce two snippets of my former fieldwork in a physics institute and an Italian village to illustrate the relation between the analytical and the empirical field.

Researchers produce what I term *analytical cuts*. Analytical cuts are specific agential cuts (Barad 2003) that delineate particular interests and discussions of researchers. Two concepts are hotly debated within the analytical field *organisation*, *culture* and the relations between them. What are at stake are the different definitions of these concepts.

I use *organisational culture* as demarcation of an anthropology of learning in cultural habitats. I could have used *national cultures* (with blurry borderlines) or *migrant cultures* (with a changeable culture) or other analytical cuts. Yet, *organisational culture* makes it easy to explain the difference between newcomers and experienced learners in organised activities in organisations, which may be more difficult to explain if the analytical cut was culture in relation to nation or ethnicity. Organisations can be organised materially with meeting spaces in buildings in which practiced places are constructed. Learning in organisations involves learning about the material manifest including the virtual environment (e.g. e-mails appearing on a computer screen) as an inherent part of a practiced place. The difference between newcomers and experienced learners becomes apparent when the newcomers realise what they have to learn about cultural resources that others already know. In organised activity, in, for instance, villages, global companies, workplaces or educational institutions, it is up to the newcoming ethnographer to learn about the lines drawn between the virtual and the physical environment as they learn what engage the ethnographic subjects.

Research on organised cultural lives is a complex matter in a globalised world. To see culture as a fixed entity was questioned in the wake of postmodernism (e.g. Strathern 1995; Gupta and Ferguson 1992, 1997; Appadurai 1995), and these

questions changed the traditional field of ethnography; focus used to be on ontological heterogeneity rather than culture as a *whole* implying ontological homogeneity. The notion of culture seems to move from ‘remote places’ (Ardener 2012) and re-emerge in new analytical cuts such as ‘organisational cultures’, ‘virtual space’ (e.g. Miller and Slater 2000) and ‘zones of awkward engagement’ as in Anna Tsing’s work on global connections and frictions (Tsing 2005). Notions of culture as any real entities have been abandoned in anthropology (Clifford and Marcus 1986; Abu-Lughod 1991; Hannerz 1997). Today, culture is recognised as conceptual constructions made by anthropologists and other researchers. Fields can be constructed without consideration of cultural boundaries because the notion of *cultural boundaries* dissolved when anthropology began to study migrations and social groups *at home*. Culture is simply no longer out there in the *field* because that field is just another of the researcher’s constructions. As Vered Amit notes, the notion of a *field* that exists independent of the fieldwork seems to be an oxymoron; all fields are shaped by:

... the conceptual, professional, financial and relational opportunities and resources accessible to the ethnographer. Seen from this perspective, an idea of fieldwork in which the ethnographer is expected to break from his/her usual involvements in order to immerse him/herself in the ‘field’ of other’s involvement is an oxymoron. (Vered Amit 2000: 6)

Opposed to this perspective of *the field* we find Charlotte Aull Davies’ perspective and to which I adhere. She underlines (inspired by the critical realist Roy Bhaskar) that in empirical research critical realism is a position which requires ‘an ontology that asserts that there is a social world independent of our knowledge of it and an epistemology that argues that it is knowable’ (Davies 1999: 17).¹ To this perspective I add that the social world is also a material world – and, to some extent, lines are drawn between the material and the social world, lines that can be studied as agential cuts. Here the question becomes how we as researchers gain access to learn not just from but *with* other people, since it is not at all easy to learn in other people’s organised practiced places. In this light, the empirical field is a social and material world of practices and cultural learning processes that feed into our analytical cuts and analysis.

Culture is emerging when sedimented self-evident cuts are questioned. Learning is often mentioned as an explanatory concept in relation to culture in anthropology (see Hasse 2012, 2014 for summaries). Though many anthropologists refer to learning in relation to, e.g., cultural change, few have set out to explore the concept in relation to culture or organisation and connect it with their own learning processes in the field. No ‘critical ethnography’ of culture (Marcus and Fischer

¹ Just to avoid misunderstandings: Though Charlotte Aull Davies speaks about ‘Reflexive Ethnography’ (1999), her understanding of reflexivity is very far from the understanding of ‘reflexivity’ given by Barad (where reflexivity is not thinking but, e.g., an image reflected by a mirror).

1999; Lave 2011) can be realised as long as we know so little of the basic process of how we come to learn what we experience as being *cultural*.

Placing learning processes as *the* methodological alignment apparatus between an ontological heterogeneity and epistemological homogeneity opens up for new and dynamic understandings of culture in the field. Then culture can be understood as a real force moving through persons and material artefacts binding them together in organisations – not immediately, but over time. Culture is real – as a process, not an entity. An anthropology of learning underlines the changes of the embodied being in a world of agential cuts. When new experiences change people, the social spaces we create together also change (Hastrup 1995: 290). Such processes of change can be seen as changes in cultural organisations and in personas – understood as ‘per sonare’ (the literal translation is ‘sounding through’): a permeable being-in-the-world through which cultural lines and connections *sound through* as we move. In these processes researchers are not *individuals* but persons through which the forces of culture, no matter how invisible and non-reflected, pass through and leave identifiable traces and marks to be elicited in anthropology.

The social organisation might be without explicitly denounced boundaries and demarcation lines, but it is still an organised materiality, which includes bodies, words and movements in and around artefacts. Most importantly, newcomers are not *immersed* but *can* become *experts* over time – experts on how to move with the local culture. Not *in* the local culture (which is a much too stable formulation) but *with* a culture where we encounter other participants who, like us, are capable of learning collective lines of expectations.

In this context, expertise includes how we use artefacts, like the chairs we sit on and the doors we open. None of these engagements are innocent. Material artefacts shape our organisations as we shape them in our organised way of handling them. Our learning processes are formed by cultural mediation when artefacts and humans move about in organisations spreading out in a globalised world. These processes of mediation are not always harmonious – they may cause frictions like when electrified fibres rub against each other. Ethnographers can pick up on these frictions organised in never-quite-stable dust bunnies and make them available for analysis.

The relation between anthropology, learning and culture is, I argue, best explored in analytical cuts that focus on organisations where cultural frictions are produced and sensed by embodied beings, rather than in large abstract entities like fixed ethnic groups, nation states or other kinds of predetermined cultural islands.

2.1 The Analytical and Empirical Fields

We tend to not ask how researchers differ from the people they set out to study as cultural beings, whether these people are organised in small villages in Indonesia, a boarding school in Australia, in large Western companies like Ciba-Geigy or in realms like small kingdoms ruled by fons (or mfons) in northwestern Cameroon. It

has been one of the self-evident presuppositions of cultural researchers – a black box with no need of explanation since the researcher is not a *real* participant in the everyday life of the people we work with.

Recently, however, social sciences have come up with many new available positions for researchers. Ethnographers are no longer seen as a *we* studying *them* but as collaborative partners in research (Low and Merry 2010; Lassiter 2005; Baba and Hill 2006). Nevertheless, a new black box (with no need of explanation) has emerged: the researcher is now a *real* participant in the everyday life of the people we work with.

No matter what kind of fieldwork we claim to engage in or with, our positions as researchers call for an opening of both of the two black boxes (participant or not) to enable an explicit understanding of what participation in other people's everyday life mean from a learning perspective. When cultural analysis, which builds on an anthropology of learning, is our point of departure, it is relevant to ask how the researcher's cultural learning processes might differ from the cultural learning processes that form the everyday life for the other participants.

To underline this difference between researchers and other participants in practiced places, I distinguish between the analytical field and the empirical field. This distinction is an analytical agential cut that belongs to the analytical field. Both the analytical field and the empirical field are entangled in the practiced places where anthropologists move around. The difference lies in the objects of an organised activity. The empirical field is the practiced place studied by ethnographers walking around learning in a material world together with the local people. The analytical field is an organised activity used to create and criticise the theoretical tools realised in cultural analysis. The difference between the researcher's activities and those of the other participants is that the ethnographer will eventually leave the empirical field to discuss what he or she has learned with fellow researchers in the analytical field. Anthropologists do not stay in the empirical fields they visit – but they do stay in the analytical fields. Analytical cuts made in the analytical field (like the concept of culture) may be of interest to the participants in the empirical field, and they may even use the conceptualisations that are constructed in the analytical field, but they are engaged in their own everyday activities. The analytical field is also an analytical cut. It is not about particular persons, but positions. An Ojibwa Indian may become an anthropologist – and an anthropologist may leave his/her position and take up another as Ojibwa again when the analytical field is of no importance. Thus, to be positioned in the analytical or empirical field is not a fixed position, but defined by the participants shifting objects of interest.

Ethnographic validity lies, in a realist's perspective, in how well we come to understand the people we study with (Maxwell 1992: 281). How we come to understand is, in my argument, connected to learning, and learning is connected to position in the fields, where we learn to become experts.

Certain norms of conduct are often expected in both the empirical and the analytical field. In the analytical field, these norms change from discipline to

discipline. To become an expert, the researcher must learn about these cultural norms in both fields.

In the analytical field of anthropology, it is sometimes accepted that the researcher uses and investigates any number of theoretical perspectives in the attempt to understand the empirical field. In the analytical field of other disciplines, it is exactly the opposite; the researcher is supposed to choose one, and only one, theoretical perspective before entering an empirical field and use that theory for analysis no matter what is encountered. The research apparatus is thus constructed differently according to the norms in the given analytical field. The analytical distinction between an empirical and an analytical field helps me to take liberties with theories (indeed whole theory complexes) when conducting an analysis of the empirical field. Rather than beginning and ending with a chosen theoretical position (such as actor–network theory, cultural–historical activity theory, postphenomenology, cognitive anthropology, feminist or STS theory, Foucault’s theory of discourse or Bourdieu’s theory of practice), the starting point for my methodology of an anthropology of learning is what the researcher may learn in the empirical field. My commitment to and use of cultural–historical activity theory, anthropological theory, STS theory, feminist theory and postphenomenology must be seen in this light. I learn in the analytical field from reading and going to conferences. I use these theories to understand the process that transforms me when learning with the empirical field. My methodological concern is how anthropologists are educated in the empirical field in ways that change our perception of the material world and our engagement with it as culture *sounds through* us and change us as persons.

How the ethnographer’s engaged learning process can be understood theoretically hinges on the development of a coherent theory of the anthropology of learning, which draws on many of the above-mentioned theoretical perspectives. Theories from the analytical field are cultural resources helping me to understand my own learning process in the empirical field. They are cuts of varied perspectives on the social and material empirical field I pass through. Instead of seeing theories as internally coherent analytical perspectives, which are distinctly separated from each other, I use theories to help me build up a cogent theory of cultural learning processes, wherever I find them useful.

It is not an eclectic position when we assume there is an empirical field anchored in a material world unknown to newcomers. Ethnographers may make use of whatever they find reasonable from the analytical field in *explaining other people’s* entangled social and material reality. This reality and our theories change when we learn about practiced places. I make *diffracted readings* – i.e. I read texts from a variety of theoretical perspectives, which in my use do not contradict but supplement each other, highlighting different aspects (and they all belong to fieldwork-oriented social sciences). In my diffracted readings, the texts (e.g. actor–network theory (ANT) or cultural–historical activity theory (CHAT)) affect each other enough to give me new perspectives on the emerging empirical field. Yet, the empirical field carries more weight when it comes to changing my perceptions. This means I allow myself to take liberties with theories, e.g., indicating a systemic view on the empirical field. I find inspiration in much of the insights from systemic

theories (like, e.g., Gregory Bateson's and Yrjö Engeström's learning theories), but as a person I am not organised in systems in the empirical field but in messy, moving yet coherent meshworks. Like Anne Edwards, who in the analytical field have called for theories of 'relational agency' rather than systemic theories, I also object to a use of theories which demand the researcher accepts the entire theoretical package (Edwards 2009).

Within clusters of theories, like CHAT, we find diversity in the analytical cuts that are made. Newcomers as individuals may move between 'activity settings' (Hedegaard 2012) or enter the kind of organisation found in Yrjö Engeström's studies of workplaces, where a group of people have a history of working together towards a common object (1987). Though a theory may be brought to the empirical field by the researcher, it may not be useful from the perspective of social and material realities of that empirical field as it emerges through agential cuts learned in the empirical field. Nevertheless, some stick to a particular analysis because that perspective engages the researcher in the analytical field. As researchers we deeply engage our persons with both the empirical and the analytical fields, and both fields move us as we gain expertise.

2.2 Engaging with the Fields

Participant observation has sine qua non been the road to understand other peoples' engaged practices (e.g. Atkinson and Hammersley 1994). It has been defined in many ways (e.g. discussing if it is a method or not and the relation between participation and observation). From Malinowski (1922) over Spradley (1980) till recent times, the method of participant observation has been both problematised and praised (e.g. de Laine 2000). Researchers may 'rely on literally being an inconspicuous bystander; or they may take the opposite approach and reduce reactivity by participating as fully as possible, trying to become invisible in their role as researcher if not as human participant' (Davies 1999: 7).

In the following I discuss the question of participation as a question of engagement. From this position, engaged observations can be made that may change theoretical positions. However, theories may also guide our perceptions because our engagement lies in the theories of the analytical field as well as in our engagement with the empirical field.

To be engaged in participant observation is to have a cause for observation – but what cause? In a supplement to *Current Anthropology*, Setha M. Low and Sally E. Merry (re)opened the discussion of what engaged anthropology is. They identified six types of engagements: '[F]rom basic commitment to our informants, to sharing and support with the communities with which we work, to teaching and public education, to social critique in academic and public forums, to more commonly understood forms of engagement such as collaboration, advocacy, and activism' (Low and Merry 2010: 214). Thomas Hylland Eriksen has in most

excellent ways written about engaged anthropology (2006) and calls for a more engaged public presence of the anthropologists.

Both of these approaches underline the political aspects of doing ethnography and the necessity to move anthropological insights outside of the analytical field and into public debates. To do engaged anthropology in a globalised world, we need engaged ethnography, which may give us strong arguments in debates about how some people may change the world for others. Though none of my own empirical fieldworks directly challenge the powers of the world mongers, I believe my take on engaged expert ethnography will give anthropologists and other researchers more debt in their methodologies and thus in their engagement with the public as well as with their ethnographic subjects.

In engaged anthropology, as defined by Low and Merry, the focus is on varied approaches which find their ultimate form in advocacy and activism that address public and political issues (Low and Merry 2010). Engagement could, however, also be analysed as a process; nobody is born engaged in activism and politics. Becoming engaged as an ethnographer is not being either restricted to the empirical field (being an activist among activists) or restricted to the analytical field (being a theoretician among theoreticians). We need not define the ethnographer as either an activist or an aloof theory-maker. In studying *with*, as proposed by Ingold, we invest ourselves in a transformation process which not only changes our perception of a geometrical space into practiced place, but also changes our engagement in those practiced places. We become expert learners with other people's cultural resources.

The *advocacy* definitions of an engaged anthropology, proposed by, e.g., Merry and Low, does not define how the ethnographers become engaged in the same problems and concerns as the people and the everyday life they study. They start with engagement as something given, not something to be earned.

Expert ethnographers are ignorant of many aspects of what there is to learn in both the analytical and the empirical field when they embark on participant observation by following the paths taken by their ethnographic subjects. In the empirical field they may be ignorant of how a chair may be materialised with unexpected agential cuts. In the analytical field researchers are continuously reminded by colleagues about other theories they should have known or used. As underlined by Jean Lave, over time we learn many things that make us look back on a past ignorance – yet the apprenticeship goes on forever (Lave 2011).

When I initiated my journey as an anthropologist with fieldwork in Cameroon in the early 1990s, I had some notions with me from the analytical field (e.g. 'cultural capital' Bourdieu 1990), but I had never heard of the work by Basil Bernstein on cultural codes (Bernstein 1971). This agential cut came with learning from colleagues in the analytical field, when they informed me that a lot of my writing seemed to draw on Bernstein's work – although I had never heard about him. Such reminders in the analytical field may be useful. Yet, the education we go through is also firmly anchored in the empirical field which became most apparent to me when I, some years after my visit to Cameroon, as a PhD. student entered a rather unusual kind of fieldwork. I enrolled as a physicist student at the Niels Bohr Institute for Physics in Copenhagen in Denmark determined to study what

contributed to women's uneasiness with physics culture. Of all remote areas (Ardener 2012) studied by anthropologists, this could have been considered one of the least cultural and exotic places an anthropologist could learn about a *remote culture*. It turned out not to be so. At first, however, the space was material and primarily meaningful due to my past experiences.

In an early article written about this fieldwork, I begin my description of the institute like this:

It is a building made of grey plaster with three wings two stories high. Windows are painted red and the doors green. On the facade is written: Niels Bohr Institutet 1920. Through the green door students dash off to their first class in experimental physics after the summer vacation. They all look like ordinary Danish youth – T-shirts with Calvin and Hobbes, a Jedi Rider or the Cure, faded jeans, sneakers and East packs. I already feel slightly out of place. For one thing I am wearing a skirt and a jacket, in my backpack I carry not only books with titles like *Universe* and *Elements of Newtonian Mechanics*, but also a tape-recorder and I am not only a newly arrived physics student but an anthropologist just starting fieldwork on my Ph.D.-project. The aim of the project is try to shed more light on possible differences in male and female students' approach to studying physics. I decided to make participant-observing fieldwork among these anything but exotic initiates to the tribe of physicists by 'following the loop' – a method that was recommended by Frederik Barth with reference to Gregory Bateson (Barth 1994: 352). As a newcomer I intend to follow wherever my position as a just-started physicist will lead me. (Hasse 2000: 5)

This positioned way of engaging with the physicist students gave me a possibility to understand the institution of physics education differently from the official texts posted by the administrators of the physics education. The official description of the Niels Bohr Institute for Physics was nothing like my embodied sensual presence in the empirical field. The institute was officially organised in different areas of study. The homepage of this educational institution said that the institute:

"[O]ffers academic degrees within the fields of astronomy, physics, geophysics, biophysics and Nano-technology. To more than 600 students the institute offers a three-year Bachelor degree followed by a two-year Master's degree and a three-year PhD programme". The disciplines of physics we could study were: "astronomy, physics, geophysics, nanophysics and biophysics [which] are all categorized within the disciplines of physics. Physics is the science of the elementary laws of nature. Physics seeks to explain nature at all levels, from the smallest elements, the quarks, to the greatest phenomena in the Universe. These aspects, from micro level to macro level, form the sciences at the Niels Bohr Institute. Starting from particle and Nano-physics, the institute continues to biophysics, onwards to geophysics and meteorology and arrives at astrophysics. The students at the Niels Bohr Institute gradually focus their field of study as they elevate towards their Masters and PhD degrees." (Niels Bohr Institute homepage retrieved 12.08, 1998)

It seemed that there was a world of difference between the officially organised *system* and the *local* organisation. The meaning of pictures of, e.g., Calvin and Hobbes and Jedi riders did not seem to be symbolic, but rather tied to local meaning-making processes, which connected different groups of students. My presence in the empirical field had made me a material-meaning learning ethnographer, rather than the symbol-interpreting ethnographer (e.g. Geertz 1973, 1984) I had learned about in my anthropological studies.

My description, however, reveals no insights into the colourful and complex learning process, which lay before me in this practiced place and which gradually changed the geometrical space to a force field of frictions in which Jedi riders and Star Wars could engage me in unexpected ways.

I went to classes in physics, mathematics and astronomy, to lectures, to student parties and plays. Gradually the position I had taken as a first-year student in the empirical field began to have an effect on me. Instead of taking notes of how my fellow students behaved, the very fact that I, to some extent, actually did what they did, and they watched and reacted to me doing it, began to have consequences for my actions and influenced my situated embodied thinking. As they expected me to act and listen as a physics student I began to do so – and from this movable position, it became increasingly difficult to not actually take an interest in and engage in physics culture.

My notes mirrored this interest. At first, I meticulously noted the number of female or male students attending class. I asked questions about how much physics in primary school had mattered for, respectively, male and female students' interest in physics. Yet, in my notes I also began to ask a new kind of questions, like 'do we really not know what gravity is?' or 'does that mean all stars are actually suns?' (see, e.g., Hasse 2008). Though naïve at first, my questions were earnest, and over time they developed into expectations of physics futures – and with time even the Jedi riders found their place in a cultural ecology allowing science fiction but excluding short dresses (see Chap. 8).

My changed reflections became a new key to a methodological understanding of participant observation as observation with participation. Observation is a positioned and not a distanced observation. Learning from the position as a physics student transformed my focus, my attention and the relation between words and material world, and gradually the physical geometrical space changed into a culturally practiced place. As noted by the British anthropologist Edwin Ardener, the social is a space that identifies because of its structures of categorising and classifying. In this social space (closer to Certeau's practiced place), human beings are 'defined by the space and are nevertheless the defining consciousness of the space' (Ardener 1989: 212). In this respect, I was gradually becoming part of the defining consciousness of a new social space.

I nourished in this process, which I eventually termed a *cultural learning process*, theoretically on cultural resources in the analytical field (such as theories from cognitive anthropology, psychology, pragmatic philosophy and the cultural historian school). However, it was my changed perceptions in the empirical field that made me select or deselect theoretical perspectives.

Cultural codes (a phrase from the analytical field) are not the best phrase for what I learned as a student of physics. Cultural codes imply a kind of totally shared and almost rule-based learning. The things I learned in the practiced place named the 'physics institute' could also be learned by other newcomers students as kinds of codes and rules. Sometimes, however, this was not the case. Codes and rules could change. And everyone did not learn exactly the same about the cultural habitat. For instance, I learned that physics students occupied a particular area in

the students' canteen. Even though the chairs were all the same, I, and the other students I hung out with, knew which particular area of the enormous canteen we belonged to. If we wanted to meet up, we could always wait at this particular place in the canteen, which also belonged to the social space of the students who defined the boundaries of physics culture. Physics students who accidentally placed themselves among the math and chemistry students, with whom we also shared the canteen, would be ridiculed, just as I was on the first day at work sitting myself on the *wrong* chair (see Chap. 1). Other physics students, who did not care or were ignorant of this invincible boundary forming them–us agential cuts in the physical and social space, began their line-walking from another position. After a year my group of students had moved to other localities such as the famed *student room* with chess boards and soft chairs.

During my first week as a physicist student I learned about many local cultural resources I could employ in order to *become* a physicist student like the other freshman who had enrolled that year.

Whatever emerges as systems and structural relations from this position 'are specific material (re)configurings of bodies, that is, ongoing re(con)figurings of space-time-matterings' (Barad 2007: 448). A concept like Barad's space-time-mattering was not known to me at the time of my fieldwork – and indeed it did not make a difference for me in the canteen. Yet, space-time-mattering is an analytical cut which underlines that particular spot in the students' canteen only functioned as our cultural meeting place for a while. But for a while it became a good resource for me for making acquaintances and keeping in contact with *fellow* students from my freshman group.

Though I later came to know Barad's work in theoretical discussions with feminists about the new materialist movement in the analytical field, my first encounter with the notion of space–time came from reading *Elements of Newtonian Mechanics* and from discussions of relativity theory. Barad's analytical field emerged to some extent from what was now my empirical field. I can now explain with her notions of agential cuts how I began a learning process of meaningful mattering in this particular culturally practiced place. Yet, at that time of my fieldwork I was ignorant of her work in the analytical field as a resource.

As new students we learned, or had opportunities to learn, about many local cultural resources in this particular organised social and material reality (e.g. Hasse 2002, 2008). I learned that there was no absolute line dividing me, the ethnographer, from the lines followed by my fellow physicist students. Though I was ignorant of many aspects of physics culture (including math), so were some of my fellow students. We were all positioned differently in our search for potential pathways to use the cultural resources found to become further engaged in the empirical field (see Chap. 7). The cumbersome math exercises never really became a cultural resource of engagement for me, and it was almost as difficult for some of my fellow students to use math to gain access into the physics culture as it was for me. We had to find other ways of staying within reach of the dust bunny. And many of us did – at least for a couple of years. Some, however, like Vibe, dropped out of the geometrical space. We wondered about them in the canteen corner. 'Have you

seen Peter lately?’ ‘I think he has dropped out.’ ‘Why?’ It was always difficult to get answers, but as an anthropologist I had the advantage that I could contact the dropouts and ask them why they had left their study. ‘Math was too difficult’ was a recurring yet not quite satisfactory explanation as many, who also found math difficult, stayed (see Hasse 2003 and Chap. 8). Over time I learned to detect frictions that could make people disappear – math or no math.

Though some would think I stayed in the same geometrical space – the physics institute – during the 2 years I followed physicist students in their study, it became in many ways a ‘multisided ethnography’ (Marcus 1995). As I moved around in this practiced place and learned that organisations in this practiced place changed, the geometrical space changed along with it.

And then I left. Researchers can never become participants in the empirical field like other participants. This is what legitimates *research* in anthropology. Our engagement in the analytical field will ensure this. Yet, my involvement in physics still forms my engaged perception of the cultural social and material world I learned in the empirical field.

2.3 Organisational Culture

Before we move on to what it means to learn culture as a defining consciousness in the analytical field, I shall look at one of the production places of culture in order to simplify the discussion: the cultural organisation.² The Niels Bohr Institute was more than a geometrical space of classrooms. It was an organised practiced place stretching far beyond the physical brick walls – yet the organisation had its limits.

The word *organisation* refers etymologically to both ‘organs’ and ‘work’ (Starbuck 2003) and has been used in many different ways in organisational studies. The most important usage for the discussion of cultural learning processes in organisations is that the term *organisation* in organisational studies comes with two meanings: one is the established institution and the other is the free organisation which emerges whenever humans work together to achieve a common goal. This is inherent in the catchy phrase by Barbara Czarniawska that organisations can act as ‘obstacles to organising’ (2013: 3).

This kind of organisation is also inherent in the concept of ‘relational agency’ (Edwards 2010) where professionals may act across institutional borders in order to work together to achieve a common outcome like, for instance, helping vulnerable children. Organisation covers then both institutions with already established traditions (Hedegaard 2012) and an organisation of people with different kind of expertise contributing to the same problem space, although their workplace may

²Though the basic theoretical approach I propose could also be used on conceptualisations like *national culture* or *ethnic groups*, exploring cultural forces in organisations has the advantage of rather restricted production sites even when we include virtual production of cultural resources.

be located in different institutions (like in Anne Edward's work on 'expertise' 2010) and in organisations without a long history of rituals and collective symbols.

This dual understanding of organisation has implications for how we understand one of the most contested concepts in anthropology: culture. The anthropologist Edwin Ardener has noted (1985) that important concepts tend to go through periodic stages of hot debate whenever a disciplinary field of study is on the verge of a strong epistemological break. In his days, the concept of 'rationality' was being debated as the discipline of anthropology shifted from being embedded in the grand narratives of Marxism, structural functionalism and structuralism to becoming more poststructuralist and relativistic. Since then, central anthropological concepts like *culture* and *fieldwork* have undergone similar changes when post-modern deconstruction problematised anthropologists' *writing culture* – a discussion brought to the forefront in the analytical field by George Marcus and James Clifford in the 1980s (Clifford and Marcus 1986). Anthropology has a strong tradition for hot debates. Yet, the problems with the concepts that cause these debates tend to remain unsolved. As problems mount the debates are abandoned, or discussions are muted, and one concept replaced with another (as yet) less contested. When concepts like *field* and *culture* become too problematic and no solutions are in sight, they are abandoned for new ones like *identity*, *narrative*, etc. without getting to the core of the challenges: how to explain cultural variation in constituted collectively shared common meaning-making, while individuals differ in their meaning-making practices. This chapter cannot answer all the problems with the culture concept addressed in the analytical field in the 1980s and 1990s, but it will unfold some of the basic problems with the concept of culture, which I argue may be remedied by connecting it to the concept learning.

My argument is best understood in relation to the small analytical field I call 'organisational culture'. A diffracted reading of how culture as a concept has been contested in studies of *organisational culture* is a simple way of approaching the contested concept of culture in relation to the likewise contested concept of organisation.

The field of analysis has *culture in organisations* as its object of analysis. The field emerged from a much larger and broader field of organisational studies, where management literature is the underlying context (Alvesson and Berg 1992: 19).

In the following I first look at the emergence of this analytical field of organisational culture. Secondly, I look at three equally problematic and contested concepts of culture within this field, which echo discussions in the broader and more general field of anthropology: integration, differentiation and fragmentation perspectives.

Analytical fields have histories. Most analytical fields are characterised by a certain degree of consensus about the so-called founders of the field, i.e. the women and (typically) men who invented the first theories to be repeated or contested by later followers. In anthropology the founding fathers (and they are indeed mostly fathers) are, e.g., Bronislaw Malinowski, Alfred R. Radcliffe-Brown, Marcel Mauss, Claude Lévi-Strauss, Lucien Lévy-Bruhl, Edward Evan Evans-Pritchard, Franz Boas, Margaret Mead and Ruth Benedict.

Though influenced by anthropology, the founding fathers of the field of organisational culture are rather connected to the founding fathers of organisational studies than the founders of anthropology. In organisational culture the founders are often sociologists like Max Weber, who connected organisation with the ‘charismatic leader’ and proposed the rationale behind the bureaucratic organisation. Another is F.W. Taylor, who gave name to the concept of Taylorism and discussions of how organisations can be rationalised. Studies tied to the development of Taylorism mainly deal with analysis of organisations as enterprises, and they have the explicit purpose of supporting management and leadership. Only a few, like Elton Mayo, took (at least to some extent) the perspective of the employees’ everyday life as his point of departure.

Researchers in the broad field of organisational studies tend to have their analytical origin in business schools and similar institutions. The main purpose of research was to enhance the performance of enterprises, and obstacles to the effectiveness of work were (and still are) their main focus. From this field a subfield developed from approximately the 1980s onwards, which emphasised the analysis of organisations as organisational cultures (Parker 2000: 59). This change happened when the field of organisational studies began to show an interest in the softer side of studying organisational management. Mayo paved the way for an understanding of what was later known as ‘human relations’ studies, where the meaning of loyalty and other human relations in organisations was stressed. It has since been seen as a paradigm shift that gradually emphasised the meaning of culture understood as ‘vision, mission, culture and values’ (Sandberg and Targama 2007: 1–2).

The researchers then began to show an interest in what can be seen (in an anthropological sense) as shared visions (Selznick 1957), myths or sagas (Clark 1972), which shape what they called the shared ‘corporate culture’ (Deal and Kennedy 1982). The interest in management did, however, still constitute the main research focus.

The concept of organisational culture is not used systematically before the 1970s. The organisational researcher Elliott Jaques, from Tavistock Institute in London, who was inspired by psychoanalysis, has been identified as the first to connect the two concepts *organisation* and *culture* in his book on the enterprise Glacier Metal from 1951 (Jaques 2007/1951). This is mentioned by many, e.g. Hofstede (2001: 392) and Mats Alvesson and Per Olof Berg (1992: 12), who have tried to trace the roots of the field. The work by Wilhelm Bion’s group also developed out of the Tavistock school, but while Jaques and his group argued for close relations between social and cyclic structures in organisations, Bion and his followers underlined (according to Alvesson and Berg) unconscious *collective* processes in work life and stressed the notion of ‘shared fantasies’ and ‘collective defence mechanisms’ (Alvesson and Berg 1992: 12). Bion (1961: 146) has also developed the concept of ‘basic assumptions’ as that which holds organisations together (which later inspired the organisational researcher Ed Schein’s work on culture in organisations).

From the mid-1970s and onwards, educational institutions were included as organisations worth studying in the analytical field. In fact, some refer to

Pettigrew's influential article on a private British boarding school from 1979 'On studying Organizational Cultures' as *the* place where the concept of organisational culture is explicitly defined for the first time (Alvesson and Berg 1992: 15). That definition underlines the stable and collective nature of culture in organisations:

In order for people to function within any given setting, they must have a continuing sense of what that reality is all about in order to be acted upon. Culture is the system of such publicly and collectively accepted meanings operating for a given group at a given time. This system of terms, forms, categories, and images interprets people's own situation to themselves. (Pettigrew 1979: 574)

Culture is thus a systematic organisation of collectively generated and accepted meanings, which functions for groups in specific situations. Psychological aspects of what creates these collectively generated and accepted meanings are not touched upon yet. From this tentative beginning, the analytical field of organisational culture emerged and grew to become the new trend in organisational research.

During the 1980s, culture in organisations almost sent all the main journals on organisational studies into raptures, and they all wanted to publish special issues of this particular topic. Martin Parker, for instance, presents this impressive list of journals with special issues on organisational culture in the 1980s: '*Journal of Management Studies* (1982, 1986), *Organizational Dynamics* (1983), *Administrative Science Quarterly* (1983), *Journal of Management* (1985), *Organization Studies* (1985) and *International Studies of Management and Organization* (1987)' (Parker 2000: 59).

Various different factors may be behind the enormous interest in cultural analysis. For one thing, several researchers in the analytical field of organisational studies (what Alvesson and Berg call the intra-scientific perspective (1992: 21)) have for long pointed out that something is missing in rigid structural and so-called objective analysis, as well as in primarily quantitative studies. We have seen an apparently growing dissatisfaction with the state of traditional *science-based* approaches in the analytical field.

One is what appears to be a growing dissatisfaction with the state of "normal science" in the discipline. Ever more obscure statistical innovations have contributed to the discipline's attractiveness to technically minded government bureaucrats, but these have failed miserably to address issues of serious social and cultural significance. (Wuthnow and Witten 1988: 49)

2.4 Fighting Over Culture Concepts

The development of the small analytical field of organisational culture is an interesting case of how analytical fields evolve, grow and shrink – along with fierce debates taken by researchers as these processes evolve. What is at stake is the boundaries set by the analytical cuts we use when analysing organisational culture. The field of organisational culture emerged from the larger field of organisational studies, because a growing number of researchers began to consider Tayloristic

measurements of time and quantitative studies of production inadequate to capture the complex everyday life and processes of change in organisations. This is an interesting development, even for researchers today, since cultural analysis is often based on qualitative methods, which many researchers in organisational studies still consider less accurate and scientific than quantitative methods. However, in the 1980s, cultural analysis was thus *re-invented*. The quantitative methods of Taylorism were unable to grasp that something which, at that time, was considered more important than legitimising research through quantitative scientific approaches, namely, how to study what cannot be weighed and measured: the basic assumptions, values, symbols, motivation and emotions.

Furthermore, two external factors influenced the development of the analytical field towards a focus on culture. With the growing globalisation it became clear that enterprises in the West could not be studied as separate from the surrounding world since there appeared to be a growing need in business life to understand what happens in a world that is increasingly viewed as a *global village*. Following this trend, Martin Ouchi's Theory Z (1981) deals with enterprises in Japan. His work shocked the analytical field, which was hitherto rather self-contained in Western journals and conferences, because he clearly showed that the Western world competed and still competes with many other non-Western countries with excellent industrial organisations. Ouchi argues that by studying Japanese organisational culture, we can learn from the different nations' cultural ways of organising and developing productive enterprises. Later, with the national studies of Geert Hofstede, the national culture approach to organisational culture develops into a proper comparative design, where organisational cultures in different national contexts are understood on the basis of a common formula (Hofstede 2001).

The other factor to influence the analytical field of organisational studies towards cultural analysis is a search among many researchers of something that holds organisations in place. Organisational culture becomes, in the lingo of the analytical field, the *social glue* which the researchers assume can account for employees' loyalty and effectiveness. At the same time, employees begin to seek a better work life with a fruitful and giving workplace culture. Employees make new demands that indicate they want more out of life in the workplace than just the salary; they want a better organisational culture (Alvesson and Berg 1992: 20). These factors can be argued to trigger the development of the analytical field of organisational culture.

Researchers met in the analytical field to discuss this concept. They discussed at conferences and through their contributions to journals, and in local research discussion groups formed around the concept of organisational culture. Yet, as in any other analytical field, there is never complete consensus about what is to be achieved by using the concept *organisational culture* as a common denominator. Nevertheless, precisely these frictions – the endless discussions about where culture is, what an organisation is and what the relation between the two might be – hold the analytical field together.

These feuds in the analytical field of organisational culture mirror, to some extent, the fierce discussions we know from the larger and more loosely connected

fields of anthropology: STS, feminist studies, etc. Because the field of organisational culture is small, it is possible, even for an outsider, to gain an overview and follow the discussion in the journals. Possibly due to the limited number of participants, or the specific focus on *culture*, the general tone of discussion is often hard and fiery when the researchers challenge each other's theoretical tools of analysis, methods and methodologies.

In research overview articles and books the conception of culture splits the researchers into different camps. On the one hand, there is a division line between functionalists and symbolists, and, on the other hand, there is a division between seeing culture in organisations as *integration* or *differentiation* and the postmodern *fragmentation*. Though using the same term (organisational culture), their analytical cuts differ. The integration perspective comprises both functionalists and symbolist, while the other two, differentiation and fragmentation, are often seen as belonging to the postmodern wave of deconstructing the wholeness created by functionality and symbols.

The functionalists are often described as those who want to use the concept of culture to improve the workplace or create enhanced value for the enterprise. They are in opposition to researchers who are occupied with developing a symbolic understanding of the concept of culture and its relation to organisation. Both perspectives draw heavily on discussions found in the analytical field of anthropology in the 1960s and 1970s.

'The harmonic whole' propagated by Edgar Schein (2004) is often connected with what is known as structural functionalism or functionalism in anthropology. In anthropology this direction is tied to the two anthropologists Bronislaw Malinowski and Alfred R. Radcliffe-Brown. The theoretical perspective focuses on culture as wholes, with particular elements (e.g. a ritual) that function to secure social equilibrium and meet psychological and biological needs within the culture as a whole. Here it is taken for granted that something like culture exists as a context for needs and other basic human aspects.

The culture (notice *culture* in singular) comprises, as a whole, basic social values that are sustained and strengthened through shared acts and rituals. Culture is seen as the context for social systems and basic human needs. This anthropological perspective on culture comes close to Schein's, whose theory on organisational culture operates on several levels. At the basic level we find the 'basic assumptions', which are the deepest and most stable fundament of the organisation. This level is followed by two levels of more superficial, but increasingly more visible, aspects of culture: values and artefacts (Schein 2004). Unlike some anthropologists, Schein does not discuss culture in relation to biological needs but assumes that basic assumptions are initiated in organisations by their founders (Schein 1983) where after culture becomes a sort of social glue holding the organisation together.

Schein also disregard mechanisms of inclusions and exclusions and how new members of the organisation, as persons, come to act in accordance with the basic assumptions and how they may dissent and change basic assumptions over time. Though he does touch upon learning, he does not discuss the relation between culture, organisation and learning in any deeper sense.

Opposite this perspective on culture as a whole, we find a perspective on culture as constructed. The group of researchers adhering to this approach draws in many ways on Geertz's interpretive understanding of culture as meaning-making of native symbols. Anthropology is not an experimental science but an interpretive science of decoding symbols, signs and seeking meaning (Geertz 1973: 4–5). In this perspective, culture cannot be reduced to physical or psychological needs known to social systems – nor to basic assumptions created by its founders. Culture is 'a historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge about and attitudes toward life' (ibid.: 89). The ethnographer can construct the ethnographic material by interpreting native interpretations, so culture appears and can be read as a publicly accessible text (ibid.: 10).

The symbolic perspective on cultural analysis focuses on the anthropological point of departure that human beings are creative co-constructors of their own reality. In relation to the functionalist perspective, where the overall meaning is given and which always operates with fixed levels of analysis, the symbolic analysis operate with individual elements, which must be put together in interpretations. From these interpretations the researcher's analytical work elicits patterns of meaning in relation to the empirical data material.

The comprehensive discussions of symbols in organisations have opened for an understanding of other ways to define organisational culture than what has been done in the functionalist perspective (Alvesson and Berg 1992). In the symbolic interpretation of organisational culture, in contrast to the functionalist approach, it is assumed that organisational members do not always attribute the same meaning to the same phenomena (Hatch and Schultz 2004).

Considerations of *who shares what in a culture* recur in the debates between the researchers who understand culture to be an integrated whole, differentiated or totally fragmented (where elements of functionalist and symbolic approaches may be present especially in the integrated perspective).

In the following, I will present my point of departure in the overview of the analytical field of organisational culture as presented by Joanna Martin in her book *Cultures in Organizations* (1992) and illustrate her perspectives with an example from my fieldwork in Sardinia in Italy.

2.5 Pro Loco in the Integration Perspective

Martin defines three different perspectives on research in organisational culture:

1. '*The integration perspective* focuses on those manifestations of a culture that have mutually consistent interpretations [...]
2. '*The differentiation perspective* focuses on cultural manifestations that have inconsistent interpretations [...]

3. *'The fragmentation perspective conceptualizes the relationship among cultural manifestations as neither clearly consistent nor clearly inconsistent.'* (Martin 2002: 94, author's italics)

In the integration perspective, a researcher's focus is on what ties the organisation together as a whole. In the differentiation perspective, focus is on the internal differences in the organisation, e.g. the internal contradictions perceived by everyday participants in organisational life. Lastly in the fragmentation perspective, a researcher's focus is on the ambiguities and complexities of the organisational culture.

I will illustrate the three perspectives by referring to a small study I made in Italy of an organisation – in the looser sense of the word (Czarniawska 2013).

First, an example of a cultural analysis of an integrated organisational culture: Martin specifically points to one researcher as a proponent of the integration perspective. This is Schein, who defines culture as:

The culture of a group can now be defined as a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way you perceive, think, and feel in relation to those problems. (Schein 2004: 17) [Author's italics]

And Schein also claims that it is basically the founders of organisations who create the organisational culture by creating and embedding the cultural elements like rituals and traditions to be followed as a whole by employees (Schein 1983).

This approach seemingly fits well with the following story. In the 1960s, a bank manager created a local subdivision of a tourist organisation called *Pro Loco* in the village Mamoiada on the island of Sardinia in Italy. In Sardinia, many villages have organised local divisions of *Pro Loco* in order to entice tourists to visit the area. In the village where I lived, from 1990 to 1993, the local organisation pivoted around a particular, rather mysterious, mask parade. The origin of this ritual could be referred back to the times of the arrival of the Saracens in the island of Sardinia. Some contested this idea and argued that the ritual stems from ancient Greece. The *Pro Loco* organisation selected twelve men, who, wearing polished black wooden masks and sheepskins ringing cowbells, marched through the village each year on the 17th of February on Sancta Antonio's day. Alongside the parade of masked men, young agile men ran around with lassos and kept the masked men from breaking the line by whipping them back in formation if they tried to escape. *Mamuthones* – the name of the participants in the parade as well as the name of the masks that the men were wearing – was performed during the carnival season and on other festive occasions. The parade also appeared at international folklore festivals.

Following Schein, one could argue that the group supporting the bank manager, who organised the *Mamuthones* parade, share the basic assumption (initiated and made explicit by the founder of the group, i.e. the bank manager) that the village needed a common identity in order to not sink into oblivion and that the local *Pro Loco* organisation had the mission to sustain that identity by performing and

upholding the traditional ritual of Mamuthones. New members were carefully selected and trained to understand how the parade gave the village a shared identity. The group's loyalty and faithfulness towards the common values and basic assumption were strengthened when an election for the local municipality changed the power relations in the village. The new people in power did not support the original Pro Loco group, led by the bank manager, and created a new group similar to the Mamuthones group, which made the original small organisation around Mamuthones and the bank manager fight for their right to define how the parade is done and what it means to the village. Every year the two organisations fiercely discussed who could participate in the parade (the parade is generally referred to as 'sfilata') and how the costumes of Mamuthones should be maintained. The faithful members of the Mamoiada Pro Loco felt strongly for the original Mamuthones organisation and would not dream of leaving Mamuthones to the new competing tourist-oriented organisation of parades, named Gruppo Beccoi.

Even though the Beccoi group had more money, because they were supported financially by the local government after the election, the faithful members of the original Mamuthones group stayed in the original group. The Mamuthones group saw themselves as the keepers of many traditions in Mamoiada built up over the years to maintain a collective spirit in the village. They arranged a shared breakfast in the carnival season and promotion tours for selected members of the Mamuthones group, and each year they conducted a special tour around the village to collect money, wine and cookies from the people in the village.

The participants in the Mamuthones group had created a miniature organisational culture which could easily be understood with an analytical cut based on what Schein calls 'basic assumptions', creating a 'strong culture' (Deal and Kennedy 1982). In a strong culture, basic assumptions are taken for granted by all members, while espoused values (following Schein's argument (2004)) are what the public is shown. Finally, we find the artefacts which are visible to all but can, however, be difficult to interpret. The basic assumption in the Mamuthones group was that the village identity and reputation depended on their keeping up the traditions; thus, the group had a special responsibility to live up to this obligation even when the local government worked against them. The espoused values were the uniform sheepskins, bells and wooden masks, which showed the group's internal collaboration and discipline to the public, and the artefacts were the sheepskins and not least the masks which were all alike: shining, polished and black. For the parade participants the artefacts appeared to be an expression of a common mission to save the village from oblivion. They seemed to agree on this and appeared to be a strong cultural group.

In the integration perspective the research apparatus seeks agential cuts, which make strong culture, shared values and symbols (like Pro Loco's black Mamuthones mask, which also was the logo of the organisation) emerge as phenomena. Martin (2002) mentions, as an example of the integration perspective, Pettigrew's study of boarding school leaders who explicitly try to introduce new cultural values at the schools by reinforcing the changes they wish for with new cultural rituals and symbols (Pettigrew 1979). The leaders create rituals and edify

narratives of the organisation to express acknowledgment of the kind of behaviour they wish their students pursue.

Others like Schein (1983) talk about symbolic consistency, where a uniform *dress code* of, e.g., masks and fur signals something about the company's shared values – just as an open floor plan signals a kind of open business value in contrast to individual, enclosed offices (Ouchi 1981). In the integration perspective, culture brings clarity to the analytical cut; it prevents insecurity when things appear ambiguous and controls the otherwise uncontrollable (Martin 1992: 51). Integration analyses reduce research to the study of a few 'content issues', which are common values, rituals, symbols and basic assumptions (Schein 1983, 2004), and these are described as if they are shared by all participants in the organisation. The shared values will be put on display and played out consistently via a number of cultural manifestations. All participants know what to do and why they do what they do. 'Organisation-wide consensus, consistency and clarity' define the integrated perspective on culture (Martin 1992: 45).

In general, in this analytical field, integration theory refers to 'common values' with no need to explain the foundation of these analytical concepts or what we basically are to understand by 'culture', 'common' and 'values' (Alvesson and Berg 1992: 16).

In relation to my exploration of how cultural learning processes create motion through frictions, the analytical cut based on the integration perspective indicates total integration is impossible. It is always possible to find *some* people in a cultural dust bunny who share common knowledge and even implicit and embodied espoused values, rituals and symbols. But is common knowledge and some shared values an expression of harmony? A culture that seems *strong*, at a superficial level, may achieve its strength through various forms of *frictions* regarding categorisations, meanings, actions, humans and artefacts. Culture is defined as much by its expulsions as by its espousing.

2.6 The Differentiation and Fragmentation Perspectives

Other analytical cuts became available as I spent more time in the village and began to understand the bank manager's group seen in a larger perspective. As mentioned, in the 1980s, a group of young men seceded from the local Pro Loco organisation in Mamoiada to form their own version of the local mask parade called Gruppo Beccoi. One of the young men, the founding member of the new group Gruppo Beccoi, had previously been excluded from the original group of Mamuthones because he did not believe in the bank manager's way of controlling the parade nor the group's demand for rigid routines and dress code during the carnival. While being a member of the Mamuthones group, he had secretly conspired with several supporters, who now followed him in his confrontation with the bank manager and supported the formation of a new group.

Although the Pro Loco-based Mamuthones group as such appeared to represent a, on the surface, strong culture in the early 1980s, it was a misleading picture of the actual conditions experienced by the participants.

Cultural analysts like Van Maanen (1991) and Gideon Kunda (1992) have focused on the downsides of strong cultures and how people react to them. This analytical cut opens for a focus on subcultures where people are suppressed, subdued and have difficulties getting their voices heard. To give an example, although the management in Disneyland highlights what is seen as common and shared values, the employees only pretend to agree with management's *smiling culture*. In the analysis of Van Maanen, pancake ladies, peanut pushers, coke blokes, suds divers and soda jerks only pretend to be smiling, whereas in fact they feel underpaid and overworked (Van Maanen 1991). Researchers need to move around and take new positions in order to become critical of espoused enunciations of strong cultures.

In the village of Mamoiada, it turned out that the Gruppo Beccoi, to some extent, stemmed from a subculture of dissent. Theories such as Schein's cannot explain what happens when frictions move members in and out of cultural dust bunnies, nor how or why a subculture of dissent emerges.

Had a researcher only focused his or her analytical cut on the elements visible from the Pro Loco perspective during the carnival, the result would have been an image of a strong organisational culture. This analysis would not have captured the simmering unrest. An analysis of 'strong culture' (Deal and Kennedy 1982) may be based on a researcher's first superficial learning in the empirical field. When the researcher goes into more depth and gains access to and allows new learning to take place, new analytical cuts emerge as a necessity to include cultural disagreements between members of a group which disturb the image of a uniform style. Thereby, the researcher has a tool to identify subcultures as a differentiation perspective (Martin 1992: 110). The differentiation perspective focuses on how internal differences found between subgroups within the same culture challenge the notion of a singular, harmonious culture characterised by uniformity. In the context of organisational culture, focus is on conflicts between groups and how they may challenge management's assertions of egalitarianism and strong culture. The researcher's attention is not directed at major common events such as common rituals and symbols, but on how employees are reacting against each other and treated differently as well as how subgroups of employees tend to confirm each other's values – perhaps in opposition to those espoused by management.

Subculture is defined by Turner (in connection with studies of industrial subculture) as a 'distinct set of perspectives shared by a group of people whose behaviour differs from that of society at large' (Turner 1971, op.cit.; Alvesson and Berg 1992: 15). Both Van Maanen and Kunda's studies show how the subcultures of employees can be critical towards and challenge the organisation's espoused symbolic representations of a strong common culture. Van Maanen illustrates that though Disneyland's 'smile culture' indeed encourages an espoused value, i.e. *smiles* (smiling broadly for all customers), the superficial behaviour of the smiling, management's perceptions of the shared basic assumptions behind the smiles and

the actual perceptions of employees differ. The employees do not smile because they love the Disney concept but because they want to keep their jobs (Van Maanen 1991). The very idea of basic assumptions and strong ‘corporate cultures’ are challenged by studies such as these (Parker 2000: 76).

In relation to the theory of cultural learning processes, researchers need to understand that when learning about what goes on in organisations, i.e. when researchers gradually become more experienced and engaged learners sharing a lot of time and practiced place with the members of the organisation, new agential cuts and boundaries are created. Learning new agential cuts creates a need for new analytical cuts.

Martin acknowledges that an integration perspective can capture something significant in the organisation, but if a researcher settles for an integration perspective as the only approach, many organisations will appear too homogeneous and too full of harmony with no room for ‘doubt, uncertainty, or collective dissent’ (Martin 1992: 45). The differentiation perspective rests, admittedly, also on a harmonic concept of culture; only in this perspective the common culture does not belong to the organisation as such but to the subculture. The limit of analysis has shifted from *organisational culture* to *subculture* with an organisation. Within this new framework, *culture* is maintained as a notion of an unproblematic harmonious community. Subcultures are perceived as uniform; ambiguity is banished to subcultures’ interstices and takes place between subcultures (Martin 2002: 94). Neither the integration perspective nor the slightly more nuanced differentiation perspective of subcultures brings us closer to a viable definition of culture in the analytical field which manages to capture complexities.

The two perspectives resemble each other and are vulnerable to the same kind of postmodern criticism known from the analytical field: the functionalist and the interpretive perspectives overlook how fragmented cultures are. In the functionalist perspective, cultural unity is something culture *has* and *maintains* through a balance of individual elements such as shared narratives, symbolic logos and rituals. In the interpretive perspective, culture refers to something the organisation *is* and that is open to different interpretations of common symbols, rituals and stories (Smircich 1983). Common for both analytical cuts is that culture is perceived to be static, be it in the unified culture or in cultural subgroups.

Ultimately, an ethnographer may never know for certain whether the patterns that shape the analysis of a presumably general culture, or subcultures, actually cover the experiences of all employees in the organisation. The same goes for the analysis of any culture referred to as an ethnic group, a national identity, etc. Gideon Kunda finds two subcultures in his work, i.e. engineers and programmers, that counteract each other in the enterprise he calls Tech. Yet, his analysis of subgroups can be deconstructed in a *fragmentation* perspective.

Kunda argues that an organisation’s programmers, who create the technological hardware and software, tend to perceive engineers as narrow-minded. And in Kunda’s Tech organisation (1992), the hardware engineers were perceived as uneducated and narrow-minded by the software guys. But, did all the software guys really share this perception as Kunda argues? Or would this picture of two

coherent subcultures (software and hardware employees) dissolve and become fragmented if Kunda spent more time and moved more around in the geometrical space of the company? Would new variations and changes emerge? At some point, Kunda might have encountered programmers who found their hardware counterparts sympathetic and friendly. The perceptions of narrow-minded engineers could be related to specific episodes or particular days of irritation or even to particular people with especially bad relations. Learning new agential cuts would require a more refined and complex analysis in which the subcultures could be deconstructed. A fragmented perspective, Martin argues, can dissolve perceptions of a common organisational culture or subcultures.

2.7 Postmodern Deconstruction

In the 1980s new deconstructive winds blew over many analytical fields and challenged former self-evident assumptions of applied analytical concepts. The concept of culture was no exception. These winds, which with a broad term may be called *postmodernism*, changed both the field of organisational culture and anthropology. The movement turned the researchers' centre of attention from the empirical fields to the analytical field. The deconstruction affected cultural analysis in two fundamental ways: (1) deconstruction of the researcher's conceptualisations of the empirical field and (2) deconstruction of the researcher's position in the empirical field.

In the first period of the postmodern perspective, we find an increased attention to how researchers *construct* their fields (Clifford and Marcus 1986) inspired by theories of construction and deconstruction (e.g. Derrida 1976, Lyotard 1984 and Foucault 1972, 1979). Statements of *culture* are as a new norm in this analytical field to be put in inverted commas, and the cultural explanations are now always considered powerful but performative statements, which are simultaneously 'precarious and partial' (Alvesson and Berg 1992: 218–219).

The new norm in the analytical field is that any reference to *culture* must be acknowledged as a partial perspective. It becomes suspect to build a holistic perspective through a culture concept that attempts to bring together all cultural elements – be it rituals or narratives – in one common term: *culture*. Postmodern researchers concentrate on deconstructing paradoxes contained in any past rhetoric and assertion about culture as a whole. In his review of the anthropological cultural history, James Boggs concludes that the concept of culture and anthropology itself has become 'powerfully constitutive forces in today's world. Critiques of culture [...] must be considered in the context of its decentring and disorienting impact on the ideas, institutions, and ideologies of Western modernism' (2004: 193).

The deconstruction of culture in anthropological studies of indigenous peoples took turns with a concept of culture that defined native culture as static, essential entities and isolated islands, which we find in, for instance, the analyses made by Ruth Benedict (1934, 1947) or the works by the group of the founding fathers of

anthropology, Malinowski, Radcliffe-Brown, Mauss, Lévi-Strauss, Lévy-Bruhl, Evans-Pritchard, Boas and even Geertz. Their culture concepts do not make sense in a globalised world. Part of the deconstruction movement entailed new constructions of the empirical field, where studies of networks or migrating groups began to replace studies of people in place. Even studies of people on islands looked at creolisation processes rather than the stable cultures of the past (e.g. Hannerz 1997). During the 1990s, it became clear that the harmonious cultures depicted in past ethnographies were constructs and fictions made by anthropologists (e.g. Gupta and Ferguson 1992, 1997; Appadurai 1995). Some anthropologists wanted to discard the concept of culture all together. Others, like Lila Abu-Lughod, voiced sharp criticism of this 'island-like' culture concept and demanded a rethinking of the concept of culture rather than abandoning it (Abu-Lughod 1991). Like so many others, she denounced the idea of culture in the singular and warned that culture theory overemphasises diversity and that anthropologists help maintain this difference by constructing culture in anthropological discourse (Abu-Lughod 1991: 143) and, like anthropologist Ulf Hannerz, dismantled the idea of culture as 'shared' (Hannerz 1997: 544). Instead she argued culture should be understood as distributed and complex – referring to Hannerz's concepts of creolisation and cultural complexity (e.g. 1992). As in the case of the integration perspective, the notion of culture in the singular was criticised for not disclosing complexity and presenting a false homogenisation of society, as well as creating illusions about borders and notions about how all *natives* in the culture share ideas because they are in the same geometrical space.

In the emerging postmodern anthropological perspective, culture was not something organisations have, nor something that can be discovered or something that can be interpreted. It is rather something written as the constructions of researchers and something which new perspectives can always deconstruct (Clifford and Marcus 1986). In this process, the notion of finding something stable which holds groups of people together is gradually excluded from the analytical field of anthropology, along with the question of why we once needed a concept of culture. The new focus is, just as in the field of organisational culture, on *fragmentation*.

The cause of the deep conflicts in the analytical field of anthropology concerning how to understand (or why to discard) culture becomes clearer through a diffracted reading of the conflicts and discussions in the much smaller field of organisational culture. Here the concept of culture is put to the test. Contrary to the field of anthropology, organisational culture has, only to a small degree, been occupied with critical scrutiny of concepts like *culture* and *organisation*. Within this field, organisations must be able to make use of concepts; i.e. companies must maximise their profits and therefore ask for good theories of *cooperate culture*.

When put to the test, functionalist cultural analysis was discarded in the 2000s because it had promised more than the analysis could keep. In the 1980s, 1990s and 2000s, the mentioned types of analyses were, in one critical review after the other, considered subjective, inaccurate, biased and unrecognisable to participants in the studied organisations' daily life (Alvesson and Berg 1992: 16; Parker 2000: 9; Martin 1992; Smircich 1983).

Researchers in organisational culture were accused of being unilaterally focused on managerial and management-oriented aspects, and they were discredited because of their instrumental use of culture. Many cultural analyses, previously hailed as handbooks for how to do strong culture, draw strongly on anthropological theory but run into problems when applied to real-life situations. The theories did not work in practice, and the culture promoters could not live up to their promises (Martin 2002: 8). Both researchers and consultants will want to work with a useful culture concept from the analytical field, but they have very different perceptions of what it entails. Culture is often by consultants described in general terms as '[t]he way we do things around here' (Deal and Kennedy 1982: 4). Even when culture is defined as elements like communication, rituals or material artefacts, there is rarely a deeper understanding of the underlying processes that explain why researchers and consultants perceive manifestation as *cultural* manifestations. In the 2000s, several overviews of studies in organisational culture emphasised that the so-called culture wave had levelled out.

The concept of culture is no longer hyped, as it was previously (e.g. Kunda 2006: ix). The concept is still relevant and seemingly indispensable for the analytical field, but it has undoubtedly disappointed as a tool for change. Consultants can still find evidence of Schein's theory of basic assumptions that continues to be discussed and applied in cultural analysis, but the functionalist integral analysis apparently exists side by side in the research with other perspectives (subcultures and fragmentation) that has contested an analysis of culture as a harmonious whole. These frictions have not led to a renewal of analytical terms that can improve cultural theories to actually accommodate all the different perspectives. Rather, they have caused a slowdown and in some cases rejection of the concept of culture, which is then replaced with other concepts around which it is easier to reach consensus in the academic field – as, for example, identity (Parker 2000; Hatch and Schultz 2004).

A researcher with a fragmentation perspective will pursue differences down to the detailed level where some individual persons get confused by the symbolic meaning of artefacts. Focus is on people's lack of understanding of shared rituals and their rejection of differences that were formerly identified between subgroups.

This perspective 'focus[es] on ambiguity, complexity of relationships among manifestations, and a multiplicity of interpretations that do not coalesce into a stable consensus' (Martin 1992: 130). A fragmentations study may, for example, focus on a single theme (such as the espoused value behind individual agency). In this perspective the researcher will be able to find participants who share, and value, or contest or become confused by the symbols espoused in the organisation.

With the fragmentation perspective, researchers come closer to a learning perspective as they are more likely to see cultures as being in constant motion. This approach operates with neither an overall consensus culture nor consensus in subcultures but an organisation constantly under construction and therefore full of ambiguity. In fact, many researchers applying the postmodern approach end up discarding *culture*, *subculture*, *basic assumptions* and *shared symbols and rituals* all together. Instead they deconstruct any sign of what would be considered shared in the two other perspectives.

Concepts of coherence thus gradually lose their eligibility as analytically relevant concepts. Culture, which formerly defined both the field of anthropology and organisational culture, is either discarded or used as an everyday concept because no one can come up with a culture concept that can comprise the integrated, differentiated and fragmented perspective in one.

Instead of addressing the problem of how to find a viable definition of culture, the solution seems to be to get rid of the concept. Researchers in the analytical fields become just as fragmented as the fields they study. The fragmentation perspective leads to cultural relativism and ultimately to the postmodern dissolution of the culture concept. In spite of critique within this field, many continue to conduct functionalist analyses of culture in organisations to this present day. They have found it easier to ignore the postmodern criticism and continue as before.

Anthropologists worked from a more critical understanding of the concept of culture than the researchers using anthropological culture theory in the field of organisational culture. In the anthropological field the self-reflection led to new questions. Where Margaret Mead and Levi-Strauss had asked questions about *animism* in cultures, the questions are now directed towards the very culture concepts Mead and Levi-Strauss used in their analyses.

Nigel Rapport and Joanna Overing formulated it as follows: ‘Where does it reside – in the mind or is it a matter of practice?’ (2000: 93) The answer is none of the places. The concept of culture belongs to the analytical field. It does not refer to a reality, but appears in the texts we write (Clifford and Marcus 1986). When we interpret, we do not simply perform text analysis; text and reality emerges through our analyses (Hastrup 1995). Culture *came home*, so to speak, to the anthropological analytical field. After having been located throughout the world linked to sites and indigenous people (Gupta and Ferguson 1997) and after experiencing a surge of interest from the public (Strathern 1995) and many other related analytical fields, the concept of culture, which had played a defining role in anthropology in many ways (Stocking 1982), was firmly defined as an analytical construct. It was necessary when anthropologists wanted to stress that all people are ‘cultured’ (not just the people in the West), but in the times of globalisation it had become a tool for creating ‘otherness’ (Abu-Lughod 1991). The new consensus in both the field of organisational culture and anthropology gradually made it increasingly impossible to make symbolic analyses like before the postmodern wake, and it also diminished the interest in searching for core values and underlying patterns. The analytical field did not decide, however, that there *were* no basic assumptions, shared meanings or symbols and rituals in organisations (or other anthropological objects of study). All such discussions of former discrepancies were simply left behind in the postmodern branches.

If culture was referred to, it would be as a complicated concept based on the individual researcher’s definition. A ‘writing culture’ approach goes beyond the ambiguous and fragmented culture in organisations to deconstructions of the concepts of ‘culture’ and ‘organisation’ (Alvesson and Berg 1992: 219–220) because it does not acknowledge anything which cannot be fragmented down to the researcher’s own perspective.

One reason for this lack of usefulness of the culture concept is no doubt that only a very limited part of the research has been directed at understanding how a concept of culture can take account of the many disagreements between researchers. This may be solved by a focus on the researchers themselves – a focus that also emerged in the wake of postmodernism.

2.8 Culture as Representation

A new addition to the postmodern branches of the anthropological and the organisational cultural fields in the 1990s and 2000s was a new attention to the researcher's position in the empirical field as well as in the analytical field. Some regarded this to be *introspective*, or *auto-ethnographic*; others went into dialogue with other fields such as science and technology studies or postcolonial and cultural studies to open up for new discussions of how research and theory develop.

In the postmodern perspective, following Geertz's notion of culture as text, it becomes central to look at the anthropologist as interpreter. Anthropologists' data is defined simply as our construction of other people's construction of what they and their friends have going (1973: 9). The basis for Geertz's hermeneutics is that culture is stable and public and can be interpreted as a text, and since culture is public, meaning is public as well. What do ethnographers do? Geertz ask – and provides the answer:

The ethnographer "inscribes" social discourse; he writes it down. In so doing, he turns it from a passing event, which exists only in its own moment of occurrence, into an account, which exists in its inscriptions and can be reconsulted. (Geertz 1973: 19)

Geertz's hermeneutics does not explain the difference between interpretations made by ethnographers and the other participants' interpretations apart from his claim that we (i.e. ethnographers) interpret 'their' interpretation. This is why postmodernists, once they had discredited the legitimate position of the authorised ethnographer as interpreter, involved the natives' voices as direct statements in anthropological texts; the aim was to heighten the legitimacy of their work as more than simply subjective. What became known as 'the crisis of representation' stressed that in describing others as *cultural*, anthropologists do not just construct cultures with their writings, but through their representations they affect other people's lives (e.g. Clifford and Marcus 1986). Texts are not innocent but creative, poetic and political constructions of others. Anthropologists are responsible for the (re)figurations they make of, e.g., Arapesh people and physics students.

These representations are not easily made. Postmodernism made it apparent that there might be crucial differences between a researcher's interpretations and the other participants' ability to read, describe and analyse cultural meaning in their everyday life. Judging from recent years of hot debate, it is rare for participants in

the empirical field to fully accept and recognise the anthropologist's culture essays. Protests are often the result when they read what the researcher has written (Brettell 1993). Western researchers have been accused of establishing a dominant discourse that constructs *the others* in their own image and present *the other* as weak and oppressed (Said 1978). In other words, we find deep discrepancy between the researchers' interpretations of representations and the interpretations of representations made by *the others*. This has again been associated with the different interests of *the others* in the empirical field. In addition to the overt references to hegemony and power relations that are linked to these discussions, this also comprises an essential discussion of misinterpretations in ethnographic research, which in turn may be connected to the earlier discussion about the relation between word meaning and world in the construction of culture analysis.

In the new ideological landscape of the postmodern analytical field, all references to culture are (since the 1990s) seen as controversial claims about representations. Poetic representations of the indigenous world are seen as political statements produced by a researcher or any everyday life participant who is part of an organisation constructed by historical development (Clifford and Marcus 1986). The author cannot claim any special authority over the natives' own voices (ibid.: 2), but that leaves the question of the authority of the natives' voices. We must realise that after postmodernism, we can no longer take statements of truth for granted, even when they act as natives' statements in cultural analysis. In postmodern critiques, empirical *truths* always appear in inverted commas to underline the fact that truths are situated, fragmented and partial. The purpose of a postmodern analysis is not to contribute to or obtain postulated scientific truths, but to deconstruct unrecognised assumptions and dichotomies, which underpin other scientific studies (Martin 1992: 193).

The elimination of the omniscient narrator gives way to a demand for reflections on authorship. Postmodern analyses amplify their own normativity when participants learn (more or less explicitly) how to write texts based on postmodern theories in the analytical field. 'Postmodern self-reflexivity, whereby an author reflexively deconstructs the weaknesses in his or her own argument, is [...] paradoxically, a way of strengthening the authority of an author' (ibid.: 197).

Another way to circumvent the diminished authority of the anthropological writer was to let the ethnographic subjects speak directly in the text and attempt to remove the signs of the anthropological author. James Clifford attempts, for example, to resolve the dispute about representation by allowing the natives to fit into his texts with 'native voices' (1988). Ethnographic subjects can speak directly to readers through their own letters, photographs and texts, which merely has the researcher as collector and mediator of texts and pictures. The ethnographic subjects' voices may represent one layer and the researcher's own voice another layer of analysis (see, e.g., Lather 1993).

A postmodern perspective demands that the writer of the cultural analysis texts abandon 'the author/ity game' (Martin 1992: 200). But as Martin points out, '[i]t is difficult to imagine how to give up the author/ity game, without reducing the researcher to the role of a secretary or a publisher' (ibid.: 201). Even the role of

secretary arranging *native voices* entails selection mechanisms. Any anthropological text will always build on a research apparatus (or more of them), regardless how much the text deconstructs itself and include selected natives' voices. In this way, *truth* can never be just *a* representation (Said 1978: 272), but always *somebodies'* representation.

Deconstruction, as an analytical strategy in itself, was a typical attempt to recreate authority as a postmodern writer. A particular style was required during the excavations of the text as text and focus was especially on contradictions in the writing. One implicit rule was that writers should strive to avoid any attempt to *close* an analysis (which Martin calls 'closure') precisely because ethnographic subjects could always question and attack any interpretation made by the researcher. The postmodern wake made a righteous demand for accountability in anthropological texts and suggested that the researcher should never lock someone or something in the categories, but always conclude with open ends (Martin calls this approach 'disclosure' (1992: 197)).

Martin stresses her own research position in the analytical field by pointing out how she has created her analysis of the analytical field from contrasting perspectives. The three perspectives in her analysis of the discussions in the analytical field of organisational culture appear in opposition to each other. They emerge in what I later named a process of 'culture contrast' (Hasse and Trentemøller 2009). The fragmentation perspective is dissolving harmony in comparison to the integration perspective, which is holistic, and the differentiation perspective suggests conflict, whereas the integration perspective focuses on harmony. Martin's own position builds on an understanding of the always situated and partial perspectives in cultural analysis, which are based on researcher-constructed categorisations. In Martin's further discussion it is clear that the same organisation may be usefully analysed from all three perspectives. Such an analysis would be able to clarify what creates consensus and how rituals and symbols act as common denominators among the organisation's participants and whether the events and statements are interpreted consistently or differently by the participants. If there are no ambiguities, we can ask whether they have been excluded from the analysis or reserved for what is taking place outside the (sub)cultures or disregarded as crucial in the analysis of individual experiences. The three approaches are, however, even when used together, just 'one among many ways to "carve up" this domain of inquiry' (Martin 1992: 43). There are no single definitions of culture and no agreement of its meaning, says Martin. Yet something is holding cultural dust bunnies together. Humans still live in material worlds, which emerge as self-evident to some but *cultural* to others.

2.9 Summary

I build my theory of cultures as frictioned, organised dust bunnies around a concept of learning. Is it a coincidence that I chose this position in the analytical field? As a researcher in an analytical field I am located among colleagues who work on aspects tied to learning and organisation. My view on culture, learning and anthropological theory is created in a particular analytical field where following the postmodern currents is the norm. This has formed my learning process in the analytical field. Thus I cannot, as some of my colleagues in the analytical field of organisational culture still do, expect culture to be a relevant concept in a self-evident way. I must begin by relating my use of *culture* to the many deconstructions and denouncements of the concept in the analytical field. My linking culture and learning maintains and insists on the concept of culture, but only after I have deconstructed it; we are children of our time as researchers and participants in the analytical fields. ‘A theory comes forward in its particular historical context and in relation to ideas that it succeeds’ (Boggs 2004: 193). As researchers we are positioned in this space-time-mattering of theories in the analytical field.

The postmodern movement created a new normativity in the analytical field which requires anthropologists to explain themselves if they present representations and modernist analyses of the postulated empirical episodes. For some time the new postmodern norms were about avoiding closure. New cultural norms and values are presented, and it is up to the students in the given analytical field (in, e.g., gender studies, anthropology and science and technology studies) to pick up on these new trends and conform to them.

The three analytical approaches presented by Martin (i.e. the integration perspective, differentiation perspective and fragmentations perspective) have all been normatively used in the analytical field. They have also grouped analysts into what might be described as groups of functionalists and symbolists, which have mutually excluded each other’s perspectives.

In her summary, Martin emphasises, however, that the three approaches only *appear* to be in opposition to each other (i.e. the fragmentation perspective is fragmented in comparison to the integration perspective, which is holistic and thus not fragmented). Following the postmodern approach, any analysis is always a partial perspective based on the researcher’s positioned access to a material space and the theoretical already constructed categorisations ethnographers bring with them to the empirical field – and the way they are formed in contrast to other perspectives in the analytical field. The three perspectives have been seen as the basis for power struggles (as in which one perspective is better than another) in the analytical field, rather than an attempt to explain how the three perspectives complement each other. In many ways, theory tends to form a battle arena in the analytical field rather than something to be developed in the meeting with the empirical field.

It is neither the ambition nor hope of Martin that this type of theory of culture should be able to reconcile and strengthen all the three perspectives in one

comprehensive theory. She notes that, even when all three perspectives are included and addressed in one analysis, the researcher only covers what can be classified within the three perspectives (Martin 1992: 193). And as already mentioned, all three perspectives can be criticised by other, more postmodern perspectives for lacking an understanding of the researcher's position.

The question remains why researchers in the analytical field of organisational culture have not even tried to reach an agreement on 'why vehement disagreements among the three social scientific perspectives have characterised this field' (Martin 1992: 43). After all, replacing the concept of culture (as some have tried) with that of identity (or any other analytical concept referring to what people share) only raises new questions similar to those that led to disagreements about the notion of *culture*. What makes people emerge as different or alike in their engagements with the material world? The question is still important whether people stay in place or move about or meet virtually or in a village. The discrepancies as well as the basic questions in the analytical field remain the same.

In order to gain a more comprehensive overview of culture in an organisation in the material learning perspective, a researcher can exchange the three different analytical cuts found in the analytical field and pursue learning connections between materials and meanings. This approach may itself be part of a new trend in the analytical field called 'new materialism' (which follow and question the former postmodern perspectives). In the material learning perspective, basic assumptions, subgroup controversies and individual deviances may all be relevant for the analysis. Yet, what matters is that vibrations of materials *sound through* the moving ethnographer – who may shift perspective by changing position many times in the research process.

This shifts focus from the processes in the analytical field back to the empirical field. Maybe closure is not an option, but in new materialism it has again been acknowledged that researchers should strive for 'the clearest vision' (Davies 1999: 62) when trying to make sense of other people's everyday life. This does not, according to Charlotte Aull Davies, mean that anthropologists should go into 'cover behind' the natives' voices, nor should we accept assertions of mimetic representation.

How do we then identify 'the clearest vision' of culture in a researcher's text or in the texts of natives or organisation members for that matter?

Martin's critique suggests that one of the most important considerations we can take with us from the postmodern era is awareness that researchers must be able to explain how their research is not simply a subjective interpretation. If a researcher's text claims to be an accountable presentation of other people's everyday practiced life, how can the processes of this accountability be explained without reducing the research apparatus to mere fiction writing or a microphone holder? Even if we shift the vocabulary to one of intra-actions and lines, the basic methodological problems of participant observation have not been addressed.

By not trying to answer these questions, the analytical field of both organisational culture and anthropology is left behind. As already mentioned by Jean Lave (2011), it is high time we went back to scrutinise the fieldwork done in

the empirical field before the ‘writing culture’ (Clifford and Marcus 1986), as the fieldwork is after all supposed to form the basis of the written text. This would shift focus from what happens in the analytical field to what happens to the researcher in the empirical field. And that will be the topic of the subsequent chapters.

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Chapter 3

Collective and Social Cultures

Anthropologists are not butterfly collectors pinning cross-culturally comparative data on rituals, religion and kinship systems in systemic charts. Anthropology, however, was originally established as a discipline around collections of data that could be put into systems in, for instance, a ‘genealogical model’ of kinship. Yet in the globalised world, anthropologists have come to realise that these systems are not stable, but constantly evolving and changing. Our former understanding of culture as *transmitted* must therefore be rethought. Tim Ingold suggests we replace *transmitted* with *wayfaring* as the process which constantly lets culture emerge as a way of life (Ingold 2011: 161). Though Ingold acknowledges that the cultural expert is ‘more knowledgeable than the novice’, he also underlines that:

[W]hat distinguishes them, however, is not a greater accumulation of mental content – as though with every increment of learning yet more representations were packed inside the head – but a greater sensitivity to cues in the environment and a greater capacity to respond to these cues with judgment and precision. The difference, if you will, is not one of how *much* you know but of how *well* you know. (ibid.)

Following my argument in Chap. 2, the predicament of culture boils down to this: We talk of culture as if culture is both material and ephemeral, integrated, diffracted and a personal entity or no entity at all – a whole with delineating boundaries, yet dissolved, ambiguous and fragmented and nonexistent, but in writing. How well can we learn the meaning of the frictions between what people share and what they contest in cultural organizations? Can all of these internally contradictory perspectives on culture be connected in a new synthesis? Newcomers, like for instance, ethnographers, enter an environment without expert knowledge of how to respond to cues in the ecological surroundings shared by the ethnographic subjects. Over time, they seem to acquire a greater capacity to respond to these cues with a judgment that, in some instances, seem equivalent to the other participants. How does that process come about?

In this chapter, I discuss how subtle and often unnoticed learning processes transform and align newcomers with expert practitioners in a cultural ecology. In

my attempt to find a synthesis between the integration, differentiation and fragmentation perspectives, I argue for an understanding of the culture concept which allows for cultural diversity within an organization. Culture is not to be contrasted to other concepts like *science* or *nature*, but to other cultures formed by cultural learning. It has always been inherent to anthropological method to work through ‘implicit comparisons’ (Nader 1994: 84). With the concept of cultural learning processes, we gain access to the implicit process in which ethnographers enter other people’s practiced places as newcomers and come out as (to some extent) cultural experts.

To be able to claim that researchers learn culture from doing fieldwork among ethnographic subjects, we must begin by revisiting the ‘interpreting culture’ approach proposed by Geertz in the 1970s together with the ‘writing culture’ approach proposed by Clifford and Marcus in the 1980s and move into the ‘new materialism’ proposed by, among others, Ingold. And a materialist and wayfaring approach must also account for the process that moves the ethnographer’s research apparatus from novice to expert in responding to not just cues but also frictions in an ecological environment.

Geertz’s analysis of cultures began with an interpretation of local symbols. In order to escape the overwhelming concept of culture, defined by Edward Burnett Tylor as a ‘complex whole’ (Tylor 1871: 1), Geertz proposed to limit the concept of culture to an understanding of culture as the *thick description* (Geertz 1973: 3) done by ethnographers, who interpreted the native culture. Here, description is about layers of intelligibility. In a geometrical space, we may, for instance, observe two local boys rapidly contracting the eyelids of their right eyes. But with reference to the original discussion by the philosopher Gilbert Ryle, Geertz notes that for one of the boys, it is an involuntary twitch, whereas in the other boy, it is a conspiratorial signal to a friend. A third boy in the local culture may mockingly parody the first boy’s wink – and thus we are left with three identical twitches with three different meanings. If our ethnographic description only records what we see – that the right eyelid contracts – it is ‘thin description’. Though the material space remains the same – three boys with identical eye movement – the interpretations become more and more complex in ‘thick description’ (ibid.: 6–7).

How does Geertz propose ethnographers move from thin to thick description? By getting the natives to interpret the winks for us. ‘In short, anthropological writings are themselves interpretations, and second and third order ones to boot. (By definition, only a “native” makes first order ones: it’s *his* culture)’. (Geertz 1973: 15)

With an example from my own fieldwork, I will contest the notion of ethnographic interpretation and try to clarify the process which makes an ethnographer capable of learning new agential cuts, what comes out as cultural analysis of physics students, East packs and Jedis presented in texts. The concept of culture

that I argue for is not a semiotic or purely materialistic one, but an engaged dialectical learning of connections between meaning and materials emerging as we move around in practiced places.

Geertz claimed it possible for the ethnographer to interpret this practiced place in commotion because ‘culture is public because meaning is’ (Geertz 1973: 12). That this is a static view is a truism in today’s anthropology.

Contrary to Geertz (and Max Weber), I do not see *Man* as an animal ‘suspended in webs of significance he himself has spun’ (1973: 5) in these practiced places. The problem is the phrase ‘he himself’. Not only because of its gendered connotation, but because the idea of a generalised web is misleading. Webs are not spun generally but in particular places where people practice different kinds of activities, which the ethnographer must learn about as new agential cuts before interpretations are made. In this learning process, frictions may occur which align the ethnographer with the other practitioners in the practiced place. Cultural analysis may be an interpretive science in search of meaning, but it is first of all a process of cultural learning wayfaring in geometrical space, which gradually transforms into a dust bunny of practiced place with no beginning or end but increasingly felt frictions. Being a newcomer to this practiced place is to be ignorant of what engages others. And learning engagement implies learning about frictions.

3.1 The Flashlight

In my study of the culture at the Niels Bohr Institute, I used extensive participant observation following the students around. With Ingold we may understand the process as a kind of wayfaring, where I follow along the same paths of movements as my fellow physics students – *along* paths of movements which make me (and them) grow into the environment ‘by following trails through a meshwork’ (Ingold 2011: 143). In this process, my perception of the environment changed along with my analytical focus. The starting point for my analysis was based on finding quantifiable data. My research question centred on the importance of gender in physics education. In the beginning, I therefore relied on counting the number of men and women who went to physics lectures. Although it was not uninteresting that there were actually very few women to count (and they became fewer as the studies progressed), I soon became unhappy with this approach as it did not tell me anything about *the reason* behind the numbers. My field notes, however, were rich in observations of what I found surprising together with quite specific everyday life episodes, which I did not quite know what to make of in my analysis. The episodes could also have been written in personal diaries by the other participants – so how could these episodes be relevant for an analysis of gender in the organizational culture of the physics institute?

An example of such an episode was the surprising story of how I learned about a new agential cut helped by a flashlight I saw from my seat among the audience watching the yearly Physics Students Show (put up every year as a burlesque

ridiculing student life and teachers). In fact, the flashlight must have hit my retina, but it only became data for my analysis at a much later point. Here is the story of the flashlight:

Every year the physics students set up a show, the Physics Students Show, on a stage they build in a large hall. On stage they commented humorously through songs and skits on the themes they themselves considered relevant in their everyday life at the institute. For me it was a unique opportunity to gain access to the ethnographic subjects' own process of learning, to follow their preparations, and I got permission to film their scenic performances.

On the opening night, one of the first-year students, Vibe, plays a woman who (receiving loud cheering from the audience) walks on stage in a thigh-length skirt and tries to seduce the male student Jonas (also a first-year student). Much to Jonas' surprise, Vibe shows that she masters all the complex physics expressions even though she wears a short dress. She even has the audacity to give the physics terms new sexy connotations like: 'The rigid body mechanics'. (Hasse 2002b: 261) Jonas becomes more and more perplex and everyone laughs and cheers. When preparing the sketch, the physics students discuss how the skit is meant to show that women are allowed to be sexy and still be taken seriously as physics students. This statement is an extension of the *official policy* of the physics institute, which is also reflected in the folder of documents introducing the physics studies to the freshmen. A pamphlet in this folder also underlines that women are just as good physicists as men.

In the celebration party following the successful premier of the show, I am told that Vibe went home because she was a little sad – but I am not told not why she is sad. At that time, I did not consider this important information. Much later the episode with Vibe and Jonas takes a surprising turn for me as it dawns on me that more was going on on stage than I (and much of the audience) had perceived. I cannot say precisely when I began to get an uneasy feeling about what happened to Vibe. In my wayfaring, small frictions began to occur but nobody spelled it out to me before much later. When I finally got an explanation, I went back to look at the video and reviewed the funny skit of the sexy, yet competent, female physics student. Vibe is both a smart and sexy female physics student on stage, but suddenly – I see a flash light! At some point in the middle of the sketch, a flash of light appears from below, near the orchestra pit. I do not know how many other people actually saw the flash in situ, but I am now aware of why it has made Vibe so sad.

I explain the episode in my Danish book 'Kultur i bevægelse' [Culture in Motion] (Hasse 2002b):

It turned out that Paul [the photographer], from his seat in the orchestra pit, – in the middle of [Vibe's] self-confident flirting with the sexually preoccupied Jonas, right at the moment when she puts him in place by showing off her own academic prowess in physics – had stuck a camera in between her legs and photographed her from below. At that very moment she was put in place as a sex object rather than a superior female physics student. (ibid: 262)

The academically superior female physics student was in a second turned into a pure sex object in this particular physics culture, in which Paul's conduct was not only thinkable but also intelligible to some of the male physics students.

I was later told that the photograph of Vibe's underwear and legs circulated as a trophy among a group of male physicists. Some of the frictions I had felt could, in retrospect, be recognised as connected to episodes in the editing room where I edited a movie of the show with a couple of other students, who sometimes giggled unexpectedly. Later in my research process, I interpret this as an episode which, among many other episodes, can explain why women do not feel welcome in the physics environment. Just like Vibe, they become sad and annoyed when they are reduced to sex objects rather than professional physicist. Vibe gradually disappears from the physics classes though not from my analysis and texts.

As a research apparatus, I make analyses that pretend to be able to reproduce the real voices of the 'cultural insiders' with an undisputed scientific authority (Martin 1992: 195). Although the episode is not in itself constructed, it becomes a story in a context I name 'a physics culture'. My boundary-making can be deconstructed. A male, or even other female, anthropologists may not have reached the same analysis. So is it the empirical field or me as a research apparatus that categorises Vibe as *sex object*? Would any other participant in the hall have written the same text? Did I focus on this episode, instead of many other incidents in everyday life, because I was preoccupied with gender constructions in the analytical field? Or is the *gendering* of Vibe a relevant general marker of a culture in an empirical field, which requires an external researcher to be written up and espoused as *collective culture*?

Such questions were taken up in the wake of the writing culture movement in the 1980s and onwards (Clifford and Marcus 1986). Anthropology as text led to new experiments with writing and representations which seemed to reach a peak in the 2000s in the form of 'exemplary ethnographies' because they are 'messy' texts (Marcus 2007: 1127) – contrary to the neat butterfly collections of the past.

Ethnographic anecdotes as messy texts can easily be perceived as impressionistic subjective narratives that bring 'the writer's epistemological discomfort to the surface of the text' (Martin 1992: 196). By pointing to the researcher as an author and designer of apparently objective depictions, the postmodern perspective generally undermines the researcher's authority and, among other things, runs the risk of reducing data obtained through participant observation to purely subjective depictions. This problem has been much discussed in auto-anthropology and auto-ethnography (e.g. Ellis et al. 2011).

However, the process that changes a cultural analysis is still a black box because the process that changes the ethnographer has been overlooked in anthropological methodology. I did, however, learn what I now understood as a new agential cut of importance for my analysis through my participation in the physics show. By learning from the physics students' creative production, I learned that women had problems being intelligible as both sexy and clever. So far, auto-ethnography and learning has, however, not been matched.

Today the creativity of the writing culture movement has moved towards creativity in conducting fieldwork and creates, for instance, collaborative spaces where ethnographers and ethnographic subjects create new spaces together. In these new practices '[t]he ethnographer is no longer a stranger, but a figure whose presence is anticipated' (Marcus 2007: 1142).

However, making this move does not solve the problem of how a researcher can speak authoritatively about other people's everyday lives, if it is not clear what the anthropologists bring to the cocreated texts. Why not assume that the ethnographic subjects could have written the text better by themselves? Even if the ethnographer is anticipated, it does not automatically make him or her an expert in taking the same cues from the environment as the other ethnographic subjects, especially when the cultural forces are subtle and apparently contradict each other, as in the physics culture where what is explicitly enunciated (women can be sexy and intelligible as good physicists) is countered by (re)actions.

Geertz is often mentioned as the researcher who invented the basic metaphor of 'reading culture' (1973: 10) in the analytical field. Cultural significance, he argued, was found through interpretation of the symbolic or semiotic signs. The natives could understand them because their meaning was public and collectively shared by them. Signs both express and shape the world by inducing special dispositions, feelings and motivations in the actors (ibid.: 94), whereby certain actions and perceptions are more likely than others. Symbols and signs were seen as mediators for public meanings; signs both constitute and represent culture. Public manifestations should be seen as tied to people's everyday life rather than perceived as entities carried by the internal structure of 'the generalized human' as proposed in the structuralism perspective, which Geertz was in opposition to. Geertz claimed signs were both models of and models for reality (ibid.: 95). As a symbol structure is supported collectively, signs can be read because 'they say something about something' (ibid.: 448) which is meaningful for the participants in everyday life. Actions such as rituals can hence be *read* as you read a book. Cultural forms were, in other words, seen as readable texts. The aim was not to try to penetrate a native head to find thinking (that would be psychology), but to understand the public significance of an event. Cultural significance could thus be fixed in sustainable forms. Public meanings were fixed in space, and thinking could be understood as a public activity (ibid.: 360).

The writing culture movement questioned the representations made in such *readings* and understood ethnographic texts as poetic. Instead of interpreting and representing the collective culture, it became the norm to experiment with different ways of making poetic and baroque texts that predict unforeseen futures and add rather than represent (Marcus 2007). Yet, these movements too are based on an assumption that somehow the ethnographer engages in collective activities.

In the 2000s, the black box question shifted from one of representation in writing to one of accounting for collaboration and collectivity in fieldwork.

Putting cultural learning processes in the middle underlines how learning is a *process* of becoming an expert apparatus in detecting local frictions. Whatever friction is folded into material mediations, it has to be learned and cannot be taken

for granted. A process of alignment is at stake, and it moves the ethnographer towards cultural expertise. What I learned from the Vibe episode was not apparent at the time, but it gradually made me aware of how to take other cues from the physics student culture. I learned to expect reactions and to recognise patterns of wayfaring. What I term a physics culture emerged in a dialectical learning process which gradually aligns the researcher's boundary creating apparatus with that of the ethnographic subjects.

As we learn frictions, we also learn cultural resources of creative agency. Vibe gave me cues to my own survival as a female in a predominately male world of physics. Most often the ethnographer becomes engaged in what matters to the ethnographic subjects by learning through an informal social designation that gradually forms a pattern of intelligible actions. The consequence of this approach is an acknowledgement that culture is not shared just because wayfarers share a geometrical space.

3.2 The Mystery of 42

It is now time to turn to the theoretical framework for learning that I chose, in the analytical field, to constitute the basic framework for my diffracted readings of organizational culture theory, anthropology, feminist, postcolonial and STS-oriented theories. This theoretical framework of learning can help us understand the difference between *social* and *collective* cultural learning. As well as what learning does in relation to development of affect and motivation in an increasingly engaged ethnographer. First of all, this approach to learning connects changes in perception and thought with learning new meaning.

Building on cultural-historical theory, my concept of learning emphasises processes evolving around words, physical spaces and (other) materials, which practitioners constantly renew when new meanings are ascribed to them. Cultural learning in human organisations becomes sites of diffraction, friction and boundary productions, and in these processes, contours of future conditions for development are forged. Being an expert is tied to an alignment of meaning, words and materials.

The concept of artefact is in general understood as any man-made object – *artefacto*. In cultural-historical theorising, material artefacts are materials soaked in social meaning. They are created by man as meaningful creations whether they are computers, pottery to store goods or saws to cut down trees. Artefacts are mediational means, and all mediational means have a material dimension. Even sound waves are material (Cole 1996: 117; Daniels 2008: 10). Though words are (*pace* Saussure) a 'meaningless' (Saussure 1966/1916) wave of air once we speak a language, it reaches our ears as so full of meaning, we never stop up to scrutinise the relation between sound waves and their meaning. Language is the primary example of a useful artefact being much more material than we usually acknowledge. Ethnographers are, like participants in general, positioned as learning the

meaning of material artefacts in practiced places – including words. The philosopher Charles Taylor has discussed the problems of meaning:

- a) Meaning is for a subject or a group of subjects. Meaning is not in the situation *in vacuo* or in the materials.
- b) Meaning is of something; that is, we can distinguish between a given element, a situation, an action, a material artefact and its meaning.
- c) Things only have meaning in a field, that is, in relation to the meanings of other things. (Taylor 1971: 11)

According to Taylor, words resemble meanings. Both need a field of contrasts created by other words or meanings, and new words or meanings will not just enter an established field but alter this field all together.

Like most philosophers, Taylor does not refer to newcomers humans, but newcomers words or meanings to an already established field. When the newcomer is a human, we can return to the discussion of interpreting cultures. What if culture is not public, because the meaning of material artefacts is not public? What if the ethnographic subjects, e.g. Vibe, Jonas and Paul, are no different from the ethnographer in having to learn the local cultural relations between meaning and material, not as in a semantic or established symbolic field but as in an emerging and constantly changing dust bunny of frictions?

This opens for new questions:

1. In a practiced place full of material artefacts, researchers try to interpret cultures that are ‘not our own’ in a culture that is social but where meaning is *not* public. The material artefacts may be public for all to *see* as ‘ontologically primitive phenomena’ (Barad 2007: 139), but the meaning of the artefacts (agential cuts) has to be learned. Here Geertz give *natives* a special advantage. ‘By definition, only a ‘native’ makes first order ones [interpretations]: it’s his culture’, Geertz claimed (Geertz 1973: 15). The interpretive approach relies on a verbalisation of word meaning. However, meaning and words only resemble each other. They are not conflating. And words are not just meaningful but material. How do ethnographers come to know the collective connection between material words and their meanings shared by ethnographic subjects?
2. How do ethnographers come to know the relations between words like *students* and *teachers*, *men* and *women*, *dresses*, *Jedi riders* and *East packs* in a cultural ecology tied to our wayfaring in the empirical field?

In the case of the physics show, only Paul and the other musicians knew the meaning of the flashlight. Neither the ethnographer nor Vibe nor Jonas (it turned out) knew the meaning tied to the flaring light, as it happened. Vibe learned it at the party, the ethnographer learned it much later – and Jonas said in an interview he only learned about the episode after the show. In the Arapesh culture, Mead had learned the meaning of the Tambaran just as the other women had. Like them, she pretended not to know the secret. Their running away from the Tambaran was a meaningful and intelligible act in a cultural sense (not everyone would find it meaningful). At the Niels Bohr Institute, the flashlight was only meaningful to some and at different times. Yet, cultural forces moved women and children around

in the geometrical space of the Arapesh village, and they pushed Vibe out of the practiced place of the Niels Bohr Institute.

The more we get to participate in collective activities, the less aligned the ethnographic subjects (formerly natives) seem to be – this is true of the Niels Bohr Institute as well as the Arapesh or Mamoiada villagers. In the case of the flashlight, the ethnographer learned along with other practitioners that women and sexy dresses would elicit reactions. In the Arapesh village as well as in Mamoiada, the all villagers shared a basic understanding of Tambarans and masks. Even if they disagreed with the effects of Tambarans and masks, they had learned to share a thinking anchored in local materials. The ethnographer will always be a newcomer to a number of established collective thinking anchored in local materials. Yet there are other newcomers than ethnographers. This was also the case at the Niels Bohr Institute.

Although the three physics students, Vibe, Jonas and Paul, did not have that much in common, they shared a love for physics, which was a mystery for me when I enrolled. In time I began to understand the love for numbers and how numbers could be connected to a world of materials. The physics students' world was a world moved about by forces far larger than we can imagine without translating them to numbers. They needed numbers to understand what was beyond their everyday understanding of a material world – and numbers were resourceful cues to inclusion in the physics culture. Numbers are cultural artefacts that move people about in practiced places. Numbers are not just abstract entities and eternally true, but 'materialised relations' (Verran 2010: 171). They have the force to move us because we care. They are matters of concern as much as matters of fact in certain cultural worlds of logic (Latour 2004; Verran 2001), that is, when we have learned their cultural meaning.

In Sardinia I learned about the importance of the number 12 in the parade of masked men. Never 11 or 13, let alone 15. The number 12 was easy to learn as a sacred number to be obeyed whenever the masked parade went into the streets. In Cameroon I visited some of the small kingdoms in the northwestern part of the country, which were all ruled by a local *fon* or *mfon*. Here the most sacred numbers were tied to a local organization of power where the king was obliged to sleep with, we were told, 800 wives and that he had more than 2,000 children. These numbers were not to be checked but taken at face value. The actual number of wives and children was never established as a fact because the connotation – even of family relations – was not one of exactness but magnitude. The king had *many* wives and children. That was the wealth of society – not exactly *how many*.

The culture at the Niels Bohr Institute was a number culture, and I encountered several problems with learning the meaning of numbers – especially in math classes. In the institutional culture, we as physics students encountered numbers everywhere, since the first day of study where we were handed our study plan. I was to follow classes and participate in tutorials between 24 and 28 h each week if I took part in all classes. It meant following classes in 'pure physics' in the big auditorium and in smaller classrooms solving equations with Vibe and Jonas and the rest of my group. We learned how to program in Dat.-F. – a specific (now obsolete) data

language. We also took classes in math, and I was not the only one who found it harder to deal with numbers in math than in physics. In physics the numbers tell us, among other things, about the forces of nature. In math they are supposed to have a beauty of their own. ‘An aesthetic of numbers’, Andrew told me, as we struggled with a matrix as our homework. I do not get it. But neither does Louise and Jonas, as it turns out. Over lunch they discuss how numbers are full of mystique. As newcomers we all struggle to be accepted in the culture of physics students and avoid being perceived as stupid by fellow students. Being stupid was, in this culture, often connected with numbers. Students would try to avoid going to the blackboard (which was used in all classrooms) to solve equations in front of the class if they were not sure of the numbers. As I participated in the classroom teaching, I also learned to share this fear. Being stupid was a local term for exclusion from the group of physics students.

I never learned to be a participant in the sense that I could juggle around with numbers as the best physicist students could. But it turned out there were other number resources around that could help me develop a shared care for particular numbers, which also became a passage into an engaged participation with fellow physics students.

When I enrolled, I considered the number 42 (forty-two) a natural number immediately following 41 and directly preceding 43. I had no particular feelings for this number. Soon, however, this number began to annoy me because it made me feel stupid. On several occasions, when we tried to solve exercises in our study group, I noted that whenever the number 42 was explicitly mentioned Jonas, Paul and others would burst out laughing. ‘It’s just the silly boys’, Eva explained, and I thought no more of it. But it annoyed me. Why would they laugh when someone asked for the result of a calculation, and Paul answered 42? Even when we all knew that the right answer was not 42, but 222, 3. When we sat in the student room and Lars walked in with a box of beers and was asked how many beers he brought with him and answered ‘42’ he received big laughs even though the actual number was more likely 20. I was puzzled and did not join the laughs because I did not understand it. Neither did Eva, Louise or Peter. I asked them, and Louise said that she did not know and that ‘the boys always said silly stuff’. Lars was an elder student and a mentor. Jonas and Andrew joked a lot with him, and they got access to asking questions about numbers in physics, which Lars could help them understand. 42 seemed to be a local resource of access to more experienced students’ knowledge of numbers – but why?

Culture is not public because meaning is not collectively shared just because it is public. If I asked directly for an explanation, those I could ask, without running the risk of being stupid, did not know or care. What was culturally shared about 42 remained a black box wrapped around sound-artefacts – or with a new vocabulary: in vague and obscure intra-actions.

When we met in the cantina for lunch or between classes, or when preparing student arrangements, elder students would chat and tell jokes – which I, together with some other female students I asked, did not understand. Some of the newcoming students got the cue and began to tell jokes. Why did the new students

make all the experienced students laugh by saying they kept getting the number 42 in their mathematical exercise?

Finally I learned to make the right connection. After a long process (beginning with my notice of the Jedi rider), I began to note more systematically that many physics students were fond of science fiction. I had not cared much for the genre before I received many cues pointing to the importance of science fiction and thus I began to read science fiction. This gave me a deeper understanding of the words spoken when we met in the cantina, and eventually I made the connection between the number 42 and science fiction. 42 is the answer to the Ultimate Question of Life, the Universe and Everything in the book *The Hitchhiker's Guide to the Galaxy* (Douglas Adams 1995). Those who cared about science fiction knew this and made many jokes not understood by those who did not care for science fiction. It was a secret knowledge in a more subtle way than that of the Tambaran in the Arapesh culture. It did not create friction directly, but it created subgroups in the culture of physics students which I, in time, could also connect to physics culture. Some could anchor their thinking about physics in science fiction artefacts like '42' – others could not.

Already from the first freshman introduction to the physics studies did the elder students often allude to science fiction elements, which they combined with physics knowledge in funny ways. One example is the yearly Physics Show which, I later realised, bore numerous significant allusions to science fiction. At my first Physics Show as a freshman, the audience were told to dress up like Star Wars characters – I could thus videotape Luke Skywalker-lookalikes and Princess Leia's among the audience. This all seems very innocent, but science fiction was an entrance to make contact with some of the elder and experienced students. I used this cue in the cultural ecology because I found myself left out of certain conversations between a group of predominately newcoming male students and a group of experienced male students. And it worked. I began to be accepted – even in math classes where I could not contribute with anything in a disciplinary sense. Yet, I began to feel included.

Was I naïve not to know about the relation between science fiction and physics before I began my study? Readers with knowledge of science fiction and physics may think so. Readers without knowledge of this particular connection will follow my surprise in realising how science fiction permeated the youth culture of some of the physicist students and took on a particular relevance in this practiced place. 42 was just one of the new things I learned and taught me how to legitimate my participation in a culture of (primarily male) physics students without being an expert on numbers. From reading science fiction, I began to understand their interest in time machines and spacecrafts that thrived among the male students, who connected science fiction allusions (e.g. Han Solo's Millennium Falcon from the Star War trilogy) with physical discussions of acceleration, the speed of light and worm holes. If you could refer to both aspects with expertise, you could participate in important discussions with the elder students and even engaged teachers. Knowledge of science fiction became a resource of securing not only social but also professional anchoring as a physicist to be. Gradually it even gave me the notion that newcoming students with an interest in science fiction

constituted the core group of what I came to understand as emergent scientists-to-be, who would leave behind those who lacked this interest. This is, of course, an enormous exaggeration on my part. It fitted my implicit comparison of what I expected and what I learned that surprised me and changed my expectations and perceptions. Suddenly I saw allusions to science fiction everywhere. After a longer while, it became apparent that science fiction only engaged some students: very few women and only some of the males. Even so, science fiction could be seen as a local cultural resource for gaining access to experienced students and their knowledge of physics and as a way to legitimate your presence in a group. The latter became my path to do ethnography as an included, rather than an excluded, person. Awareness of science fiction became a cultural resource for relational agency which gradually drew me closer to a deeper understanding of the selection mechanisms in the local culture. I began to think *with* 42 in new ways, not as an ordinary number, but as a thinking tool for participation.

In this sense, 42 functioned like a word – a sound wave – in the external world which began to work on me from the inside. In order to understand this as a process of learning, we need to dive deep into the psychological processes so vehemently avoided by Geertz and many other social anthropologists. We need theory which can make us aware of how a researcher as an apparatus is transformed with his or her learning process. Though the world in which we are wayfarers is a material place, we perceive it as we go along. And both our thinking and perception may change the materials we sense as we learn.

3.3 The Stick and the Fruit

Cultural-historical learning theory connects materials and meaning-making practices. The first and most important step in the cultural learning process is an exploration of what creates new lines and temporary more or less stable connections between materials and cultural meanings of something – be it a person, a sound wave like a word or a stick. The notion of word meaning is helpful in this respect. Vygotsky developed this notion most clearly in his book *Thinking and Speech* (1987), but it has been developed throughout his entire authorship. Vygotsky, like Taylor, does not conflate word with meaning. Word and meaning form the basic unit of verbal thinking (Vygotsky 1978: 47), which again forms the analytical understanding of a collective consciousness and artefact-mediated action.

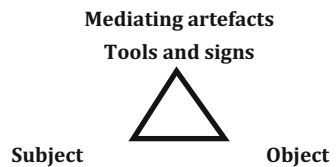
Vygotsky was, among others, inspired by the German psychologist Wolfgang Köhler and his studies of how apes solved posed problems. ‘Man wants the stick, the ape wants the fruit’, says Vygotsky (Vygotsky 1997: 131). Put differently, humans arrange their ecological surroundings. They do not just reach for a banana high up in a tree. They can think in ways which make them plan how to make sticks to get hold of bananas. Dust bunnies of connections involve sticks, bananas and conceptualisations of sticks and bananas as well as repeated use of working with sticks to get hold of bananas. To understand the process of the engaged

ethnographer in depth involves understanding how the ethnographer’s thinking apparatus are profoundly changed when engaging with the material cues of the empirical field.

The founding principles of the line of thinking developed by Vygotsky and his followers are ‘mediation through artefacts’, ‘historical development’ and ‘practical activity’ (Cole 1996: 108–110). Of these the most basic principle of the cultural-historical school is the idea of mediation (Engeström 2001: 134). This theoretical concept was developed and explored in the 1920s and early 1930s by Vygotsky and his circle of colleagues including Alexei Leont’ev and Alexander Luria (one must be aware that the Russian names can be spelled very differently and Leont’ev,¹ like Vygotsky, is spelled in many ways in the translated texts from this period).

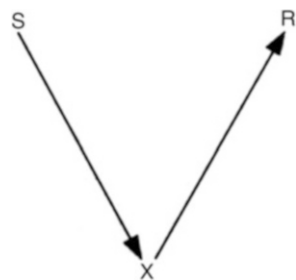
Vygotsky’s thinking has been illustrated by a model: a triangle formed by the subject (S), the object that interests the subject (O) and a mediating artefact (M) (Cole 1996: 119; Cole and Engeström 1993: 5) (Fig. 3.1).

Fig. 3.1 A model of mediation replacing Vygotsky’s original model



Vygotsky did not refer to this model nor the notion of mediation through artefacts proposed by Michael Cole especially (1996: 117), but he did make another kind of triangle (likely to have influenced Cole’s triangle). Inspired by the so-called inventor of reflexology, the Russian experimentalist Ivan Pavlov, Vygotsky argued that the relationship between a stimulus and a response is mediated (Vygotsky 1978: 40) – here illustrated by X (Fig. 3.2).

Fig. 3.2 Vygotsky’s original model of mediation



Vygotsky took his own thoughts much further than Pavlov and Köhler’s experiments with animals. His concern was the relationship between man and his material surroundings. Human communication in cultural organisations is founded

¹ Also spelled Leontiev or Leontjev.

on verbal thinking. Contrary to animals, humans use mediational means which affect our communication, memory and ability to create our own material environments. When the ape wants a banana, there is a direct line between subject and object – the ape reaches out for the banana. Even if it happen to use a stick, this stick does not become a thinking tool and cannot be socially communicated and passed on as a cultural resource to other apes. Vygotsky talk about the ape only ‘completing’ the triangle without making the material stick a (conceptual) tool because ‘it does not have the meaning of a tool’ (Vygotsky 1997: 131).

The triangle model developed by Cole is helpful in understanding Vygotsky’s basic concept of mediation. A concrete example (the example is mine but partly based on Vygotsky’s own examples drawn from Köhler’s work) will illustrate the difference between, and intertwining of, tool and sign as mediators in human learning and development. In this example, we see the difference between the ape, whose behaviour is based on what Vygotsky names elementary structures ‘conditioned chiefly by biological determinants’ (Vygotsky 1978: 124) and the human child, whose behaviour is based on what Vygotsky names the development of higher psychological structures ‘which emerge in the process of cultural development’ (Vygotsky 1978: 124). Both child and ape try to reach a banana placed in a cage with bars (much like Köhler’s experiment), but the banana only can be reached with a stick. In order to perceive the stick as a tool, the ape must have a stick within its visual field simultaneously with seeing the banana. Only seeing the stick will, according to Vygotsky, make it possible for the ape to use the stick to reach the banana. Yet the ape shows some human-like intellectual capacity in making use of sticks to reach bananas. Because the child has already learned the concept *stick*, she can use it as a *thinking tool* to search the room for a stick. From mediating signs of sticks in speech, memory and directed attention, the child can plan ahead and try to find a material stick (a broom or maybe two smaller sticks tied together) she can use as a tool to push the banana to the other side of the cage. By the *interiorised* or *internalised* use of mediating signs, she has created a tool to be used in an external activity. The internalised sign that mediates between stick and child makes it possible for her to deliberately plan to make or find a stick.

Human activity involves both tools and signs. What I want to emphasise more than its usually done in cultural–historical learning theory is the importance of materials connected to word meaning. Vygotsky and his colleagues were inspired by the experiments by the German psychologist Narziss Ach, who followed the children’s concept formation in playing with material objects with apparently arbitrary names, where it was concluded that ‘artificial tools can aid a child to build a new concept and master a task they [the children] would otherwise not have been able to complete’ (Vygotsky and Luria 1993: 27). Using sensuous objects in mediated cognising is the basis of the method Vygotsky and his colleagues named the method of dual stimulation (Vygotsky 1987: 127) – sometimes called double stimulation in which materials (objects/tools) and signs form together.

When Vygotsky writes of *tools*, this sometimes refers to sensuous material object as ‘technical tools’ and sometimes to ‘psychological tools’ (Vygotsky 1997: 81). Both are artificial formations. The dual stimulation is, however, encompassing all kinds of material objects – whether they are used as tools or

not. Tools were, however, very important to Vygotsky in his theory of the development of a collective consciousness and human influence on cultural ecologies.

Vygotsky made a clear distinction between tools (material objects) and signs (conceptual tools), but he also subsumed them under the same category of mediational means necessary for social interaction. The distinction is that technical tools are externally oriented and must lead to changes in a material world, whereas signs as, e.g. psychological tools, are internally oriented and directed towards the mastery of mental processes. It is a ‘means of internal activity aimed at mastering oneself’, and the mastering of the material world (called ‘nature’ by Vygotsky) and the human behaviour is mutually linked. When we alter ‘nature’, we change ourselves, and when we change ourselves, we change ‘nature’ (Vygotsky 1978: 55).

Language was for Vygotsky the most significant artefact when it comes to human activity. In language we find the combination of physical materiality (the word as a sound wave) and meaning (thoughts). Language and thought are entangled with social relations (understood as the physical human beings we can observe) as well as other forms of physical artefacts (Hasse and Trentemøller 2009: 26).

The sign of a stick is both a word that can be spoken and a wider line of conceptual thinking, an inner tool for thinking that the child has internalised through social interaction and a material phenomena.

In the process of learning to take cues from an environment, humans gain more and more freedom from the given conditions in their material surroundings (Vygotsky 1978: 26). Learning a language adds to our freedom of moving around. In contrast to the ape, which is dependent on whatever comes into its visual field, the human no longer need to see a stick but can go look for it. This is not an association theory or a representationalist theory of a one-to-one relation between stick as material and sign; it is a relation between agency, materials and culturally informed imaginative thinking anchored in words and other materials.

Vygotsky makes it very clear that internalised connections are not the invention of the individual child.

From the very first day of the child’s development his activities acquire a meaning of their own in a system of social behavior and, being directed towards a definite purpose, are refracted through the prism of the child’s environment. The path from object through the child and from child to object passes through another person. (Vygotsky 1978: 30)

Regardless whether Vygotsky was right in assuming that apes cannot ‘think sticks’, his analysis opened up for a deeper understanding of culture as an entangled relation between materials (like sticks) and their collectively learned social meaning.

The term *tool* can in my diffracted reading of Vygotsky cover any physical object (including axes, dresses but also words understood as sound waves or written words), which we use in practical activity. Through these tools we can cause changes in an external material world. Signs, on the other hand, refers to the changes that occur in human engagement when we internalise or interiorise (or incorporate) an external sign, that is, when it is turned inwards and gradually

becomes an internal thinking tool – and thus mediates our actions and our social agency through the internal process of learning (Vygotsky 1978: 55–56). This is how we learn culture, through processes of mediation that constantly shift grounds between an outer physical world of materials, worked on through our tools (which leads to changes in material objects), and our inner world of signs turned to thinking tools (which leads to changes in our thinking and perception of being-in-the-world). Internal psychological activities originate from learning in practical activity and practical activity is social and cultural. Thus, what we perceive when wayfaring always depends on both material surroundings and how we learn to think with other people engaging in their practical activities.

We can formulate the general genetic law of cultural development as follows: Every function in the cultural development of the child appears on the stage twice, in two planes, first, the social, then the psychological, first between people as an intermental category, then within the child as an intramental category. (Vygotsky 1997: 106)

Humans are active and creative agents. When we ‘intra-act’ (Barad 2003) with the world and artefacts come into being as onto-epistemic realities, our agential cuts are always social cuts too. Whatever is material is also discursive, but whatever is discursive is also internalised as thinking tools. Thinking tools do not only concern tools that affect the external world, but all kinds of meaningful material having effects on our expected being-in-the-world. Though Vygotsky did not make it explicit how both an axe and a monument are materials imbued with potentials for becoming thinking tools, he has given us the ways to understand how word meaning holds cultures together in practical activities with materials.

3.4 The Forbidden Colours

In the culture of physics students, I internalised a meaning tied to the many science fiction allusions which changed the agential cuts in my analysis. Instead of cutting the world up in men and women as I had done in the analytical field, a new categorization emerged: *science fictionists* and *non-science fictionists*. The process behind this new way of cutting up the analytical field was deeply material but also tied to a new perception of material artefacts such as science fiction posters and 42. Though I did not connect science fiction with Vibe’s short dress, I did begin to see the material phenomena with some cultural expertise.

In the introduction to the anthology ‘Things that talk’, Lorraine Daston points to the distinction between things and objects: A ‘thing’ must (with reference to Heidegger) be sharply distinguished from the Kantian ‘object’ (Gegenstand) (Daston 2004: 16). Where the thing is ‘das Ding an sich’, the object is a product of ideas and representations. In Barad’s version, there are no ‘things’ only ‘relata-within-phenomena’ (Barad 2003).

This distinction is further elaborated in Vygotsky’s original discussion of ‘real objects’ (Vygotsky 1978: 33) in relation to stimulus and response and objects as

mediated through tools and signs. By real object, Vygotsky means that we do not see the world simply in colour and shape but also as a world with sense and meaning:

I do not merely see something round and black with two hands; I see a clock and I can distinguish one hand from the other. Some brain-injured patients say when they see a clock that they are seeing something round and white with two thin steel strips, but they do not know it is a clock; such people have lost their real relationship with objects. These observations suggest that all human perception consists of categorized rather than isolated perceptions. (Vygotsky 1978: 33)

Thus, Vygotsky comes close to Gibson's point that perception is the most basic aspect of cognition (Gibson 1979). Our concern is not 'the world as it is' vs culture (the old nature vs culture dichotomy) but cultural diverse ways of being-in-the-world. In this perspective, there are no direct perceptions of phenomena, but culturally formed agential cuts which make some people self-evidently see something round with black hands – and others a watch. In some organisational cultures the watch is furthermore entangled with for instance fear of being late, in others with lines of moving much too slowly through a sun-swidden landscape to an expected oasis.

Adding to Vygotsky, we may add that 'real objects' are tied to cultural becomings. When we as physics students learn to use, for instance, tools like machines tied to particle detectors, we do not only perform a creative act of producing new objects like hitherto unknown particles, we simultaneously create new forms of subjectivity. The subject is transformed in relation to an equally transformed environment as we learn to embody it. A modernist understanding of the separation between a stand-alone subject and a perceived object must therefore be abandoned, but it does not mean leaving onto-epistemic entities in a social vacuum. When humans and materials create their cultural world together, they do so on social and sometimes collective premises. Though materials apparently may offer direct perception and unmediated affordances (Gibson 1979), from the perspective of an anthropology of learning, what matters is cultural diversity in perceiving a common world of primitive ontologies.

Multiculturalism is not just a word; it has real consequences for human lives (Eriksen 2003) also in how we misunderstand our perceptions of phenomena. People learn to generate diverse agential cuts of the same objects (like short dresses or the number 42) as if they were natural signs and they (re)act accordingly. So how do our perceptions become so diversified if the subject–object distinction itself is both a product of learning and an impossibility seen from a learning perspective?

If perception is the most basic type of cognition (Gibson 1979), the type of perception relevant to an anthropology of learning is not the 'direct perception' where Gibson claim we can see Niagara Falls as opposed to mediated perception where we see a picture of it (Gibson 1979: 147). Following Vygotsky all that interests the ethnographer is that even perceiving Niagara Falls in its natural environment *is socially and sometimes collectively mediated perception* understood as culturally mediated perception. Niagara Falls emerges as a phenomenon in different agential cuts. Yet, what Gibson brings to the notion of culturally mediated

perception is emphasis on the body coming into being in an ecological environment, where everything is related. Though the phenomenological perspective on ecological perception does not address learning (Jenkins 2008: 39) Gibson, as Merleau-Ponty, makes us aware that our worlds come into being with perception in bodily locomotion (Gibson 1979: 219).

Our bodies do not just perceive in locomotion in geometrical space, but in practiced places. We cannot escape meaning, Merleau-Ponty tells us (1962). But what is meaning in relation to perception? Meaning is social perception. And it is only collective in certain instances.

With my diffracted reading of the cultural-historical learning theory, I wish to underline, in a more distinct manner than Vygotsky, that tools and other materials (like men and women, words, dresses and even so-called natural occurrences like rivers and trees) in the human cultural worlds are also simultaneously potential signs. And the relationship between tools and signs are *multistable* (Ihde 2002), as subject and object keep being entangled in new ways. ‘In other words, *relata* do not pre-exist relations; rather, *relata* within-phenomena emerge through specific intra-actions’ (Barad 2007: 140). When we intra-act, the agential separability between subject and object is always social – and sometimes collectively intelligible.

To give an example, a hammer is not just a tool but also a sign of hammering for those who have learned (incorporated or internalised) the meaning of hammering. But hammering is also a situated activity. As agential cuts, hammer and hammering are liable to change in the course of human activity. As things and materials, objects may be constant, but as *real objects* they are transformed in intra-action.

Tools transform the materialities of the world, as when a person uses an axe to cut down a tree to build a house. But trees and houses are also cultural signs that become thinking tools. As we move in space, our thinking is also moved. Signs (e.g. sound waves in our talk or knots on a handkerchief) are not to be understood as purely internal because signs are also *extrinsic stimuli* that make it possible for humans to think (and in Vygotsky’s lingo: to control their behaviour) with reference to the materialities of the world. They are *mediated* and thus hold a double existence as both material and meaningful. Vygotsky further contends that the *social process* of mediation and action transforms the objects of the physical world. This is an addition to other theories of materials (like material feminism) because our relation to objects aligns over time, even if the situatedness of practice may make the world become anew when we actively engage in practiced places. Objects can have collective meaning, which over time makes us expect certain agential cuts. Cultural expertise is the ability to predict the social reactions when engaging with a collective consciousness spread out in a cultural ecology of mediating artefacts. Even when acknowledging that materials are never stable entities but formed in agential cuts, there is a social and sometimes collective alignment in how phenomena emerge. The process of creating connection lines between meaning and materials does not come about easily; it has to be learned not once, but again and again.

In relation to a collective consciousness, the process can be more easily understood if we first look at how we learn from explicit rules like the ones set up in the experiments conducted by researchers. In the 1920s, Vygotsky’s followers made a

number of experiments to explore sign development in children. We may use these as examples of a general process of learning through explicit designation of meaning. In the experiments, Leont'ev and his assistants demonstrate with particular clarity the entanglement of internalised signs and material artefacts in relation to voluntary attention and memory. The older a child is the less it needs what Vygotsky calls 'external mnemotechnique' (1998: 104) in order to remember cues from the environment. Though Vygotsky does not envision how the results of the experiments may help unfold what goes on in practiced places in everyday life, these ground-breaking experiments clearly show how connectionism between materials and meanings works in practice – also for adults.

In one experiment, children of different ages were asked to play various games in which they, e.g. were to answer a set of questions using a single word but without using certain colour words. The experimenters decided that the child should not say, for instance, green and yellow and could not mention the same colour twice no matter what the question was.

In Vygotsky's rendering (1978: 42–45), the questions would typically be like this:

1. Do you have a playmate?
2. What colour is your shirt?
3. Did you ever board a train?
4. What colour are the railway carriages?

In some experiments, the child got a set of coloured cards as *auxiliary artefacts* – in others no cards were provided. In some experiments, the auxiliary artefacts (as an example of the aforementioned external mnemotechnique) tied attention and memory to a materiality. Sometimes only the forbidden words were accompanied by cards, e.g. a green and a yellow card. At other times, a whole series of cards could be turned over (when the colour had been mentioned twice) whereby the list of forbidden cards would grow as the experiments evolved: black, white, red, blue, lilac, brown and grey would be placed beside the initially forbidden cards materialising the words yellow and green. Adults also participated in the experiments, and they were much better at avoiding errors than the children. Among the children, the ability to use the colour cards as auxiliary artefacts generally increased with the age of the child.

Though the experiments seem simple and mostly concerned with children's development, they may tell us something important about practiced places and how we become nested with material anchors and learn to avoid the kind of frictions that cause exclusion from social practice.

The preschool children, Vygotsky notes, were generally unable to discover how to use the auxiliary colour cards and had a great deal of trouble with both the task of not mentioning a colour more than twice and not mentioning, e.g. green or yellow, at all. Even when the experimenters tried to explain to the children how the colour cards could help them and they understood the rules, the experimenters concluded that the younger children were incapable of using the external means to organise their own behaviour according to the rules. As the children in the experiment

became older, they became more and more capable of controlling their own behaviour by using the provided external material artefacts as signs. The significant discovery of Vygotsky and his colleagues concerned how children become thinking human beings, but the experiments are also valuable when it comes to understanding how adults generally make use of material surroundings to organise their behaviour.

Engeström has used this basic understanding to develop a system of expansive learning through the intervention of researchers in the so-called change laboratories in organizations (see Chap. 8). Many researchers in the cultural-historical school see Vygotsky's discovery as revolutionary because it endows the human with agency and frees him or her from the tyranny of the surroundings while stressing the purposeful collaborative transformation of the world (e.g. Stetsenko 2008).

The outcome of the experiments could, however, also be read in another manner. The coloured cards become a system of external, auxiliary stimuli that considerably raises the child's possibility of effectively doing what the experimenters expect. For adolescent children, the use of the external signs, i.e. the coloured cards, still predominates as auxiliary stimulus (i.e. a psychological tool) acting on thinking from the outside. Among the adults, the use of the cards diminishes, but their behaviour remains mediated; the auxiliary artefacts (or *stimuli* as they were referred to in the post-Pavlov era in which Vygotsky conducted his experiments) were simply 'emancipated from primary external forms' (Vygotsky 1978: 45). The experiments show that humans orient themselves in their material surroundings in order to do what they believe other human beings expect of them. Small children do not master this ability as well as adults, but adults adjust to the extent that they hardly need the auxiliary card in order to control their behaviour. They have internalised the meaning of the cards, set up by experimenters, and use them as inner auxiliary artefacts with a material counterpart. Cards become what the experimenters called 'mediated remembering' (ibid.: 45). Human capacity for mediated remembering develops as a capability of mastering our behaviour by organising special stimuli in our surroundings to help us remember, for instance, remembering the time of a meeting by looking at the clock. These are agential cuts involving material artefacts which increasingly align not just the behaviour but also the thinking tools of humans engaged in activities.

The underlying process is what Vygotsky and his colleagues have called *internalisation*; the external sign has been transformed into an internal sign as a means of remembering. The material card showing the colour green becomes a thinking tool for recollection. Yet, we might add another dimension to this based on a diffracted reading of material feminism: The thinking tool is sustained as long as the experimenter needs it. Thus, we can identify a social dimension and a power hierarchy in the collective alignment process.

The wider implication of these findings is that sign operations connect materials with meanings which may be internalised as (in the Vygotskian lingo) tools for controlling behaviour. Using signs in the physical environment in this way is neither a simple process of transmitted passed down cultural-historical representation nor a process of individual invention. Rather than describing the process in the

more rigid terms preferred by Vygotsky and his colleagues, I prefer to see the results of the experiments as indications of how adults learn to orient themselves in cultural ecologies and make use of the resources in their physical surroundings in culturally informed ways. When a geometrical space becomes a practiced place, a process of internalisation is initiated which forms connection lines between past, present and future meanings. These meanings are tied to the material surroundings which in themselves come to act as signs for how to move and how to move artefacts around in practiced place. Far from being fixed instrumental tools, the use of signs becomes internalised as a largely implicit, unrecognised and volatile way of orienting our field of attention when we *intra-act*. Thus, our materialisations and internalised meanings meet halfway, as argued by Barad (2007). Connected with the Vygotskian framework, Barad's discussion of the meaning of this meeting no longer concerns physics, but is rather replaced by a focus on a constantly emerging and transformed cultural collective consciousness. What is originally not a sign operation at all, but a direct perception (Gibson 1979) of phenomena in a physical geometrical space with colours, sounds and smells, becomes culturally internalised meaning only after a series of qualitative transformations. The geometrical space is thereby transformed into a collectively practiced place. The collective aspect of the practiced place evolves as a dialectic learning process. As Vygotsky notes:

... each of these transformations provides the conditions for the next stage and is itself conditioned by the preceding one; thus, transformations are linked like stages of a single process, and are historical in nature. In this respect, the higher psychological functions are no exception to the general rule that applies to elementary processes; they, too, are subject to the fundamental law of development which knows no exceptions, and appear in the general course of the child's psychological development as the outcome of the same dialectical process, not as something introduced from without or from within. (Vygotsky 1978: 46)

The experiment with the green and yellow cards involves mnemonic devices to remember the appropriate agential cuts of a particular cultural ecology. Vygotsky has included other mnemonic techniques, like knots on a string, languages, various systems of counting, algebraic symbols, but also artwork, written texts, diagrams, maps and conventional signs, in a number of examples of what is (in cultural-historical theory) also translated 'semiotic means' (Vygotsky 1981: 137).² All of these means could also be termed thinking tools with the specific ability to mediate between humans and thus affect their agency in a material world.

Artefacts not only comprise tools such as knives, forks and axes but any man-made materialised sign, which can be perceived of as thinking tools. Tables, computers, chairs, doors, walls and houses we walk in are all artefacts. We anchor our thinking in these manifestations just like the children learned to anchor their

² My interest is, however, not in semiotics, which I find a much too *fixed* way of describing collectively aligned intra-actions that create cultural artefacts. Memory is not a 'record of a fixed past' (Barad 2007: x), though I also believe Vygotsky adds to Barad's framework the notion of word meaning as an embodied thought-anchored process, which is also mental.

thinking in a green card. The same goes for the sound waves forming words like 42 or chair. No word exists outside the materiality of speech (as a configuration of sound waves, gestures and neural waves somehow circulating in the brain) and no chairs or tables or speech as sound waves exist without ‘an order imposed by human beings’ (Cole 1996: 117). When ethnographers take these basic insights from cultural-historical activity theory as a point of departure for their way of thinking methodologically about participant observations in fieldwork, interesting aspects of Vygotsky’s theory appear in a new light.

3.5 Word Meaning

Throughout human history, tools and signs have, in a dialectical relationship, helped humans construct all kinds of artefacts (houses, chairs, etc.), which may re-enter human activities as tools or signs. Not all artefacts are tools (though understood in a broad sense even a bed is a tool for sleeping), and not all nature known to humans is social in the sense that we have invented signs to describe and communicate about everything. We are capable of experiencing the world beyond the realm of the social, but that is not the concern of the ethnographer. For the ethnographer, it is the social and, even more, the cultural collective that concerns us.

And here it becomes clear that the association theory, so vehemently argued against by Vygotsky, may be our worst enemy, when ethnographers try to establish a common language with our ethnographic subjects.

In traditional psychology, Vygotsky noted, association theory claims that once a meaning has been attached to a word, it forms a stable relation. However, this is not the case; associations keep changing as we learn and move about in practical activity. Word meanings keep changing (Vygotsky 1987: 245). In the lingo of new materialism, new agential cuts keep emerging and splitting materials and their meanings in creative ways. Thus, even when making ethnographies in *our own* mother tongue, we cannot take for granted that we as newcomers understand the creative meanings of the words shared by other more experienced old timers.

Word meanings constitute the basic unit of analysis for Vygotsky and the basic unit of analysis for ethnographers who seek to establish common knowledge and communicate within a common language. Newcomers have to learn to think anew with the thinking tools provided as cues for agency in the local context.

As material objects, artefacts are created in the process of activity-directed actions. Abstract or invisible aspects of material artefacts are forged by their participation in human interactions, of which ‘they were previously a part and which they mediate in the present’ (Cole 1996: 117–118). Thus, meaningfulness is not in the materials in themselves. As *relata-within-phenomena* (Barad 2003: 815), artefacts emerge through specific social and collective intra-actions.

Word meanings constitute the basic unit of analysis of a collective consciousness for Vygotsky, and though Vygotsky is sometimes considered a cognitive theorist

(compared to, e.g. his collaborator Leont'ev), his concept of word meaning is anchored in materiality. Speech is both physical sound waves (like when we pronounce the word stick) and the complex meanings we tie to the word and the material. This is what makes it a concept.

Vygotsky denied that we think words organised in sentences. Contrary to the meaning discussed by Taylor, words are not just contrasted other words – and meanings other meanings. Though words and meaning (as thinking) are separated, they can also be aligned. Thoughts do not immediately coincide with verbal expression. Thoughts do not consist of individual words like speech (Vygotsky 1987: 281).

Even so, words are an essential cultural resource for thinking. Speech and thinking are neither the same nor completely independent. When we analyse human beings as cultural thinkers, thinking should not be analysed separate from speech. Words anchor social and collective meanings in speech. Word meanings, as signs, become resources through which humans can control their own behaviour from within and also communicate with each other.

Thought and speech cannot be analysed as two completely separate, parallel processes that influence each other quite mechanically. Vygotsky attempts to describe this problem with reference to the sea which cannot be reduced to two separate analyses of, respectively, hydrogen and oxygen as two separate elements. The complex unity of what Vygotsky calls 'verbal thinking' (Vygotsky 1987: 47) should not be analysed as separate elements but as units of word meanings, which retain the characteristics of the whole while capturing specific aspects. 'Word meaning is a phenomenon of thinking only to the extent that thought is connected with the word and embodied in it' (Vygotsky 1987: 244).

Verbal thinking cannot be reduced to discrete components with generalisations that reduce complexity and eliminate differences. Like water is a coherent body of oxygen and hydrogen, verbal thinking is a body of intellectual thought processes and speech functions (ibid.).

We learn word meaning from other words that are connected in knowledge systems, but we also learn from our practical experience with material artefacts, as auxiliary tools, when we link words, thinking, actions and physical objects.

We can see cultural relations at work in the analytical unit of word meaning – when people in a community learn to connect the same ideas with the same words through practical work organised in a workplace culture made up of everyday life agencies. The connections of word meanings do not exist a priori. We learn to make connections between words, actions and physical objects from the reactions to our actions in the social surroundings.

The relationship of thought to word is not a thing but a process, a movement from thought to word and from word to thought [...] Thought is not expressed but completed in the word. We can, therefore, speak of the establishment (i.e., the unity of being and nonbeing) of thought in the word [...] The structure of speech is not simply the mirror image of the structure of thought. It cannot, therefore, be placed on thought like clothes off a rack. Speech does not merely serve as the expression of developed thought. Thought is

restructured as it is transformed into speech. It is not expressed but completed in the word. (Vygotsky 1987: 250–251)

As a word 42 kept evolving in my fieldwork at the Niels Bohr Institute. First, it was a natural number, then it became connected to science fiction and eventually it became connected with an overall understanding of an amalgamation of gender, dresses and forces of inclusion and expulsion in the cultural ecology of physics culture. 42 found its place in an evolving thinking complex.

If Vygotsky underlines how thinking is completed in words, we may enhance the perspective to all kinds of materials in our surroundings that *anchor* and communicate meaning in constant flux. Our collective consciousness makes use of these thinking tools and their anchors in both the material *stick* and the word stick. The sign thus plays a double function in internal mediation: It is used for communication and it is a generalisation, and the two aspects are connected as communication built on generalisation. ‘Meaning does not belong to thinking but to consciousness as a whole’ (Vygotsky 1997: 138). And consciousness as a whole includes material artefacts like the sound wave of 42. Animals do not *think* tools. They just use what is at hand. Consequently they have no means of preparing for future plans. For the animal, Vygotsky argued, the use of tools is just a means to satisfy an instinctive wish like getting food. In that sense, animals do not use tools, because tools are not just material entities but signs that anchor meaning (note: biologists may disagree with Vygotsky on whether apes can think tools. This discussion is outside the scope of my argument. However, if animals actually think tools, it only extends the relevance of Vygotsky’s argument). Tools are wrought in practice, and for newcomers, tools become a way to gain access to participation in practice. To think with a tool requires abstraction from the situation. Thinking tools give humans another type of stimulation and motivation than mere perception of an environment without cultural real artefacts. Thus, ‘[m]an wants the stick, the ape wants the fruit’ (Vygotsky 1997: 131) is a cultural statement. Some societies might have traditions that prohibit men from using sticks or eating bananas, but that may change over time. The word *stick* is thus a cultural sign, which is useful for communication at a certain place and time because it is generalised and collectively understood by other humans in the given culture.

Consciousness as a social consciousness is a totality – inspired by Marx: ‘the mental nature of man represents the totality of social relations’ (Vygotsky 1997: 106). This does not mean that the single person has internalised all potential relations or that they are always organised to conflate with others, but when this happens, we have a cultural collective consciousness in organisation

3.6 Collective and Social Artefacts

The fundamental way Vygotsky perceived word meaning in relation to materiality was complex. A material artefact is turned into a sign for a single person in the following situation described by Gordon Wells:

First, the same artifact, for example, a spade, can function both as tool and as sign in different contexts. When I am digging my vegetable garden, the spade mediates my material activity as I turn over the soil; in this context it is clearly a tool. But if I am interrupted, I may leave the spade at the point I have reached as a sign to ‘tell’ me where I should continue when I return to the task. (Wells 2007: 245)

This sign may not be interpreted in the same way by a passer-by. Even so, both the spade and the sign *spade* are social resources humans can use in work and communication in cultures where the word spade and the material spade are well known. This connection between material and word makes it possible to recognise the material (elongated iron with a flat part in one end) as a tool for digging. Though some *affordance* for digging may be *in* the material arrangement, its cultural significance is not visible but must be learned. From an ethnographic point of view, many questions may be asked seeing the handle of a spade left in a pile of earth. For instance, can only men and not women use spades in this culture? For experts in the cultural ecology, spades or sticks, for example, are connected with word meanings for which the physical sound waves produced when pronouncing *spade* or *stick* are signs, and internally they anchor a complex of already learned intertwined cultural meanings. Meaning is thus social and connected with a collective consciousness. As meaning does not belong to thinking but to consciousness as a whole, (Vygotsky 1997: 138), it is important for our understanding of a collective consciousness in cultural ecologies to underline that consciousness as a whole includes material artefacts.

His colleague Leont’ev puts it this way:

Consciousness is co-knowing, but only in that sense that individual consciousness may exist only in the presence of social consciousness and of language that is its real substrate. In the process of material production, people also produce language, and this serves not only as a means of information but also as a carrier of the socially developed meanings fixed in it. (Leont’ev 1978: 33)

But there is more to word meaning. Like the spider and bird, we work on nature and create webs and nests, but in human activity, meaning, consciousness and material activity inform each other (Vygotsky 1997) in particular practiced places. When our activities change so does word meanings. Even if all signs and tools were social, they would not all be collectively shared because humans constantly and creatively reconfigure their meticulously aligned collective consciousness. It therefore makes sense to separate the collective and the social though they are often conflated in the analytical field. Though humans draw on the same social resources, they continuously reconfigure what is collectively shared.

In a very early work, Vygotsky discussed the psychology of art and made a note of not conflating the social with the collective, but acknowledged that all apparently individual acts are social:

Art is the social within us [. . .], and even if its action is performed by a single individual, it does not mean that its essence is individual. It is quite naive and inappropriate to take the social to be collective, as with a large crowd of persons. The social also exists where there is only one person with his individual experiences and tribulations. (Vygotsky 1971: 17)

Though Vygotsky thus underlined the point that individuals are always social, he was also open for a discussion of when and how the social becomes collective. The social is always present, whereas the collective is a special case. This is relevant for a discussion of the ethnographer's process of cultural learning. Artefacts and actions are social but not everyone shares collective cultural thinking.

In his discussion of how speech and thinking are intertwined, Vygotsky further developed this line of thinking with reference to a dialog between the young woman Kitty and her lover Levin in the novel *Anne Karenina* by Leo Tolstoy.

Kitty and Levin engage in a *collective* dialogue that goes like this:

"I have long wished to ask you something."

"Please do."

"This," he said, and wrote the initial letters: W y a : i c n b, d y m t o n. These letters meant: "When you answered: It cannot be, did you mean then or never?" It seemed impossible that she would be able to understand the complicated sentence.

"I understand," she said, blushing.

"What word is that?" he asked, pointing to the n which stood for "never"

"The word is never," she said, "but that is not true." He quickly erased what he had written, handed her the chalk, and rose. She wrote: I c n a o t.

His face brightened suddenly: he had understood. It meant: "I could not answer otherwise then." (Vygotsky 1987: 275)

In this abbreviation of external speech, we find the core of the relation between word meaning and materiality. Between the lovers, a secret language is built up which could not be understood by people who are not engaged in the love life of the two persons. This is maybe the smallest unit of a collective culture. Two people aligned in reading material signs because their thinking is aligned. While the words behind the written signs are social, the interpretations of the abbreviated speech signs made by Kitty and Levin are collective.

We not only anchor our thoughts in words, our thoughts are sometimes collectively shared. Though external speech is both social and public, and thus apparently available to all, the collective meaning of words is complex and tied to particular cultural practices. Thus, the same social resource, like the number 42, or material artefact, like a chair, may anchor different word meanings for different people, who may become just as collective in their *secret* understandings as Kitty and Levin. This extends a discussion of expression and meaning (Taylor 1971). Culture emerges when materiality and collective meaning converge into 'cultural self-evident' connections (Hasse 2002a; Hasse and Trentemøller 2009).

The co-knowing of a collective consciousness involves a learning process that begins *before the fact*. The *fact* is also momentary – following Barad’s discussion of how subject–object constantly entangles each other in new ways.

But with the Vygotskian perspective, I add to Barad’s that the *cuts* become aligned over time in a cultural dust bunny. Lines become aligned.

This has consequence for how we understand the ethnographers’ apparatuses. They are not something we chose as when choosing to bring a camera – they are us.

Instead of seeing the apparatus as something that may be used somewhat instrumentally or, in Barad’s own thinking, as almost free of a historical body, I do not see the apparatus as something we chose to use, but something that emerges in relation to a person who moves through a frictioned physical space. Apparatuses which enact agential cuts emerge from this position (see, e.g. Barad 2007: 55). As frictions are experienced, more and more agential cuts align in a collectively shared practiced place.

In cultural-historical theory, consciousness has a collectively shared *semantic* structure. Inspired by contemporary Russians (especially A.A. Potebnia), Vygotsky further developed the notion of consciousness as ‘an internalized system of social relationships’ in which we are in a constant internal dialogue with our interlocutors (Zavershneva 2010: 25). In this line of thinking, Vygotsky emphasises that language is not a fixed relation between a sound and the thing it denotes – just like *the chair* in the canteen is not a relation between the word *chair* and the material *chair*.

It is the relation between the speaker and the listener, the relation between people directed toward an object, it is an intersychic reaction that establishes the unity of two organisms in the same orientation toward an object. Linguistics fetishizes words, the psychologist exposes the fact that behind the visible relations between things lies relations between people. (Zavershneva 2010: 25–26)

In Barad’s rendering, the Vygotskian approach presupposes a separation of *relata* before relations. I follow her in acknowledging that *relata* emerge within phenomena and in relation to apparatus. This makes it possible to deal analytically with a group of people sharing a geometrical space yet perceiving its phenomena in diverse ways. I wish to add to this discussion that the *meaning* of words and auxiliary artefacts may be as (in)visible and (in)accessible to a newcomer as to young children who must learn to internalise human social meaning from scratch. The position as newcomer makes us aware that there is a distinction between the social and the collectively shared aligned cuts. A collective consciousness is a special case of collective relationships, which have been formed over time and have transformed the persons engaged in collective activities as they have engaged with material artefacts.

The use of artefacts (as cuts) not only radically changes human conditions of existence, they even react back on humans in the sense that they make a change in our psychic condition, as already noted by Vygotsky.

3.7 Learning Word Meaning

Vygotsky's word meaning can make us aware that ethnographers, as adult newcomers, change thinking tools because we learn to care about word meanings in a new local collective consciousness. This is also an effect of agential cuts. In learning that I could use 42 and other science fiction resources as tools for participation, the instruments gradually began to change me. Why did physics students bother about science fiction? I began to think with science fiction and the world of physics education suddenly opened a new world to me. I began to understand the complex whole of physics in an entirely new way, which was tied to a very emotional agenda of searching for life in space.

Understanding the words of others also requires understanding their thoughts. And even this is incomplete without understanding their motives or why they expressed their thoughts. In precisely this sense we complete the psychological analysis of any expression only when we reveal the most secret internal plane of verbal thinking – its motivation. (Vygotsky 1987: 283)

Human beings are motivated to engage in activities. Engagement, tools and collective thinking merge. Meaning becomes public through learning about the collective use of social artefacts in activity.

When Helen Verran discussed how different number logics prevailed in the logics of the West and the logics of African numbers, $2 + 2$ no longer equalled 4 (Verran 2001). Science, mathematics and logic come together in practiced places be it in Yoruba primary schools in Nigeria or at the Niels Bohr Institute in Denmark. Logic and math are not just culturally relative. Cultural resources make us think and perceive phenomena differently. For the ethnographer, the outcome is that meanings of cultural materiality must be learned in practical engaged-directed activity. It is when we become engaged that we begin to think and use mediational means as thinking tools for agency.

'Meanings in themselves do not give rise to thought but mediate it – just as tools do not generate activity' (Leont'ev 1978: 33). For culture to become public in a practiced place, the newcoming ethnographer must be open for engagement that allows an emotional relationship with the empirical field to evolve so he or she can learn the thinking tied to materials.

[Thought] is not born of other thoughts. Thought has its origin in the motivating sphere of consciousness, a sphere that includes our inclinations and needs, our interests and impulses, and our affect and emotions. The affective and volitional tendency stands behind thought. Only here do we find the answer to the final "why" in the analysis of thinking. (Vygotsky 1987: 282)

The mentioned word meaning of the number 42 also has its origin in the motivating sphere of a collective consciousness in physics, a sphere that includes physics students' inclinations and needs to belong to the world of future physics, their interests and impulses and their affection and emotions. The affective and volitional tendency is behind the material instantiation (as words, on posters, etc.) of the number 42, as well as behind many other cultural resources from the genre of

science fiction, which I learned as a path into a collective consciousness in physics at the Niels Bohr Institute at a particular time in space.

Do collective word meanings require us to participate in activities in order to nest in our environments? Or do we develop our environments without engaging in activities? Or do environments develop us just because we are present?

The notion of culture is closely connected to these questions. When our surroundings are well known, we nest in the sense that our embodied being in the world works from already culturally formed perceptions of what to expect.

3.8 Summary

Objects are affiliate and emerge in relations rather than having properties *sui generis* (Suchman 2005: 381). Artefacts are objects which are material and meaningful. Words are also artefacts. For the child, the world consists, at first, in separate objects; then we begin to grasp the actions and words tied to these objects, and finally, we move on to think with words as anchors. What I have added (or made more salient) in the Vygotskian theoretical framework is that materials also anchor thinking. Materials and words intra-act in creating the phenomena, which we perceive. When we perceive our environment as meaningful, perception is something we have learned. We are not born with it (Vygotsky 1987: 297). To Vygotsky's original studies of child development, we may add that meaningful perception develops as agential cuts throughout all our life when we encounter materials in new practiced places.

Culture is a process of meaning-making in a material world; it is not stable and isolated but constantly on the move. Word meanings keep changing; yet even if the subject-object relation is only momentarily separated over time, the word meanings gradually align with a locally situated collective consciousness, which builds on a common (and often very abbreviated or even gestural) language. This is equivalent to Anne Edwards's discussion of the so-called easy transfer of meaning in communication based on common knowledge (Edwards 2010). A newcomer has to find ways to tap into this shared understanding of the physical surroundings, and for the newcoming ethnographer its part of the craft. For other participants, like Vibe, the frictions encountered may lead to a motivation to leave the shared practiced place – which indeed she did.

I learned from Vibe that I should downplay my femininity, and from other students, I learned that science fiction was a cultural resource. In time (as discussed in Chap. 8), I even came to see short dresses, the expulsion of Vibe, the love for number and science fiction as connected in physics culture. Learning about science fiction made 42 intelligible to me and gave me access to participate in not just meaningful but also emotionally engaging activities. My research apparatus was transformed in the process, as was my perception and cognition of the material space I momentarily shared with my fellow students.

Observation implies having both an empirical and an analytical object, but studying culture makes it clear that there is no one-to-one or associative relationship, between language, the social world and the material world. Though the relation between words and world is often experienced as a singularity, language provides no direct way to culture (Hastrup 1995: 42). With Vygotsky we can now understand why. To know a word is not to know the collective thinking it anchors. To know a culture is not to know its words alone, and it is not about knowing structures but to know how to speak and act in a ‘socially meaningful (or meaningless, for that matter) way’ (Hastrup 1995: 42). And this involves agential knowledge of what type of collective consciousness is anchored in material artefacts.

It is from this perspective that we can begin to understand the practice of ethnographers in new ways – as one of learning in a practiced place of a defining collective consciousness.

Perception, observation and understanding are all transformed by learning. Perception is the sensual being in the world through a physical space full of sounds, smells and sights. Observation is a special case of deliberate perception (often accompanied by certain tools from notebooks, sketch books, cameras and recorders), and understanding is what gradually transforms our perceptions and ourselves in a process of cultural alignment. The meaning of culture cannot be reduced to its being public, as Geertz claimed (Geertz 1973: 12).

Processes form expectations as sediment layers on which new perceptions are formed. The experienced practitioners share certain understandings, but like the newcoming ethnographer, their access to and engagement in learning will also determine the *thickness* of their lines of entanglements.

What appear to be established semiotic interpretations of materials (also named material–semiotic, coded materiality or material–symbolic meaning) from a certain perspective in the analytical field is a matter of learning from the point of view of the newcomer and matters of concern materialise in learning.

Our repertoire of cultural resources to be used in situated organisational culture (but maybe not elsewhere) is expanded enormously once it is learned. From twinkling our eyes due to nervousness, we may learn that twinkling can be used in a meaningful way. We may first learn that twinkling is a mediational means of flirting with somebody, and then we may learn that twinkling can be a mock flirtation. We may learn twinkling as a sign of conspiracy, or we may learn twinkling as a secret code of membership. Each time new meanings of twinkling are learned, not only the complexity but also our expertise in acknowledging frictions is enhanced. The ethnographer should not assume that these meanings are well known to all other ethnographic subjects or that their perceptions are similar to the research apparatus. On the contrary, learning a larger cultural repertoire makes it possible to make new discerning observation practices of who reacts to what.

The process of learning is always based on access to learning from the available bodily operations and geometrical spaces accessible to the research apparatus – but also from the formed word meanings which close or exclude attention fields.

In this process, the transformation of perceptions may transform the analytical object. To understand the learning processes of how concepts like culture, norms, traditions and habitus move from participant observation to anthropology, it has been necessary to draw on different sets of theoretical frameworks and diffracted readings in the analytical field. This anthropology of learning can be defined as cultural learning processes in which embodied, sensuous learning of connections forms patterns of expected agential cuts in particular practiced places.

This leads to an emphasis on the body and physical position of the learning ethnographer in a geometrical space, which is the topic of the next chapter.

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Chapter 4

Position Matters!

'Being there' (Geertz 1988: 1) is more than ensuring convincing authorship in anthropology. Before *writing culture* come *learning culture*. Learning is about wayfaring and moving position in, seen from a bird's eye view, a change in a geometrical space. In *The Practice of Everyday Life* (Certeau 1984), place is defined in the way cultural geographers often define geometrical space: a place is where two things cannot be in the same location. Certeau also refers to Maurice Merleau-Ponty's distinction between *geometrical space* and *anthropological space* (1984: 117). Geometrical space is 'homogeneous and isotropic' contrary to the physical space which we 'vaguely regard [...] as the setting for things', (Merleau-Ponty 1962: 284). In anthropological space, 'the thing is correlative to my body and, in more general terms, to my existence, of which my body is merely the stabilized structure [...] and if we try to describe the real as it appears to us in perceptual experience, we find it overlaid with anthropological predicates' (Merleau-Ponty 1962: 373). What de Certeau adds to this distinction is that in a geometrical space, things and humans are *placed* but when they (are) move(d) about the geometrical space become practiced place. What I shall add to these definitions is that behind a practiced place is a defining and defined social and sometimes collective (anthropological) space, which is accessible only through physical and social positions. I shall present two definitions of *position* (physical and social) both of relevance to ethnographic participant observation.

The first definition I propose in this chapter is this: we learn from where our body is positioned, i.e. *placed* in geometrical space, and it follows that the ethnographer's body cannot be in more than one position at the time. Moreover, I argue that *position matters* and it therefore matters from where in geometrical space we learn. For Certeau, practiced place comes close to the anthropological understanding of a *social space*, i.e. where the geometrical space is transformed into practiced place through direction, velocities and time variables (Certeau 1984: 117). In relation to learning, being *placed* is to be in a *corporeal field* defined as a space

with which every person is ‘inextricably linked by way of the physical, sensing and moving body’ (Hastrup 1995: 95). It is from this physical position in geometrical space that the body transforms from ‘a spatiality of position’ to ‘a spatiality of situation’ (Merleau-Ponty 1962: 115).

The second definition of *position* is a socially designated position (Hasse 2002). Our position in social space also defines our varying placements in the geometrical space as we move through the practiced place in the empirical field. Both the first and the second definition of position refer to how position influences how we learn new word meanings (see Chap. 3) connected with materials in cultural organisations. The two types of positions are intertwined and inform each other.

The importance of a researcher’s situated bodies has been one of the main contributions of feminism to the field of STS (science and technology studies). Researchers who work from what the biologist and feminist Donna Haraway calls a ‘God’s eye view’ forget to make us aware of their physical positioning and how they gain access to empirical fields. From the carefree position as a disembodied being, the researcher may appear as a detached all-seeing and omniscient researcher, who is distanced from everything and everyone in the empirical field precisely to be able to exercise full power over the research (Haraway 1991: 183).

The underlying claim of this detached position is connected to a claim of objective knowledge. Yet, according to Haraway, true objective knowledge is in fact based on the realisation that the researcher’s physical location matters. From this position it is realised that partiality, not universality, is the true condition for any research to be taken seriously. Instead of a vision from ‘nowhere’, a researcher must acknowledge a vision from somewhere, where body, ambiguity and motion are inseparable and only the detached ‘god trick’ is prohibited (ibid.: 195). Situated knowledge is, in Haraway’s analytical terms, not linked to learning in a situated practice, as by Lave and Wenger (1991), but to a *somewhere* position. The road to a wider vision is recognition that to be a researcher is to be ‘somewhere in particular’ (Haraway 1991: 196).

Learning connections in material space are tied to the bodily placed boundary-making apparatus of the researcher. The research apparatus is always situated somewhere in the practiced place, and mattering matter (Barad 2007: 3) emerges as the researcher moves around in the empirical field. The practiced place is in other words not given, but an ‘intra-active becoming’ (Barad 2007: 170). Whereas Barad considers Judith Butler’s emphasis on human bodies needlessly anthropocentric (Barad 2003: 821n26), I shall, with a reference to Merleau-Ponty, underline the body as our medium for being-in-the-world: ‘third term, always tacitly understood, in the figure-background structure, and every figure stands out against the double horizon of external and bodily space’ (Merleau-Ponty 1962: 115).

The phenomenological perspective has only presented a rudimentary understanding of culture, as has been noted by Don Ihde (2002). I have argued culture is a process rather than entity, where *to process* ‘is understood in an intransitive sense. Like life itself, it does not begin here or end there, but is *continually going*

on. It is equivalent to the very movement the *processing* – of the whole person, indivisibly body and mind, through the lifeworld’ (Ingold 2011: 159).

Culture challenges the classical distinction between a *life world* and separate ‘worlds of science’ (Ihde 2002: xvi). The analytical field can, in other words, be studied as an empirical field – depending on the position of the researchers.

The material organisation may have boundaries in relation to the positioned body of the ethnographer or any other researcher visiting an empirical field.¹ Mattering matter is, for the ethnographer, always a process which aligns bodies in anthropological spaces and that require learning in practiced places. In this perspective, situated learning is about gaining access to learning.

Studying *with* (Ingold 2011) is often difficult because humans organise their geometrical and anthropological (including virtual) spaces with all kinds of material obstructions for which researchers need social interference to overcome. One example is locked doors and codes. Yet, even when social access is given, a relation between a human body and what it can do in its material surroundings, like accessing a homepage, mounting walls and crossing lakes, is always present. Furthermore, we cannot take for granted that all material surroundings are organised by humans. Some forests have explicit rules for where to go and what may be picked up – others do not. It is therefore very difficult for a newcomer to know when boundaries of organisations are transgressed if he or she is not faced with any reactions from other humans.

All learning of cultural word meanings constitutes agential cuts in organisations, and their beginnings (more so than ends) form the path of learning. Even when we move freely through a geometrical space and pass all kinds of intermeshed materialised lines of thoughts, our beginnings have consequences for how and what we learn. In this chapter I will probe deeper into the importance of the *initial* position when we enter other people’s cultural practiced place. Moreover, I discuss advantages and consequences of the different kinds of positions available to an evolving research apparatus regarding social role, social categories and structural identity – all in relation to the analytical concept of position.

There might be a power hierarchy of the two ways of understanding positions: the bodily position often depends on the social position. Our bodies are cultural and

¹ In this chapter I sometimes refer ethnographers as researchers. The term *ethnographer* is used when I refer to the specific method of participant observation (ethnographers as participant researchers writing ethnographies based on participant observation), whereas I use the term *researcher* to refer to anyone researching an empirical field (which can also be researched through interviews, surveys and consultancy work). Of course many ethnographers use many different approaches when doing fieldwork, but here I wish to underline the importance of position in the empirical field no matter whether we talk about an ethnographer or a researcher. In the analytical field, ethnographers may come from anthropology or other disciplines making use of ethnographic approaches. When I refer to the practitioners in the empirical field, I call them *practitioners* when they are engaged in practices and *participants* when they join social and sometimes collective groups. When they are subjected to the ethnographer’s attempts to learn, I name them *ethnographic subjects*.

lived, and cultural bodies cannot be separated from the lived bodies (Ihde 2002: 69–70).

How we are allowed to access learning will often be a consequence of our social position in the field. This restricts the learning and thus the transformation of the research apparatus for ethnographers in particular and participants in general – but it also opens for possibilities of learning.

Adding to Certeau, the practiced place is more than a geometrical space practiced and storied; through social designation the geometrical space becomes what Edwin Ardener has called a ‘defining space’:

The social is, in virtue of its categorizing and classifying structures, a space that ‘identifies’. It is a chief source of any concept that we have of identity. That there is a multiplicity of identities that coexist together from any single perspective is not strictly speaking a problem theoretically. It is one of the proofs – and one of the costs – of the apparent paradox of the continuity between the space and the individuals that constitute it. They are defined by the space and are nevertheless the defining consciousness of the space. (Ardener 2012: 520)

When perceived from the position of the newcomer, it is not just the ethnographer who defines the field of study. The definer becomes the defined, the classifier becomes the classified and it is from this position the ethnographer can begin to untangle the imagined and the realised lines of fibres in the dust bunny. The agential cuts of an organised collective consciousness depend on the social roles and structural identities available to us, and they might not be what we imagined in the analytical field.

The responsible research apparatus will, as a minimum, seek recognition of how the researcher’s position is perceived locally, as that will ultimately create the specified conditions for research.

4.1 Structural Identities

When entering the empirical field as participant observers, ethnographers must acknowledge that they no longer have full power over their research. Position in the empirical field is to take up an available place in a geometrical space, and that often means taking up a social role (Hastrup 1987a). Social roles are defined by local social categories that, for the ethnographer, may be unknown.

One of my anthropological colleague studied people’s shopping habits and cooking practices in Kenya. She was allowed to follow several families during their trips to the market and when they cooked their meals. She had presented herself as an anthropologist working for a Danish aid agency. She was aware that she probably seemed different to her ethnographic subjects as a white female and a comparatively wealthy researcher in her 30s, but it was her impression that she was more or less accepted. Even so, she increasingly experienced more than acknowledged frictions. Only much later, after a long and uneasy time in the field where she gradually became aware that she was not as accepted after all, she began to get

glimpses of an unexpected connection to a local social role. It turned out that in the local organisations of cultural knowledge, she was perceived as an undercover tax inspector sent by the government. Being designated this role in the local cultural imaginary placed her as somebody who should not get access to what really mattered – and locals would even try to give false impressions like, for instance, that they earned less money than they actually did (thus hiding egg-selling from the doorstep). The massive pressure for secrecy that her appearance as a *tax collector-spy* elicited in the households was the cause of the frictions she encountered. Her being white, young and female was less significant. Her notes on how much grocery the ethnographic subjects bought and how they prepared them were to be used for making plans for better local nutrition policies in the aid agency. This, however, was not what the local households recognised, and my colleague only learned about their concerns almost at the end of her fieldwork period.

She learned because she noticed, or even sensed, frictions when she entered a room and began to make enquiries about her own position and how it was perceived. When she finally got the answer, it was very valuable for her cultural analysis. It gave new, important knowledge about what motivated and emotionated her hosts in the cultural context. She had herself become a cultural marker (see Chap. 5) of this context. Her bodily placement as a *tax collector* barred her way (she later realised) from participating in dance events and family parties (showing, e.g. an excess of food).

Depending on their analytical object, researchers seek from the outset to position themselves in ways that enable them to learn certain participants' cultural connections over others.

Being defined in a local culture by the empirical field will not necessarily *determine* the nature of the data generated in the encounters with the empirical field, but it provides a direction for the research. The initial position sparks a process of transformation of the ethnographer's embodied apparatus which gradually becomes aligned with the agential cuts of the other ethnographic subjects. In this sense participant observation is about *researching selves* in the empirical and analytical field, not in a self-indulgent and narcissistic way or as an equivalent of the Western genre of autobiography as underlined by Charlotte Aull Davies, but because it is '[I]n this process of interaction of the ethnographer as self and the ethnographer as other that social knowledge of general interest and significance is produced' (Davies 1999: 189).

Thus, what is important is not auto-ethnography with a narrow focus on the researcher's autobiographical, individual history, gender, personal opinions and theoretical preferences (Ellis et al. 2011). What is important is who we can become.

I began my study of gender and physics at the Niels Bohr Institute in September 1996 together with 119 other freshmen enrolled to study physics at the Niels Bohr Institute in Copenhagen. In agreement with the study leader and tutors, I was allowed to take a position as a pro forma physics student. This structural identity gave me access to be positioned as a member of a study group. I was invited to participate in the introductory course, I got a timetable, I began to follow the teaching and I even sought help from a fellow student to read homework and

solve exercises. This position, which initially gave access to some form of participation, became crucial for my cultural analysis. The position provided a unique opportunity to gain insight into the cultural learning processes that formed newcoming students. I also got a structural identity that gave me the opportunity to ask the question: ‘How does the researcher deviate from other participants?’ Since I, like the other new students, was included in the structural identity of physics student, it was assumed that I somehow, at least in principle, could fill in the social role associated with this category.

A word like *physics student* opens an agential cut and gives us a structural identity of the *them-we-are-kind*. Once we are socially included in the category, our physical presence is (initially) recognised as synonymous with the expectations of that social role.

Expectations are tied to the word *physics student*, which gradually connects to invisible lines of meaning in the landscape (a geometrical space not yet an organised practiced place) and the material objects in the highly organised world of physics students I was about to learn about. When we study cultures, whether in foreign or our own language, we may be unaware of all the self-evident cuts we have already learned to make when we describe and define a social space.

In my Western culture, people may have some expectations of a physics student, but other social categories, like a *priest* or *teacher*, are better known to the general public. This means that most people would be able to give a fairly precise description of what they expect a priest or a teacher to do – although the reality may be somewhat more complex. Very few social roles that are embedded in organisations have as recognisable expectations as those tied to the structural identity and social role of a priest. It would probably be more difficult for most people to describe what a physics student does than what a priest does. I was not quite sure myself when I began studying physics. To be given the structural identity as a physics student is not the same as being recognised as one. This become apparent once we begin to *practice* being a physics student.

In traditional role theory, people could not be separated from social roles and their agency was closely associated with these roles (Hollis 1985). In role theory structural identities define a group of people as being equal to each other – *idem et idem* (i.e. the same and the same). Consequently we have expectations of how people should behave and talk because they occupy a social role tied to a structural identity along with the social category tied to this identity. We more or less implicitly assume a structural identity, named by a social category like *priest* to determine a person’s foreseeable acts as located in practiced places and in relation to other people. My structural identity did, however, not mean that I could fully fill the social role as a physics student. Physics students are, for instance, expected to pass exams, and I had, among other things, given up going to exams. Even so I got legitimate access to the same geometrical spaces and practiced places as the other physics students, and that became crucial for my learning process in the empirical field and hence for the cultural analysis.

My position as a physics student gave me a legitimate presence in the practiced place, and the authorised identity positioned my body and research apparatus

among the physics students. From here I learned about the interaction between material artefacts, practiced place and the arrangements between meaning and materials. However, there is more to learning than *being there*.

4.2 Social Roles

Though participants may still be named with the word of the structural identity, they may also find that they are excluded from practice because they do not fulfil what is expected of the social role. Thus, not being able to fill a social role as expected elicits frictions, which may become part of a cultural analysis.

Social roles have been a controversial concept in social psychology because the concept is perceived to be a rigid concept that reduces people to functions. When I use the term here, it is to emphasise that participants in organisations' everyday life are connected with specific *expected* functions, meanings and actions. The structural identity is the formal, external and often qualifying position which gives access, while the social role has to be filled by a bodily presence that reveals how the practice of the structural identity is performed.

We must learn about the important connections that are locally attached to the position the structural identity and social role give us, and that is whether we learn as a researcher or any other participant in an organisation.

Social roles create and restrict possibilities (Hollis 1985: 231), but it is the local connections tied to the social roles that create the social expectations of how participants should behave.

One of the anthropologists who have made conscious choices and sought out available structural identities is Kirsten Hastrup. In Iceland she took the position of a helper on a farm milking cows (1995: 17–18), as sheepherder and fish cleaner (Hastrup 1987a). All of the social roles provided access to some forms of agential knowledge in the local, social practiced place, irrespective of whether she, as the anthropologist, was accepted as a genuine participant or not. The Icelandic milkmaid (*fjósakona*) is a possible position because there is a social category and a structural identity that can be filled out by enacting the social role of milkmaid: '[T]he category was there ready to be populated, and the work was there as well' (Hastrup 1987b: 98).

Although a social role appears to be clearly defined by the structural identities as they are defined in social categories like *milkmaid*, *boss*, *priest*, *secretary* or *social worker*, in practice many unexpected cultural connections are tied to the position to be learned as new cuts in the organisation's local practiced place.

An important aspect of a research methodology is to reflect upon and react in relation to what we learn about the social roles in organisations – including our own roles. A researcher can participate in many ways, but always on the defining terms of the social space.

Researchers are in a special situation as newcomers because they rarely have necessary and natural positions to take up in the organisation's everyday life.

Basically, a researcher can easily be excluded from participation in the existing everyday life. As a researcher you have to negotiate and invent your necessary presence in other people's practiced place. Cultural sensitivity is important as the researcher may be far from sure about the meanings attached to his or her presence in the empirical field.

Researchers are generally aware that their gender, ethnicity and age may have an impact on their access to do research, but other connections that are specific to the organisational culture may also be at play. In entering an organisation, the ethnographer must first learn to know what is connected with the presence of a researcher.

At the Niels Bohr Institute, I inhabited the unique position of being an ethnographer designated a structural identity equivalent to the other newcomers participants: that of a physics student. Learning is a process that sets social expectations in motion, and precisely this movement makes my research apparatus capable of capturing all the moods and unspoken sensations that are tied to the word meanings in the nested culture. I got access to learn not just what was said but also the silences of the social space (Star and Strauss 1999).

It is rare, however, that researchers are included in the empirical field with the same structural identity as the field's other ethnographic subjects. In my other fieldworks, my cultural analysis builds on other, and more traditional, research positions. The basic problem of access remained relevant, and how to get access is something we have to learn to acquire in all kinds of fieldwork. Access, including the initial structural identity, is something ethnographers negotiate every day in the empirical field.

To get a structural identity that ensures access does not necessarily mean generating a way to fill out the social role that is accepted in the long run. It is an entry point. Categories such as physicist student generalise and even out differences that will gradually emerge when we begin to practice in practiced places. While identity categories and group conceptualisations partly lead language users to believe that a stable membership has been achieved, we soon learn that in practiced places people can be perceived as more or less peripheral participants no matter what general structural identity they have obtained. Precisely because a social role, tied to structural identity, comes with certain expectations, the *idem et idem* structural identity becomes dissolved if practitioners begin to focus their attention on the differences within the group. And that will gradually exclude some from being recognised as included in the group because they do not meet the expectations of the social role.

The expertise which the researcher brings to the everyday life of an organisation (an institute, village life or an enterprise) may neither be wanted nor understood, and even if it is considered useful to include a researcher in the organisation, the social role that defines the researcher often remains unclear or even contested as local participants may have other agendas than researchers.

4.3 Learning Who We Are

Losing power over research entails understanding the transformation process of our own positions when engaging with a frictioned empirical field. Depending on the disciplinary tradition, position may be understood differently as an analytical concept in the analytical field. The various understandings may, however, all be relevant when we seek to understand the premises of the cultural learning process analytically. When taking a closer look at the different theoretical ways of discussing *positions*, the poststructuralist, cultural cognitive and postphenomenological approaches all seem relevant. A diffracted reading of all three perspectives will enable an understanding of various aspects of positions seen in relation to learning. A poststructuralist approach tells us that being positioned is something others do to us when they discursively assign us a subject position. The cultural cognitive approach tells us that to be positioned (or subjectivised) by others is a transformation of our motivated engagements when we form new connections between (bodily) appearances and meaning. The postphenomenological approach tells us that our position is important in relation to how our material world emerges from our being-in-the-world.

Bronwyn Davies and Ron Harré set up a discursive, poststructuralist model for learning about how others perceive us (here in my rendering):

1. First we are learning of the categories which include some people and simultaneously exclude others, e.g. male/female and father/daughter.
2. As we participate in the various discursive practices, meanings are allocated to those categories including the storylines through which different subject positions are elaborated.
3. Then we begin to position ourselves in terms of the categories and storylines. This involves imaginatively positioning oneself as if one belongs in one category and not in the other (e.g. as girl and not boy, or good girl and not bad girl).
4. Finally we begin to recognise ourselves as having the characteristics that locate oneself as a member of various subclasses of dichotomous categories and not of others – i.e. the development of a sense of oneself as belonging in the world in certain ways and thus seeing the world from the perspective of one so positioned. This process of recognition entails an emotional commitment to the category membership and the development of a moral system organised around the belonging. All four processes arise in relation to a theory of the self-embodied in the pronoun grammar in which persons understand themselves as historically continuous and unitary.

The experiencing of contradictory positions is problematic, as something to be reconciled or remedied, stems from this general feature of the way being a person is done in our society. (Davies and Harré 1990: 47)

Does the above apply to the researcher? To some extent, yes. In other words, the presentation of position needs elaboration. As researchers we first learn the categories that include some people and exclude other – but they might not be

dichotomous in the manner we expect (as in being *woman* excludes being *man*). In fact they may not be neatly arranged in dichotomies as all. They may rather be entangled in local meaning-making processes in which pointing to yourself as *woman* is not just the opposite of *man* but, e.g. connected with wearing short dresses, being sexy, being giggly and being unserious in contrast to being a serious male or female physicist or *not stupid*, or *somebody who does not need affirmative action* (Hasse 2002). As in the case with Vibe, the word meaning of *woman* is complex and can only be learned in the local practiced place. From the abstract viewpoint of the analytical field, *woman* would necessarily exclude *man* and thereby point to the existence of men. Some practiced places have, however, not ascribed the same semantic density to *women* as in the Western academia.

An increasing degree of what Ardener called a semantic density of connections between the meanings of words and materiality (Ardener 1989: 168–169) appears when we, over time, learn how connections are tied to the material appearance of body signs. Semantic density refers to a specific material physicality which again and again becomes associated with particular meanings. This could refer to the process in which cultural ideas of what to expect are formed.

Being a female researcher at, e.g. a Western physics institution places you in a political field connected to the women's movement or fights for affirmative rights for women (Hasse and Trentemøller 2008). In this perspective, Davies and Harré are right in saying that when we participate in discursive practices, (local) meanings will be assigned to these categories. Yet, such ascription of meaning does not only happen through discourse and storylines and meaning does not only appear in dichotomy. We (newcoming researchers as well as well as newcoming participants) are often not sure or unaware of which meaning is assigned to material artefacts. We assume certain meanings because we gradually learn to read other peoples' reactions in ways that are not contradicted by negative reactions. We appear to develop, for instance, semantic densities of what *woman* means and if it has a meaning at all. Researchers learn to position themselves in terms of categorisations and stories told by others in the empirical field, and this influences the access to learning. Researchers, just like other participants, might imagine themselves as having characteristics that place them in an included position in relation to various structural identities, but in time they might learn that the world around them does not agree with their own definition. It is part of the craft of being an ethnographer to be able to include scrutiny of one's own position in the cultural analysis. Other people's characterisations of researchers in the field, be it positive, painful or problematic for doing research, touch upon our deep sense of self, which Harré and Davies allude to (Davies and Harré 1990: 90), but it is especially so for the ethnographer, who invests the moving body in other people's practiced places.

While poststructuralists, like Bronwyn Davies, focus on discourse as having a constitutional effect and being a resource to be drawn on in negotiations of appropriate identities, the learning perspective may open for new ways of understanding processes of learning that take place *before* negotiation. Learning is an emergent and often frictioned process which occurs as we move about in places and negotiate our identities in situ. Positions may be destabilised in negotiation. Subject

positions can be *disturbed*, turned around and challenged by becoming what Donna Haraway, with Trinh Min-Ha, called ‘inappropriate(d) others’ (Haraway 1992: 299), but disturbances are not disturbances when seen from the analytical position of cultural learning. Disturbances are disturbing previous learning about the connections between words, materials and thoughts. People may suddenly become excluded as inappropriate(d) others, and the unexpected or *disturbing* is not easy to predict. For the ethnographer (the inappropriate(d) other par excellence), being disturbed in an assumed identity is a resource for making cultural analysis. Nevertheless, we, like any other practitioner, tend to act on predictions that rely on a collective consciousness, which makes us expect that others find our acts intelligible.

In relation to the position of the researcher, it is important to note that no matter which structural identity the researcher, or another practitioner, has obtained and thereby gained access to a social space, we cannot choose what is connected with the social category and the actions tied to the people’s social role. That is, researchers cannot decide on what grounds their position is interpreted and negotiated locally. Although some researchers argue, in the analytical field, that it is possible to negotiate through discourse, negotiation is not tied to discourse alone. From the person perspective, being discursively *told* as someone is not enough to change your sense of being and make you intelligible to others. Being positioned by others is a cultural resource that may be negotiated, used and acted upon. It may profoundly change our way of being – but only if we are engaged participants.

Positioned categories do not necessarily appear as binary opposition pairs (and hence not as dichotomies like *man–woman*, *black and white*, as postmodernists like Davies and Harré tend to emphasise). *Secretary* is not necessarily in a dichotomous relation to *boss* and *high status work*, but is rather spun into a complex network of meaningful connections in learned and aligned agential cuts. Entirely new categories specifically linked to the particular organisation can also occur – as in the organisation Disneyland, where people are classified according to a wide range of special tasks (pancake ladies, peanut pushers, coke blokes, suds divers, soda jerks) (Maanen 1991: 62), or as in the case of young American college students who classify and include and exclude each other with labels like *pricks*, *stub*, *playboys*, *bitches* or *dykes*. These classifications are understood with a reference to a host of implicit expectations in accordance with how they should behave in romantic relations (Holland and Eisenhart 1990).

In the analytical field, we can make a domain analysis of how people classify each other in the empirical field. It is never as simple as *rich vs. poor*. We always see various kinds of vagrants, as well as various kinds of police officers and various kinds of caseworkers affecting the vagrant’s everyday life (Spradley 1980).

Structural identities and their associated social roles can be defined as our official entry to figured positions in organisations; but they cannot, and should not, be seen as the only connection that controls our agency. Roles are not ‘the determining basis of action’ (Davies and Harré 1990: 51–52) – partly because we can negotiate for new positions and partly because our negotiations begin with learning about expectations.

4.4 Cultural Models of Expectations

Moving beyond the linguistic turn, being positioned with the social category of, e.g. *tramp*, *police officer*, *physics student* or other available structural identities can be said to be embedded in the materials of identities (scarfs, aprons, soda machines) – but social categories are also *cultural models* of simplified figures in *figured worlds*. In the book *Identity and Agency in Cultural Worlds* (Holland et al. 1998), the notion of figured world is defined as a cognitive architecture made up of simplified patterns of expectations, which make us intelligible to each other. Figured worlds consist of simplified *figures* and are thus less complex as cultures; in so far the analytical attention to figures mainly focuses on identity in relation to agency. Social categories are tied to cultural models that form expectancies of how people should behave in such figured worlds (Holland et al. 1998).

The cultural cognitive theory behind the notion of *figured worlds* is an explanation of how we form connections which make us expect certain actions. In the article *How Cultural Systems Become Desire: A Case Study of American Romance*, Dorothy Holland describes a cultural model as a local world populated with actors, linking specific and stereotypical roles in the students' imaginations. It is:

[A] simplified world populated by a set of agents (e.g. attractive women, boyfriends, lovers, fiancés), who engage in a limited range of important acts or state changes (e.g. flirting with, falling in love with, dumping, having sex with) as moved by a specific set of forces (e.g. attractiveness, love). (Holland 1992: 65)

The figured world Holland describes is a figured world because we assume everyone around us knows the existence of the expected world we act in (Holland et al. 1998). Anyone who has learned the simple model and its figured players has learned to expect certain reactions and relate his or her own stories to it and recognise what should be included and excluded from it. The notion of cultural models implies a learning process. Our *figured* positions change our possibilities for learning (Holland 1992). As we grow into our figured identities and become engaged, we gradually change the connections we make. Behind the theory of figured world stands another theory about how we learn new connections and thus develop a wider vocabulary. Through this process we build what Edwards call 'common knowledge' (Edwards 2010).

Researchers like Roy D'Andrade, Claudia Strauss, Naomi Quinn and Dorothy Holland ask questions about the relations between culture, practice and learning. Together they, and other anthropologists such as Theodore Schwartz, Geoffrey M. White and Cathrine Lutz, have developed the anthropological theory of cultural models in works like *Cultural Models in Language and Thought* (Holland and Quinn 1987), *Human Motives and Cultural Models* (D'Andrade and Strauss 1992) and *A Cognitive Theory of Cultural Meaning* (Strauss and Quinn 1997). Figured world theory builds on this framework.

Roy D'Andrade has presented an introduction to the field in *The Development of Cognitive Anthropology* (1995). Here schematised models not only have potential for directing our acts, but do so in culturally dynamic rather stabilising ways

(D'Andrade 1995: 29). Cognitive anthropologists add three important aspects to the discussion of position. When we are motivated to move in practiced places, we follow general cognitive *schemas* assembled in cultural models, which also form our expectation of how others move about. The models for action are cultural; in so far we find diversity between cognitive basic schemas forming motivations in different ethnic groups and national cultures, but we also find diversity between groups of scientists, butchers, nurses or other professions where people learn to form cultural models through their everyday activities. Learning cultural models is tied to *doings* rather than biology, ethnicity or nationality. Basic schemas for how to act are organised in cultural models in the form of clusters of self-evident connections of knowledge which are learned through everyday activities (Hasse and Trentemøller 2008). As learning differs with differences in everyday practice, we cannot assume local organisations of cultural knowledge to be equally motivating for all members of an ethnic group or a national culture. Homogeneity must be determined through empirical research.

Once internalised, cultural models fill out knowledge about what we perceive with what we expect to perceive. This *filling out* is with an inspiration from computer language known as a *default value*. In a computer program, *default values* are preset values that automatically fill out what it is expected the user needs – unless the user actively changes the requirements. In the cognitive sciences and cultural models theory, much inspired by computer science, it is supposed that once learned the mind automatically fill out connections, which preset our expectations. A much used example is the way young college students expect to be treated on a first date (Holland and Eisenhart 1990). Knowledge about the course of a dating event is highly cultural. In American high schools, young people have internalised many expectations which are not shared by, e.g. Masai youngsters in Kenya. They do not share the 'figured world' (Holland et al. 1998) of how to date. Cultural models are directive; in so far the mental models influence our goals and our feelings about, for example, using artefacts and organising personal memories around prototypical events, which we might contrast to our own experiences. In this capacity, cultural models are 'learned internalized patterns of thought-feeling that mediate both the interpretation of on-going experience and the reconstruction of memories' (Strauss 1992a: 3). In this view, culture is an ongoing and mental learning process. Within the wider framework of cognitive theory, the specific theoretical approach of cultural models offers an analytical tool to capture both end products (i.e. cultural models which affect emotions and motivations to act) and processes (i.e. learning the connections through which cultural models are formed). *Cultural models* are intertwined and organised connections of knowledge about how to act and understand acts formed in activities and doings, and cultural models give directive force to certain motivations to act, without turning persons into 'cultural dopes' (Holland and Quinn 1987; Strauss 1992b).

Cultural models are conditional for our personal semantic networks, but they only have a directive force. They do not *determine* how we think (Strauss 1992a: 1). Though participants may share expectations of how other participants expect a student or a priest to act, they may not themselves accept these expectations. The

degree of the models' directive force on us depends on our previous expertise and the feelings we carry in our personal semantic network.

In empirical studies, theories of cultural organisations of knowledge have mainly been applied to test our ability to understand and agree with linguistic statements like proverbs, commercial slogans or abstract general concepts and thus underscore *representation* as has been the case in many cultural studies. Though this framework also explores the relation between materiality and practice – explicitly developed into an even broader theory of 'figured worlds' (Holland et al. 1998) – the emphasis has been on language and cognition rather than materials and practice. So far cultural model methodology has primarily been used for discourse analysis and interviews designed to elicit ethnographic subjects' underlying self-evident cognitive schemas (Garro 2007) as well as the more encompassing figured worlds. This branch of research has primarily been related to studies of abstract concepts like cultural models of marriage and romance, *the American Dream* or maxims, proverbs, morality tales and other verbal expressions (e.g. Holland 1992; Strauss and Quinn 1997). Only in a few studies has the theoretical framework been connected with empirical studies of how people form basic cultural model connections in *doings* with material artefacts in cultural practice (e.g. Holland and Cole 1995).

Holland has later worked with Jean Lave, and they developed the notion of history in persons and referred to how 'the person is forming in practice' along with 'the cultural resources that the person adapts to author himself or herself' (Holland and Lave 2001: 4). They also refer to the Vygotskian concept of 'semiotic mediation' through 'psychological tools' (Vygotsky 1981: 137) (often used instead of word meaning). Although Lave started with the notion of the newcomer, history in person is, in this work, primarily used to explain how people can modulate their own behaviour through cultural symbols.

Put in simple terms: people place cultural artefacts in the environment to stimulate their memory, to guide their problem solving, to shape their feelings, to remember their goals, to remind themselves who they are, or to otherwise affect their thoughts and emotions. (Holland and Lave 2001: 6)

Like many other in the analytical field of cultural–historical activity theory, Holland and Lave are primarily concerned with a reading of Vygotsky that adds to human agency. They are less concerned with the material constraints of culture, which may prevent agency or in deep psychological ways transform human beings forever. When Holland and Lave write that:

Members new to the environmental groups became acquainted with the artefacts and activities that their group had for thinking and feeling and acting toward the environment. Over time, they became able to use the cultural symbols to modify the way they acted with respect to the earth (Holland and Lave 2001: 6)

it points to the basic, and rather frightening, aspects of Vygotsky's cultural theory, which I have used to develop a theory of cultural learning processes.

The same paragraph above could have been as follows: members new to the Neo-Nazi groups became acquainted with the artefacts and activities that their

group had for thinking and feeling and acting towards the immigrants. Over time, they became able to use the cultural symbols to modify the way they acted with respect to the immigrants. Or *Neo-Nazi* could be exchanged with *Goth*, *secretary* or *milkmaids* or any other social role. Each artefact, or *relatum*, used comes with expectations internal to the groups. In this sense, learning has deep implications. The learning culture is not just a superficial layer over practical activity, but involves our whole sensing bodies in creations of agential cuts.

The theory of cultural models belongs, like the poststructuralist discussion of discourse, to what has been called the ‘linguistic turn’ (e.g. The anthology edited by Richard Rorty (1967) *The linguistic turn: Essays in philosophical method*) in the social sciences concerned with words, stories and narratives. This theorising in the analytical field has been concerned with language, identity formation and semiotics rather than the materials used as cultural resources in the more recent ‘material turn’ (Hicks and Beaudry 2010) and the body as the ‘third term’ (Merleau-Ponty 1962: 115) of all human experience as found in the postphenomenological approach.

4.5 Embodied Practice

We are positioned by the way others position us – as presented by Davies and Harré in their poststructural model. We also learn how to behave in accordance with others’ expectations as described in the cognitive cultural model theory. We are, however, also embodied beings who ultimately learn from our *being-in-the-world* as we engage with practiced places. Practice is, with reference to Bourdieu, governed by the regularities that are outside the logic of logic (Bourdieu 1990, 1977). It is beyond participants’ normal logics of logic to explain cultural inclusions and exclusions to the researcher. This kind of activity belongs to the analytical field. That does not mean understanding practical knowledge is beyond the research scope. The first practice a researcher must understand is his own, and it is, as Bourdieu points out, one aspect of this practice that we will never be able to directly transform the basic primary incorporation of everyday life to text. In studies of people’s everyday lives, the target can never be ‘objective knowledge’ (Bourdieu 1977: 1).

The practical knowledge, which Bourdieu calls the primary, is the phenomenological knowledge: ‘[I]nscribed in the relationship of familiarity with the familiar environment, the unquestioning apprehension of the social world which, by definition, does not reflect on itself and excludes the question of the conditions of its own possibility’ (Bourdieu 1977: 3).

But might we not get closer to a positioned understanding of familiarity with the environment? Researchers cannot transfer the geometrical space; we engage within the empirical field, in a 1:1 relation in our texts (or movies or other representations). We may, however, probe even deeper into an understanding of how we, as researchers, access the collective consciousness that holds materials and meanings together in cultural dust bunnies. The postphenomenological turn in

phenomenology, which discarded the transcendental phenomenology of Husserl, may be of help. It is an existential phenomenology in which bodies are existential, not transcendental.

Following Merleau-Ponty's dissolving of the mind–body distinction could mean recognition of the body as the specific site where consciousness and the material world conflate in one conceptual anthropological space.

Don Ihde, philosopher of technology, has explored how we can understand both our cultural and our embodied motile, perceptual and emotive *being-in-the-world* with a reference to what he terms: body I and body II (Ihde 2002: 69–70). Body I is the *corps vecu*, while body II is the cultural body.

Body one is the perceiving, active, oriented being-a-body from which we experience the world around us. It is the experience-as-body that is a constant of all our experiencing. (...) Body one is the necessary condition of all situated knowledges – but it is not the sufficient condition. Body two is what could be called, out of context, the cultural or socially constructed body. It is the body of the condemned in Foucault, the body upon which is written or signified the various possible meanings of politics, culture and the *socius*. And it is the body that can have markers. It is the body that can be female, of a certain age, from a certain culture, of a certain class, and thus have a cultural perspective as the embodied and enculturated particular being we are. (ibid.: 69–70)

Fieldwork, where the researcher participates in the empirical field's everyday life, makes the researcher's body a field of attention both methodologically and in relation to the analysis made.

The researcher's body moves and intra-operates as it aligns to the physical place as the other participants do. The researcher's lived body (*corps vecu*) becomes his or her access to shared sensory experiences with other participants in the empirical field. The researcher's body is, like the other participants' bodies, in motion causing frictions in the ever-changing physical space. It is through these movements the physical world and its artefacts are made up as a social world of expectations and reactions.

The body is a cultural–historical body which builds lived body cultural sediments (Leder 1990) and is also a focal point for new connections (Hastrup 1995: 95). Cultural sediments are the embodied connections we have learned to draw between materiality and their local meanings. Over time they become a point of departure for our agential knowledge building on, and transforming, our previously formed connections of connections.

In learning and internalising – i.e. embodying – cultural agential cuts, we simultaneously align our thoughts and bodies in ways which may lead humans to break away from biological development but condemn us to meaning (Merleau-Ponty 1962) through the new collective forms of a culturally based psychological process (Vygotsky 1978: 40) that we learn as we engage in the empirical field.

What cognitive anthropology can learn from the perspective of embodiment is the basic understanding that consciousness is not a clearly demarcated a priori entity; consciousness is always in the making in relation to the body engaged in its immediate surroundings – including technological tools and even virtual realities. The body's movements in practiced places form learning process that are always

intricately folded into collective cultural–historical processes through which ‘meaning-making processes’ occur (Bruner 1990: 64). Cognitive anthropology and the poststructural approaches seem in many ways to share interests with the cultural–historical perspective unfolded in Chap. 3. Here we also find an interest in the structure of relations between humans and surroundings and even sometimes an emerging interest in how material artefacts such as words and technologies mediate human actions. However, neither Davies and Harré’s poststructuralism (1990), Vygotsky’s cultural–historical theory (1978), Engeström’s activity theory (1987) and Bourdieu’s practice theory (1990) nor the interpretations found in cognitive anthropology (Strauss and Quinn 1997; Holland et al. 1998), Anne Edward’s interpretations of both (2010) and cultural–historically inspired analysis of routines and technologies in organisations (e.g. Blackler 1995) place enough emphasis on how we learn through our embodied being tied together in a world of emerging materials and meanings. In feminist materialism, as well as in anthropology, where situated bodies are acknowledged, too little focus has been put on how ethnographers’ bodies are transformed as they learn new material-constituting relations within-phenomena during their fieldwork.

Though not following Barad entirely, that perspective can also be qualified in general phenomenology and further developed in postphenomenology – primarily in the work of Don Ihde. Contrary to cultural–historical theory, where artefacts refer to many kinds of material mediation between separated subjects and objects, the philosophy of postphenomenology explicitly focuses on technological mediation as fundamental in understanding human–technology relationships. Where cultural–historical theory centres on how this mediated relationship influences behaviour through signs, which create new forms of culturally based psychological processes, postphenomenology has a special interest in embodiment and technological transformations of human perception and defines mediation explicitly as ‘technological mediation’:

Technological mediation then concerns the role of technology in human action (conceived as the ways in which human beings are present in their world) and human experience (conceived as the ways in which their world is present to them). (Verbeek 2006: 363)

Don Ihde initially (1990) identified four ways of human–technology relations, which we may think of particular agential cuts. Two of these are examined as technological mediation of perception starting from Heidegger’s analysis of tool use as either ‘ready-to-hand’ or ‘present-to-hand’ (Heidegger 2002: vii).

When technological tools are used, they mediate our being-in-the-world in so far that technologies are co-shaping our perceptions and actions.

Ihde’s first type of mediation (directly inspired by Heidegger) is, as noted by Verbeek, equivalent to Heidegger’s readiness-to-hand:

1. The embodiment relation. Technologies are extensions of human bodies which change our perception of our surroundings – but are not noticed in themselves. They are incorporated by their users, ‘establishing a relationship between humans and their world through the technological artefact’ (Verbeek 2006: 365).

The example used to illustrate this mediation is looking through a pair of glasses.

2. The hermeneutic relation. Technology mediates, not as incorporated but as material objects, which must be *read* and *interpreted*. Though the object may be deliberately in the focus of attention, what you examine is not the technology itself but what it tells you about the world it mediates.

The example used by Ihde is a thermometer, which is interpreted when you want to know how cold it is – without transposing a sensation of *coldness* into your body (Ihde 1990: 85).

The last two human–technology relations do not concern mediation; it is claimed in postphenomenological theory (Verbeek 2006: 379). I happen to disagree following the above discussions of how patterns of expectation of how to act in relation to technology are always mediated. Nevertheless, it is useful to become aware of how the *body* is positioned in relation to the mediating material artefacts.

3. The alterity relation. Here technologies are not embodied but involve relations to technologies – what Ihde calls a quasi-other (Ihde 1990: 98), where technology in Verbeek’s words is the ‘terminus of our experience’ (Verbeek 2007: 43). This relation occurs when interacting with a device as if it were another living being, like when we buy a train ticket at an automatic ticket dispenser or play virtual reality games where human beings relate to a simulated world or a social robot.
4. The background relation. This last human–machine relation differs from the three above; in so far it neither mediates human-world experiences nor constitutes the focus of attention. It is technology as ‘absent presence’ (Ihde 1990: 109), though an integrated part of the experienced life world. The example is the background noise of a humming refrigerator.

Ihde shows that technologies, when mediating our sensory relationship with reality, transform what we perceive. According to Ihde, the transformation of perception always has a structure of amplification and reduction. Mediating technologies amplify specific aspects of reality (perceived from the human body) while reducing other aspects (Verbeek 2006: 365).

Verbeek adds a new classification (inspired by Latour’s analysis of how artefacts mediate action) to the four above-mentioned postphenomenological human–machine relations. Mediating technologies can be perceived as modern visions, postmodern visions and posthuman visions. The subject–object dichotomy is upheld in the modernist version of mediation, and in this separated existence, a subject can experience correct representations of the world through, e.g. imaging technologies. Postmodern visions dissolve this idea and stress (in line with Ihde’s second version of mediation: the material hermeneutics) that any perception is mediated. Finally, the posthuman vision, coming closer to Barad’s position, underlines the *intentionality* of technology. The latter vision thus underlines that technologies mediate in ways that reach beyond human intentionality and possibilities of perception as in artist Wouter Hooijmans’ photographs which reveal the world as it would look, if we did not need to blink our eyes (Verbeek 2007).

One difference between cultural cognitive, poststructuralist and cultural–historical analyses on the one hand and postphenomenology on the other is that postphenomenology has its roots in phenomenology where philosophical questions are explored. In the words of Robert Rosenberger:

... from the starting point of human bodily experience of the world. For thinkers such as Ihde and Verbeek, a technology is investigated in terms of the way an individual's experience of the world is altered or enhanced through its use. (Rosenberger 2008: 90)

Thus, the human–machine relation may be discussed as positioned cultural mediation, but explorations in postphenomenology do not go into how cultural–historical processes evolve through the combined entanglement of position with the emergence of tools and signs. Yet, cultural–historical theory rarely takes this entanglement of the embodied human–machine relation as a starting point.

By combining the linguistic with the material turn, we become aware that human–artefact/technology relations always concern configurations of material–cognitive mediation in social spaces that affect positioned persons in practiced places.

It is the embodied knowledge of body I Bourdieu assumes is not available for research. Yet, the embodied knowledge of body I is where the body meets materials in the surrounding world, rather than giving us lexical knowledge. We aim at acquiring anthropological knowledge of the studied practice, but our text is not, and can never be, the same as the primary embodied experience other people obtain in practiced places. We may, however, come to embody the knowledge of other cultures when they are familiarised in us – i.e. when our body I is exposed to the cultural body II.

4.6 The Cultural Body

It can have serious consequences if ethnographers maintain the illusion that they, as participant observers, alone have the power to define who and what we are in the empirical field. It can even lead to a crisis that makes ethnographers leave the field or suffer breakdowns (e.g. Davies 1999: 181).

Dorinne Kondo has described how she, during her fieldwork in Tokyo, went shopping and suddenly caught a mirror image of a young woman in a windowpane. She saw a typical Japanese young woman with sandals and kimono, who moved in the conventional manner with curved knee and slightly dragging feet. Then she realised the young woman mirrored in the windowpane was herself.

Kondo is a Japanese-American woman on fieldwork in Japan. Her appearance is Japanese, but she primarily thinks of herself as American. When she suddenly sees herself as a native Japanese woman, she is startled by the image because she feels her ethnographic subjects and fieldwork have created an 'identity collapse'. She reminds us that:

... it is important to recognize the ways in which ethnographic subjects are also actors and agents and that the negotiation of reality that takes place in the doing of ethnography involves complex and shifting relations of power in which the ethnographer acts and is acted upon. (Kondo 1986: 75)

Kondo is already linked to a cultural model of *being Japanese* through her physical appearance. Her body signs make people read her as a Japanese woman – and this reading leads to certain reactions and expectations, which Kondo over time internalises so they become her own self-evident body movements in the practiced place; over time, she becomes a Japanese woman – besides being an American researcher.

Culture is, in this perspective, not a superficial layer on top of a subject's bounded whole, nor is the body a mere carcass. The moving agents combine feelings and cultural learning processes of connections in same body, and in everyday practice, it is meaningless to ask where the culture begins and body I or body II stops.

With a distinction between Ihde's analytical model of body I and body II, we can combine a cultural perspective with a postphenomenological perspective in a new analytical cut. Kondo is the same body (body I) whether it is perceived as *Japanese* or *American* or *woman*. It is, however, also a cultural body (body II) which has, by now, become rooted in the Japanese social categories and structural identities creating expectations about a particular behaviour. This is what transforms the movements of the lived body (body I) in a long-time practice-based learning process in the practiced Japanese social space. Kondo only has one sensuous, living body, but seeing her cultural body from the outside makes her aware that her bodily appearance is divided into two different sets of expectations of how that living body should act. One is tied to the US body and one to the Japanese woman's body. The social roles implied as cultural models become internalised and are not innocent masks we, as researchers, can take on and off. They become part of the research apparatus that changes with the empirical field.

Kondo's example reminds us that we can always (including when researchers study people of their own skin colour) transform our bodies to meet the expectations we have learned characterise the given practiced place, which is a place that culturally differs from what we expected. The point is that both newcomers and researchers learn in practiced places, but we sometimes need a shock like Kondo's to make us realise how culturally transformed we become by engaging in new practices. Sometimes our physical transformation may seem innocent, but it penetrates deeply into the research apparatus that ethnographers have to, e.g. change the way they dress in order to be perceived as intelligible. Yet this transformation is just as important for our anthropological analysis as any verbal information given by an interlocutor, as noted by Judith Okely (1992). Making a subtle embodied transformation a source for analysis can be difficult if we do not keep note of how we change in the frictioned empirical field. The process of adjusting often draws implicitly on an already internalised agential knowledge that we have a hard time realising how we learn to imitate others or learn by engaging in practice.

In the postphenomenological perspective, it is possible to do away with the subject–object dichotomy all together if we follow Merleau-Ponty in his demonstration of how we do not *have* bodies – we *are* bodies (1962). Ihde suggests we name this motile, perceptual and emotive being-in-the-world for body I (Ihde 2002: xi). In the postphenomenological perspective, we are also bodies in a social and cultural sense – i.e. in the body II sphere. Technology and other materials traverse both of these perspectives on the body (Ihde 2002: xii). From a phenomenological perspective, this perspective on bodies has wider implications than has yet been explored in empirical sciences making use of ethnographic research. It is from the embodied point of the departure that we, like Kondo, learn to discipline our bodies in relation to cultural requirements – and by becoming aware of these processes, we can transform bodily experiences to theories and texts in the analytical field.

The discursive position ascribed to ethnographers and other participants forms our being-in-the-world as we learn the cultural models of expectations for how to move in practiced places. We are not passive vessels to be filled with cultural signs. The processes transform us as we engage actively in cultural activities. The more engagement, the more transformation into a collective consciousness, which is never immanent but learned.

As pointed out from a postphenomenological perspective, all knowledge implies our own embodied being – not our conscious subjectivity. Our bodies, including their limits and contingencies, are also implied in the research process. We can, to a limited extent, elicit a learned generation of knowledge for reflection, but what we learn is by far mostly learned implicitly from practical doings through bodily intra-actions that become unnoticed as the world becomes a local familiarised cultural world for us. The embedded and sedimented learned cultural connections may be collective and thus common to a group of people in ‘corporeal fields’ (Hastrup 1995: 94ff). Sediments should not be construed as a metaphor of layer-upon-layer deposits, but rather as entanglements and transformations of previous connections. It is the common process of transformation that makes us personally committed to the collective cultural resources in the practiced place.

Researchers’ bodies are not just reacting or reacted to; they are our research apparatus in transformation. The social role as a researcher is both an entrance and an impediment to learn like the other participants, when we move between the different available positions offered by the field.

For relevant connections to be formed in relation to what engages the other participants, the researcher must be positioned in the physical place where relevant meaning is ‘socially designated’ (Hasse 2002: 171).

4.7 The Oxymoronic Participant

Acknowledging the defining power of the empirical field is not the same as making the most of it. On the contrary, many ethnographers try to avoid the uncomfortable position of risking being transformed by taking up and holding on to the position as either consultant or researcher.

Researchers in the analytical field of anthropology have had a long discussion of the position of the anthropologist, not in relation to learning, but regarding the moral and ethical position of a researcher who gains insight into information of other people's lives. What was, for instance, the position of anthropologists connected with the Colonial Social Science Research Council (CSSRC) or, more recently, the anthropologists hired to work specifically for the Soviet State (Baba and Hill 2006)? The moral obligations of anthropologists have always been discussed intensely in organisational and institutional anthropology. The main concern has been how anthropologists influence and transform the empirical field – sometimes with negative, and in any case disputed, consequences for the people they study (e.g. the controversy between Chagnon and Tierney in the 1990s; see, e.g. Eakin 2013).

My discussion does not concern how anthropologists may do harm to the people they study, but how we can learn from them. Though we cannot decide how we will be defined in the defining social space, we can try to obtain positions which give us access to learn about internal frictions through engaged participation.

In books on research methods and methodologies, it is not uncommon to find references to participant observation as *oxymoronic* referring to two mutually excluding activities (e.g. Tonkin 1984; Davies 1999: 72; DeWalt and DeWalt 2011: 28). This has led to attempts to divide the process of participant observation in different roles, e.g. as complete observer, observer as participant, participant as observer or complete participant (Junker 1952; Gold 1958), where the complete participant is described as being fully part of the setting while the complete observer does not take part in the social setting at all. Others, like Stocking, divide the ethnographic method into three positions: participation, observation and interrogation (1982). Bernard (2006) makes use of three other classifications, pure participation, participant observation and pure observation, followed by Kathleen and Billie DeWalt who define pure observation as more psychological or sociological than anthropological and pure participation as 'going native' (DeWalt and DeWalt 2011: 21–22). I happen to disagree with all of these attempts to classify and divide the position of the ethnographer in the field. Though it is useful to know about the differences between the ways we participate in the empirical field, these differences do *not* characterise the difference between being a participant and an observer. All participants observe and all observers participate. The problem lies in the separation of participation and observation. DeWalt and DeWalt discuss *learning to be a participant observer* (DeWalt and DeWalt 2011: 19ff) without references to learning theory, and they define a process in which the way we participate also forms what we perceive. They just use *learning* as a heuristic device to explain

that most of learning is tacit without diving deeper into the process (e.g. DeWalt and DeWalt 2011: 80).

Learning in relation to participation in an ascribed or negotiated social position is not an important issue in most books on ethnographic methods. If our point of departure is that ethnographers and ethnographic subjects alike both learn from participation and observation, we can ask new questions about which type of participation and observation separates the learning of the ethnographer from the learning of the ethnographic subjects.

Below I give a bid on three different possible positions of the researcher, which are defined by the engagement in the empirical field: (1) the research consultant, (2) the researcher participant and (3) the participant researcher. We observe and participate in all positions, but since the type of participation differs, so does the observations. Since research positions will be negotiated and developed creatively at all times in the social space, and because researchers may walk across real or presumed borders, it is normal that ethnographers are moving in and out of these positions.

People of high status in the empirical field may have very different agendas than those the researcher has prepared in the analytical field and those that can be met at the shop floor. Especially when *studying up* (Nader 1969), ethnographers run a risk of being overturned by the field. It is deeply frustrating, but instead of frustration, the researcher may see it as a possibility (Davies 1999: 108). We can learn a lot about organisational culture by being aware of the terms of our own positioning – and what we are allowed to learn.

In the small field of organisational culture, many researchers meet the empirical field as consultants. Many anthropologists engaged in applied research in Western countries also take up this position. Yet, the consultant position has its limits even if it is an *advocacy* position where the anthropologist is welcomed by a group of people fighting for their rights to land or dignity. The social category provides a structural identity which tends to place the researcher as being close to the strong powers, e.g. leadership, of groups – and maybe even top management. The research consultant can even be invited and paid for by the chief. Anthropologists are present in the empirical field because someone in power wants them to be there. This was, for instance, the case in Paul Rabinow's study of the Cetus Corporation and their *making* of the polymerase chain reaction (PCR) as it developed in the biotechnology company to the extent that Rabinow almost wrote his book on PCR together with Tom White, the former vice president of Cetus (Rabinow 1999). Rabinow was not White's consultant – they both benefitted from exploring the processes of making PCR together. Yet, some practitioners may perceive that type of collaboration as the ethnographer taking up the role of a research consultant acting as the *right-hand man* of the powerful (which may vary from being the big chief, management, a state or, in former times, a colonial administration), like my friend who was intelligible as a tax collector but *not* as the anthropologist she really was. A consultant cannot avoid being defined when entering a social space with inherent frictions tied to the various social roles. This has consequences for what can be learned about the organisation's culture from the position as a consultant.

Here is an example of how a position near to the top management might impede learning beyond the spoken words – and thereby impede learning about the actual word meanings in the words spoken. In the 1980s, the expert of organisational culture, Edgar Schein, worked as a consultant for a British oil company. He was, among other things, invited to a meeting where the chairman of the organisation met with the local managers and the top management. From this position Schein noted that the top manager handled the situation in a friendly and welcoming way when he advised the local leaders about their future roles in the company. Schein had understood that the local leaders were informed of a change that would result in changes in the local national managements. They would lose autonomy and power to the central office in London. Schein writes that when he subsequently submitted a report to the management, in which he stressed the good atmosphere at the meeting, the president broke into incumbent laughter and said that Schein had misunderstood the matter altogether: he had, in fact, witnessed the biggest bloodbath ever in the organisation. The chairman had never before experienced the company's top management being as aggressive and demeaning to the local leaders.

In relation to cultural learning processes, Schein had not learned the connections between gestures and word meanings, which were obviously demeaning for the other participants. Schein notes humbly: 'So much for my understanding of the British culture and the culture of this company' (Schein 2004: 122–123).

We could say that Schein did learn the meaning behind the words and deeds at the meeting – eventually. This, however, was only because he stayed in the field and because his main ethnographic subjects chose over time to confide in him. Otherwise, he might never have known what was so obvious to the other participants in the described situation.

In this case, the ethnographer shares the same geometrical space with the ethnographic subjects, but his observations differ from theirs. The meeting lasted, Schein informs us, 3 days. To be in the same room with his ethnographic subjects for 3 days could have been a unique position for a researcher. However, we may assume he was perceived to be a *right-hand man* of the top management at this meeting; wherefore he did not gain access to learn about the meeting from the local directors' point of view.

The point I want to make is *neither did he try*. He assumed the materials could speak for themselves and be taken at face value. He did not try to position himself as somebody engaged in the same activities as the others in the room. As I interpret Schein's description of the situation, he could not tear himself away from the structural identity of senior top management consultant he had been given at the outset. Therefore, he did not get access to all the conversations among the local leaders, who most likely characterised the 3 days in other ways than the top management – although they might have agreed that a bloodbath took place. From his position Schein learns absolutely nothing about the consequences of the organisation's drastic changes for the shop floor people. He stuck to the most powerful, but even in the board rooms, he did not learn about the angry and powerless local managers. If he wanted to understand the reactions of the shop

floor people, he would have had to physically move out of the board room and into the shop floor.

It is hard to learn about frictions when one is not engaged. We do not know if the local management actually avoided him, but had he tried to befriend them, their reactions might have taught him something about his own position. Research consultants may supplement their research with surveys and questionnaires, but without attempts to engage, they learn very little. Furthermore, engaging may even open for a possibility to move around in the organisation (a wayfaring studying variety in practiced place) and learn about the empirical field from different positions. Very little new learning occurs that may challenge the researcher's perceptions formed in the analytical field and the perceptions received from top management.

This is the case in all other kinds of ethnographies where anthropologists have been greeted welcome by the most powerful and have a hard time getting to the not so powerful people. Doing research in societies that divide humans into, e.g. local gendered categorisations may affect the research position so that a male ethnographer cannot study suppressed women. A position among the powerful offers a special opportunity to learn about the everyday life and concerns of senior management, chiefs and local leaders, but may simultaneously prevent a deeper contact with the local, less privileged people, employees or servants. Being positioned close to local powers may therefore restrict the physical radius and the social space of the research. From this position one can do surveys in order to learn the *tacit* insider knowledge, but the questions asked are unlikely to be challenged.

Even if a researcher is officially granted a position that allows him or her to move freely around the local organisation (e.g. an enterprise, school or a village), an entrance through the gates of the powerful may place him or her as a *management spy* in relation to the shop floor people. As in the case of my friend in Kenya, who, unwittingly, became a *government spy* on taxation issues.

4.8 Learning to Move

When a research consultant begins to move around in the organisational landscape and engages in the 'vectors of direction, velocities and time variables' (Certeau 1984: 117) in the geometrical space shared by other people, the research apparatus automatically changes as the ethnographer changes position and becomes a research participant with potentials to become a participant researcher. This change, which might be surprisingly challenging and painful for the researcher, moves the apparatus closer to the empirical field of the practiced place in the organisational culture. This position allows the researcher to leave the kind of research conducted primarily on the *premises defined in the analytical field* and focus on other aspects than those in the imagination of leaders, managers, state agencies, etc. As a research participant, the apparatus can move around and gain access to learn many new connections.

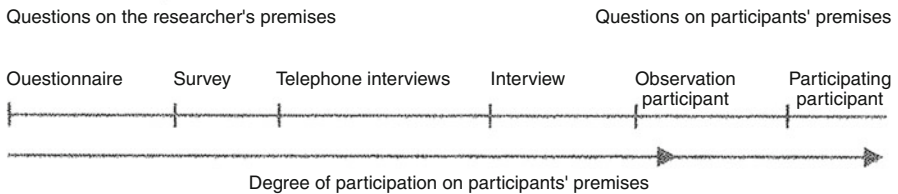
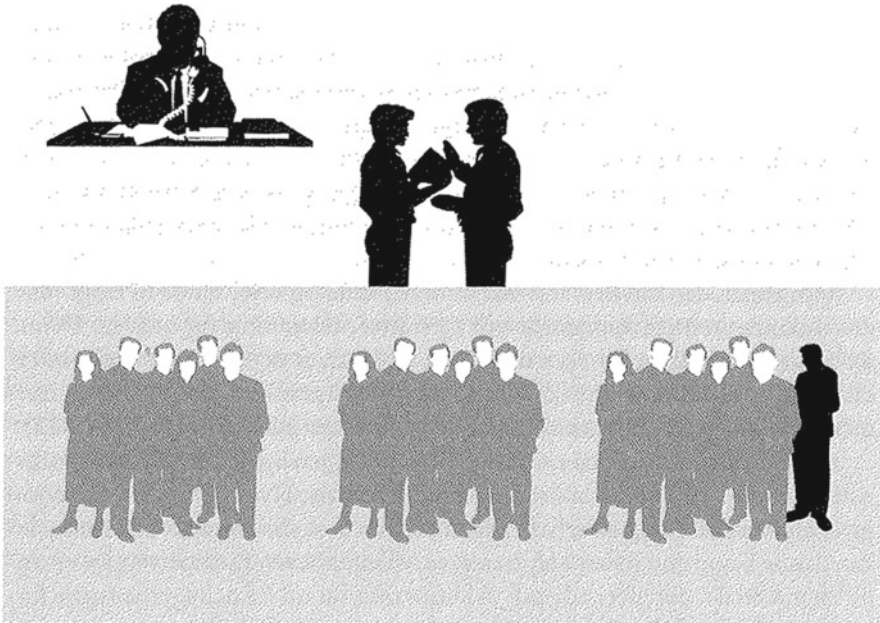
The researcher may still be considered a *spy*, *snitch* or *advocate* for some. But the big difference is that the researcher is physically exposed to a varied learning from the practices of the other practitioners, however painful it may be. This position is more vulnerable than that of the research consultant, who keeps a distance to other people's judgments. Yet, the research participant still clings to the position as *researcher*, which can be upheld when the apparatus takes the position of, e.g. an interviewer. This is still close enough to the empirical field to learn unexpected connections in the dust bunny, but it also keeps the more painful aspects of experiencing other people's everyday life from within at bay. Though the questions asked may be transformed in interactive interviews where both the interviewee and the interviewer acquire new insights during the interview process (Davies 1999: 99), the learning still largely evolves from the premises set up by the researcher. The researcher creates effects and affects as he or she may give rise to new thoughts and reflections in the empirical field. The participants in the empirical field can learn a lot from the researcher's questions and from hearing their own answers said out loud. But what does the research participant learn from the interviews? Enunciating words is a material act that involves the physical position of the researcher. The words in interviews emerge in different physical surroundings, and speech and word meaning may differ accordingly. The word meanings of words are like icebergs looking like small white tips floating around in the water; below the surface a huge mass connects to the tip. If a researcher is to learn the many meaningful connections tied to the ethnographic subjects' spoken words (i.e. their *word meanings* as agential cuts), it matters how the researcher learns about the meaning of words: in movements between the research institution and people's homes or in movements within the organisation where they work. The research participant may encounter the same kind of frustrations as other participants who move between institutionalised organisations (e.g. Edwards 2010; Hedegaard 2012) when they sense an unknown friction behind the spoken words.

The researcher may bring guidelines from the analytical field for whom to interview, how and about what (e.g. Davies 1999), but if the researcher is to understand frictions in depth, some form of participation is needed to learn to understand the same meanings of words as the local ethnographic subjects attach to them (Hasse and Trentemøller 2009).

The researcher can learn what is said about artefacts and the layers of word meaning embedded in them and like any other participant observe and interpret what goes on. The learning processes from doing things in practice are, however, not an option as the research participant is still tied to the social role and expectations of the *researcher*. A research participant taking up the position as interviewer and as a distant observer may find it difficult to capture the processes that create frictions behind the becoming of the connections between artefacts and people in the field.

For practical reasons, researchers often have to make do with a position as research participant. They must pragmatically accept being attributed with the structural identity of *interviewer* or *observer*. From these positions they can, to a limited extent, observe and internalise the embodied thinking tools that give

meaning to the material artefacts and that have consequences for people in the organisations.



What distinguishes a participant researcher from a research participant? A participant researcher is a researcher who is willing to be engaged in other people's activities and therefore seeks positions through which it is possible to engage in the organisation's everyday life, like the other participants and *on the premises of the empirical field*. Other participants must to some extent accept the participant researcher as someone who is a legitimate participant in the organisation's everyday life. New research questions arise in this process, and new research categories form as the learning process changes the research apparatus' position and access to learning. The new questions and categorisations will be related to the participant researcher's learning about the consequences of being engaged in a particular practice, and this could not be learned without his or her awareness of such engagements and consequences.

Activities and cultural markers pointing towards the position and social role of *researcher* are abandoned in the participant researcher position. The researcher actively works against the social role as *researcher*; that is, he or she makes no

interviews, does not (visibly) write research notes, does not use a tape recorder or a camera and does not ask participants to act as ‘ethnographic subjects’ and thus abstains from referring to them as collaborators or consultants in a research project (Lassiter 2005: 13).

Participant researchers must, for ethical reasons, present themselves as researchers, but from this point of departure, they strive to participate on equal footing with the other participants, i.e. engage in the activities that occupy the other participants. Thus, participant researchers attempt to conduct research on the participants’ premises, which are not known beforehand but gradually emerge with the learning of the local word meanings. These premises gradually become the foreground and the analytical field simultaneously moves to the background.

There are many possible structural identities and social roles that can move the participant researcher closer to a position similar to the ordinary participants. Some of these positions are not known to the researcher in the analytical field, and some have to be learned as part of the research process. In fact, it is a characteristic of participant researcher to jump between positions when they emerge as available through the learning process in the empirical field.

In a Danish article (Hasse 1995), I have described how I learned that new positions were available to me during my fieldwork. In Cameroon my learning position was established as a *Western white woman*. I only did fieldwork for a short time (less than 2 months) and could thus do very little to change position. What I observed from this position was very few internal frictions. From ‘culture contrast’ (Hasse and Trentemøller 2009), I learned about an exotic culture that was very different from my own, filled with shadow leopards and ritual masks. I only learned about frictions when they arose because I or my family transgressed local expectations. At one point my daughter and a friend’s daughter, then 4 and 5 years old, wanted to rest on a pile of old stones in front of the walls of the fon’s palace. The stones looked like any old stone piled on top of the other as a small mountain the size of a small hut. My friend and I had already learned the stone piles were somehow holy to the local people. Even so the girls climbed up and sat down, but a minute later a very angry man wearing a cloak came running and chased them away. Later also our guide explained that this stone pile was holy to the people in the Cameroon Grasslands but exactly how was still unknown to me. As a white woman I had access to make interviews with some of the women in the palace and even with the fon himself sitting on a wooden decorated throne, but I was not let in on all the connections and the secret about what made the stones holy, which were self-evident for local people. Here my learning stopped and was only reinvigorated when I many years later read Richard Fardon’s book on the Grasslands. It turned out that the stone pile was incarnating the spirit of the mfon and was, among other things, used when the new fon was initiated and only certain males (drummers) were allowed to sit on the pile (Fardon 2008: 18).

In Sardinia in the 1990s, I was not the *white woman* but definitely a *woman* who gradually became integrated in the everyday life of the small village where I lived (Hasse 1995). I first presented myself with the categories available to me based on what I perceived relevant. These were a *journalist* and *researcher* since I was going

to write an article about the mask parade and took an interest in folklore and folk traditions. During my first months in the village, I learned that being able (or unable) to speak English made a difference for the villagers, especially for the members of the local tourist organisation Pro Loco. The ability to speak English emerged as an unexpected cultural resource for getting access to participate in the activities of the male groups. Gradually, I negotiated my way into the role of *interpreter* for the group and was thus eligible to participate in the part of their everyday life that included planning a journey to a folk festival in England. I was able to participate in this trip, which again opened up many new opportunities to negotiate positions. I learned that I could also be positioned as someone who could drive a car and make statements on behalf of the group in English. During the journey I also learned that I could fill the social role of *mama* (a local social category that denotes a person who can take care of catering and caring for male members of the mask parade).

As a feminist I was not able to become on a par with the other *mamas*. It was, nevertheless, the position as *mama* that gave me access to a physical place (e.g. the bus hired to drive us to England from Sardinia) that would otherwise have been reserved for members of the group and their families. These different (multiple) complex positions gave me access to participate in the organisation's travels, and my cultural analysis took partly shape on these trips because I could learn a lot about the otherwise tacit everyday knowledge about the organisation Pro Loco's attempt to balance between being the folklore guardians of the village identity and a modern tourist organisation that deliberately recreates the past in order to attract tourists in the future (Hasse 1995). My new positions opened up new opportunities to learn connections and gave me both culturally and historically a holistic perspective on the organisational culture of Pro Loco. Changing positions and moving into participation in other people's lives are not without problems, however.

As I became more engaged on the premises of the empirical field, I also encountered new frictions emerging with the formation of my new social identity. Since the social role of caring *mama* (i.e. one who cooks for the men and helps if they had a fever) was offered to me, I accepted that learning position. But being a feminist in the analytical field made it hard on me to comply with the social role of *mama*. A position as a feminist might have been an interesting provocation, and I could definitely have learned something from inciting reflections about women's and men's social roles. It would, however, most likely have prevented any deeper learning in the group, as the position as *feminist* is likely to have excluded me from access to learning on the group's own premises. Here, engagement required me to learn how to stay in the group. A rebellious young woman from the village might have had another kind of engagement with the group which might have led to detachment. I accepted to learn to do things which were in many ways contrary to my feminist background and it sometimes felt as treason against the local feminists (with whom I sympathised in the analytical field). In many ways it was thus mentally challenging for me to be a participant on the premises of the empirical field.

My presence was driven by another general purpose than the other participants. Being positioned as a woman, I could never be fully accepted as a participant in a male mask procession in the Pro Loco, so I had to *make do* with taking on the available roles of *mama* and *interpreter*. The position I was offered, being intelligible as a *mama kind of woman*, was one I had to learn to accept in order to stay and learn more. Nevertheless, the position gave access to a much more thorough analysis of the dust bunny of connections tied to Pro Loco than the position of merely research consultant (probably I would unwittingly have been considered a spy from Gruppo Beccoi or the municipality) or a research participant. However, it affected me and my research apparatus in many troublesome ways. The position opened up matters that I would not have cared about before, but now I began to care about the frictions between the groups, and sometimes I even feared for my own participation as the competition between Mamuthones and Gruppo Beccoi evolved.

Even though one should think the position of *physics student* would be easier because it is, after all, an open and inclusive social category, this position too had a profound impact on me as my own research apparatus was transformed. More so than in Cameroon and Sardinia, the well-known practiced place of a university turned into an ethnographic field full of frictions between students, teachers, men and women. After a year of attending classes, the empirical field had profoundly changed the way I perceived the world around me (something I discuss in Chap. 8). Yet, it is also very clear that what I learned by being engaged was only a partial perspective – and that this is a ‘privileged’ one (Haraway 1991).

4.9 The Radical Other

So far learning as a participant and learning as a researcher have been touched upon but not explored in depth. We should, however, be aware that learning as a newcomers participant will never be the same as learning to transform a research apparatus – no matter how many likenesses we find in the positioned learning process. The distinction becomes clear when we take a closer look at the researcher, who has been accepted as a participant and has been allowed to learn as any other newcomer.

Expert ethnographers may share the practiced place with their ethnographic subjects and even externalise and discuss their analysis with the practitioners. It has been an integrated part of ethnographic methods to present data and discuss these with informants (e.g. as a ‘feedback loop’ Hasse 2000). Ethnographers may even, as in interventionist and action research (e.g. the change laboratories conducted by Engeström, Edwards, Daniels and their colleagues, e.g. Engeström et al. 1996; Daniels et al. 2007), work with the ethnographic subjects on their problem spaces. Indeed it has become the norm that anthropologists experiment with new methods of collaboration (Marcus 2007) and that the collaboration between ethnographers and ethnographic subjects is no longer just a consequence of fieldwork but a precondition of fieldwork design and dissemination. ‘As a result,

ethnographic subjects are shifting from being informants to being consultants' (Lassiter 2005: 84).

Yet, it is unclear how and what makes ethnographers engage in the same activities as the ethnographic subjects – even when their wish is to make collaborative research. Edward's discussion of relational expertise is important because it reminds us how difficult it is to understand what constitutes a problem space for others (Edwards 2010). Relational expertise also makes us aware that expert ethnographers can never become expert practitioners in the empirical field of ethnographic studies. The relation between researcher and practitioner is asymmetrical for two reasons.

The first is connected to future expectations (see Chap. 8). Though expert ethnographers are for a while engaged in other people's problem space, they do not in the same way engage in the motives that engage the people in the organisational cultures they study. The motives of others may be shared, but even ethnographers will not completely engage in the activity and not even obtain the relational agency of the ethnographic subjects who share an engagement in the future of their collaborations long after the ethnographers have left the place.

The second related reason is connected to the movements between the analytical and the empirical fields. Expert researchers' engagements are always divided between these fields. Even when the empirical field is given primacy, ethnographers are as emotionally and motivationally engaged in the analytical as in the empirical field.

So when Luke Eric Lassiter, for instance, proposes that collaborative ethnography is capable of reaching the public through the co-production of ethnographic texts in an effort to 'serve humankind more directly' (Lassiter 2005: 83), we are still not sure *who* exactly are co-producers, i.e. what the term 'ethnographic subjects' covers and how these participants differ from or are aligned with the collaborative ethnographer.

As a boundary-making apparatus, the researcher may engage in the same activities and learn through the same positioned bodily experiences as the other participants. We are, however, never just participants but *participant researchers*. The main difference is that the researcher is a member of the analytical field with other engagements than those in the empirical field.

On the one hand, the researcher may be embedded and indeed strive to be embodied in the empirical field. After some time he or she may even be able to participate in any conversation during lunch break in the organisation, just like any other newcomer. They might even gain 'interactional expertise' as claimed by Harry Collins (2004: 125) so they can communicate without being recognised as an outsider. Yet, the empirical field will never be the same for a newcomers participant and a newcomers expert participant researcher.

The researcher looks with a double gaze (Hastrup 1995) which combines the empirical and analytical fields of attention. Taking what is perceived and learned in the empirical field into consideration, the researcher gradually builds an understanding of the everyday life in the organisation which can be written down as a cultural analysis in the analytical field.

The researcher differs from the other participants by having the empirical field as an object of research interest; the actual objective is not participation in everyday life (as it would be for a newcomer), but the analysis made in *the analytical field*. This is a condition of all research, irrespective whether the researcher describes his or her research as *action research* or *collaborative ethnography* and maybe even works in the organisation together with the ethnographic subjects. If the ethnographer does not step back from being a participant, with local interests in the empirical field, to become a researcher, obliged to discuss results with the analytical field, no real new cultural analysis can be made.

No matter how *multi-voiced* the research, the research apparatus produces *agential cuts* that belong to the analytical field to be of any general value. When we claim to explore our *own practice* in cultural analysis (a nurse studying nursing culture, a teacher studying teaching culture), we must assume the position of researcher, yet seek a social role as ethnographers and thus separate ourselves radically from the other participants. We cannot go on being nurses or teachers but must become researchers struggling with social roles, using our own bodies to make explorations of inclusions and exclusions – and try to become a newcomer to a well-known practice. The core of learning as an anthropologist is precisely to accept our position as ‘radical others’ – the term is formulated by Kirsten Hastrup:

It is for anthropology to assume the position of the ‘radical other’ in the world. It is a particular epistemological position in which we renounce continuity between our own words, conceptions, theories and conventions of representation and those of the people studied, whoever they are, and to whatever world they are native – including our own. (Hastrup 1995: 7)

I would slightly alter the definition of this position and argue that any researcher, obliged to engage with an analytical field, is a *radical other* in the empirical field. That we are radical others does, however, not (as I have argued) exclude us from the position of learning like any other newcomer in the organisation.

The fact that we must ultimately develop cultural analysis in the analytical field – alone or with ethnographic subjects – means that we must be committed to learn in the empirical field in order to make appropriate and responsible analyses.

Initially, the researcher’s analytical *category tools* can provide a focus from the general a priori categorisations flourishing in the analytical field, such as *ethnicity*, *gender* or *rituals*. During the cultural learning processes in the meeting with the ethnographic subjects, the researcher might see entirely new analytical perspectives – some of which may not previously have been enunciated in the analytical field.

These learning processes are what drive analytical fields forward. A kind of crane dance emerges where the research apparatus moves back and forth between what is learned in the empirical field and the analytical field. From this position new learning possibilities emerge in the analytical field, which again lead to new learning possibilities in the empirical field. The researcher goes back and forth between different positions and shifts between positions in the analytical and empirical field as the analysis of an organisational culture gradually emerges as a holistic pattern of connections.

In recent years, a myriad of new approaches of how researchers can get closer to everyday life have appeared. The researchers give their ethnographic subjects cameras, tasks, diaries and recorders to record their planning, meetings, etc. However, the many new technologies do not alter the methodological basic premises: Firstly, researchers learn about the interface between the analytical and empirical fields. Secondly, when researchers negotiate positions and social roles in the empirical field, it happens on the premises of the empirical field. Thirdly, when researchers develop cultural analysis, it happens on the *radical other's* premises.

4.10 Summary

The social position will often determine the body's physical location relative to the learning of meaningful connections in practiced places. The initial position, which gives access to the field, is often crucial for a researcher's further access to learn about practices because it sets the future conditions for participation in the empirical field.

The many social roles, structural identity and social categories cover the various aspects of the position of participating newcomers and researchers. The concept *social role* represents the general expectations in a given culture of how *social categories* should be *filled out* and completed in a practiced social space. The structural identities are linked to the local collective understanding of how one is perceived to be with the legitimate allowance to be actively engaged in transforming the physical geometrical space to a practiced place. Structural identities may coincide with the general social categories, though not necessarily. Common to the concepts of structural identity, social category and social role is that they give rise to expectations about a particular collectively accepted agential knowledge. The term *position* refers to physical placement in geometrical space that opens for learning in the practiced place. What gradually emerges is a defining and defined anthropological space. The boundaries of how and where we can participate positioned as researchers and participants are made by the cultural organisations, rather than by the researcher and the newcomers participants – but our positions are also developed through ongoing negotiations.

The researcher can obtain a unique position because he or she is the radical other, who can be allowed to move around in a manner no other participant has access to. By combining the observations made within the organisation and subsequently interviewing participants in their home, the researcher can learn about things that are not said directly during participation in the organisation's everyday practice. However, if the purpose is a cultural analysis, it will be difficult for the researcher to determine what can be said or not said, and not least why without also participating in the everyday life of the organisation's physical space.

Here it helps to learn relationships in the same manner as other participants. That is to say, the researcher may try to obtain positions which allow for as much

participation as possible in the organisation's everyday life and seek the social roles that make this possible.

It is a methodological point that it is not possible to move into any structural identity in the meeting with the empirical field without the field's acceptance, and we cannot avoid being ascribed structural identities in that process. We are, as participating researchers, affected to take on the structural identities that the field offers (as consultant, tax inspector, physics students, cleaning women, interpreters, drivers, etc.). We will, as researchers, be entangled in the type of psychological conflicts Davies and Harré remind us are tied to being positioned and which Kondo experienced. This is not just because other people define us as *Western, woman, Japanese* or *physicist student*. We might know about the structural identities beforehand, but the painful experience of being exposing oneself to others' agential cuts that split apart the research apparatus implicates us in a defining social space where our positioned agential knowing may become our best resource for cultural analysis – when it becomes 'self-reflection' (Davies 1999: 181).

Although there are 'multiple possible interpretations of any speech action' (Davies and Harré 1990: 105), and the same applies to the interpretation of bodily operations, it is characteristic of organisational cultures that *they*, not the researcher, define which 'interpretations' of the research position can be negotiated. A researcher may describe and define herself as *midwife, physicist* or *secretary*, but if she is unable, even to a small extent, to become intelligible by doing in practice what is expected from the presented structural identity, the discursive speech acts referring to *physicist* or *secretary* will not give access to participation in the physical space. Conversely, the accepted body signs (body II) and the appropriate agential knowing (body I) (Ihde 2002: 69–70) may, more than any discursively assigned label, provide the researcher with a legitimate presence, from which it is possible to learn the importance of collectively learned connections made in the anthropological space.

Anthropologists should not strive to map a social space as an authoritative cartography where each point has a fixed meaning; rather they should be self-reflexive about their process of learning. In other words, we should participate in the same space as our ethnographic subjects, walk their tours and write 'spatial stories' (Certeau 1984: 115).

This requires a new focus on the materialities of learning (Sørensen 2009). After my diffracted reading of the different theories applied in the analytical field of poststructural, cognitive cultural and postphenomenological theory, we now move to a more *material turn* in social and humanistic studies (e.g. Tuin 2011; Hicks and Beaudry 2010).

Spaces emerge as we move ourselves and materials from one place to another, and spatial stories are the narratives resulting from our movements. It is not important who we are when we enter the empirical field, but who we become and are transformed into in the process of cultural learning. From being naively descriptive and introspective taking a God's eye view, anthropology has moved towards a deeper understanding of the researcher's situated 'interpretations' and writing culture to celebrate all kinds of collaborative experiments (Marcus 2007).

Interpretations are, however, too literary a term for what reading materials entail. It is time to move back to the material foundation in 'being there' (Geertz 1988: 1), which has always made anthropological wayfaring so important in the analytical as well as in the empirical field.

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Chapter 5

Social Designation of Cultural Markers

What does it mean to become an engaged ethnographer? I have very strong feelings invested in my prolonged fieldworks, none of which can I say have ever been terminated. At the Niels Bohr Institute for Physics, where I, a humanist, enrolled to begin physics studies together with young people, some almost half my age, I often felt at odds and lonesome. Among the Italian and Danish physicists I followed in their attempts to detect new particles in the ATLAS project, I felt very much out of place. Although I really had no apparent business in their world of particles and detectors, I was provided with an office, a computer, and access to exactly the same kind of hardware and some software they used in their daily life. In both fieldworks the feeling of ignorance was naturally immense and grew each time I appreciated learning new knowledge. Nowhere have I felt as ignorant as in the physicists' world. Even so, I began to wonder how the Coriolis force would affect my movements in physical space. All of a sudden, the force that deflects winds to the right (clockwise) in the Northern Hemisphere became a real force in my world. I began to notice how my bicycle wheels created friction against the asphalt and speculated about how the Coriolis force maybe had moved my body without my notice. I marvelled at how the stars on the night sky turned into hundreds of thousands of suns surrounded by (maybe habitable) planets. I began to study the surface of tables and stones to detect materials. In Sardinia I became engaged in the local vendetta (see Hasse 1995) and could not avoid taking sides for the Mamuthones group. I also learned how much it meant to uphold traditions of parades, dressing and bread making in a world where all the young people seemed to disappear and newcomers came with no respect for the old-timers practiced skills. I learned to care, and from this position local frictions became meaningful. In order to learn what constitutes cultural resources in practiced places, the ethnographer has to become engaged in the local frictions. To be engaged requires a position from which to be engaged in a practiced place.

Learning is the basic process that teaches us about the meaningfulness of our environments and guides our fields of attention – and it is both a social and corporeal learning. Yet, it has proven more than hard to get to grips with in the

analytical field (see e.g. Hasse 2014). I have argued position will in a basic sense determine what the ethnographer learns as collectively marked in the empirical field (see Chap. 4), and it is from these positions we may learn the collective motives and emotions others attach to material cultural markers. However, to learn as an ethnographer involves more than position, if we are to develop new cultural analysis of how collective meanings are not just anchored in words but also in our material surroundings. For engaged, experienced practitioners chairs and stone piles are markers in cultural landscapes. The newcomer, however, is travelling through unknown land. They are ignorant of what in the material surroundings matters to others. The stone piles or chairs may remain unmarked for wayfarers if newcomers do not learn to become engaged. For the newcoming ethnographer cultural markers are essential for the cultural analysis. Cultural markers are not representations or symbols. They are collectively aligned agential cuts nested in local materials. In this chapter I take a closer look at how we learn to care about material surroundings and how cultural connections tied to materials become directive forces for collectively shared motivation, thoughts and feelings.

An engaged ethnographer is not a passive bystander but one who seeks an active involvement with the people and environments he or she learns from. Matter is 'mattering' in Barad's terminology as a 'dynamic articulation/configuration of the world. In other words, materiality is discursive (i.e. material phenomena are inseparable from the apparatuses of bodily production' (Barad 2007: 151). In her posthuman vernacular there are no stand-alone subjects to learn about stand-alone objects and thus no pre-given relations or connections. The *relata* (where *relata* is enacted with the momentary agential cut within phenomenon) may gain consistency in what Barad calls space-time-mattering (note; sometimes in Barad written with no hyphens – which may be clearer – indicate the entanglement but also makes it more difficult to read) through a process of iteration. Yet, this process remains somewhat mysterious in Barad's discussions – maybe because her concern is not with the agential cut of an embodied *person* let alone an ethnographer studying culture. In her discussions, terms like *social*, *culture* and *collective* are not explained very clearly. Her understanding of cultures seems to be in relation to nature – not other cultures. My analytical cut is concerned with *newcomers* and not issues of relation between nature and culture. From a newcomers' position there are no new cultural iterations yet. Collective iterations of what matters to others have to be learned. I therefore need to re-enter the human being as a learner of collectively shared iterative connections. Connections could be considered momentous *relata*-within-phenomena but they emerge in a social and sometimes collective process of learning. Newcomers align their *relata* with the *relata* of more experienced practitioners, which, e.g. turn an otherwise unnoticed stone pile in to a collective mattering matter. Thereby the stone pile or chair becomes, in the Vygotskian

sense, a new anchor for thoughts. I use the term *connections* to imply how mattering matter emerges through learning and nest newcomers in a more and more familiar landscape as they gradually become more skilful in reading cultural markers. Ethnographers, from whatever position they are occupying, may learn to share cultural markers as collectively shared relata with their ethnographic subjects. It is through learning (a more precise term for an alignment process than *iteration*) that humans align their space-time-mattering.

I shall discuss this complex and entangled process of social and sometimes collective learning as four analytically separated processes, which in practice are entangled:

1. Learning through social designation (verbally, by pointing or (re)actions)
2. Practiced-based learning (both 1 and 2 are discussed in this chapter)
3. Learning through culture contrast as implicit comparisons (discussed in Chap. 6)
4. Scalar learning – more or less aligned collective learning where learning occurs as a nested sedimentation of future expectations (discussed in Chaps. 7 and 8)

Through these processes we gradually not only learn expectations but become affected when what we learn to expect does not happen as we become nested in collectively shared mattering matter. When our expectations are not met, it causes friction which raises our awareness of cultural markers. In order to understand social designation and practice-based learning and the ethnographers' engagements from this perspective, we have to dive into 'the miasma of the collective' (Edwards 2009: 202) and look at how material artefacts become cultural markers we (not just 'I') care about.

5.1 Cultural Resources

Cultural resources (Suchman 2007: 85) are not just communicative but material as well. In Cameroon it turned out to be a cultural resource that we travelled with a local journalist who literally opened doors for us to the palaces of the Mfons. Also blond hair proved to be a cultural resource for access, as it apparently invoked as sense of curiousness in our local hosts. In Sardinia my knowledge of English became a resource for access to the men's group even though I, as a woman, could not myself participate in the parade. When the group was asked to go on a folklore festival tour in England, it turned out they needed me as an interpreter.

In the physics students' culture I learned that all kinds of science fiction allusions could be tools for entering other, and more physics-like, activities. Not just the number 42 from the book *The Hitchhikers Guide to the Galaxy* (Adams 1995) but references to movies like Contact, Star Wars, Star Trek, the books by Asimov and many others proved to be good companions in my journey into physics land. The research apparatus is in this case engaged in a collectively shared mattering through which physics culture emerges intelligible in new ways. At some point, for instance, we discussed the speed of light after a lecture on Einstein. I was walking

along with some students who had let me become part of their study group and some elder students who were resourceful of physics knowledge. A few months earlier I felt I did not belong when they began to discuss space-crafts in relation to the speed of light and ‘how fast the Millennium Falcon could run’ (Han Solo’s starship from the Star Wars movies). Without knowledge of science fiction references, I might have had to leave such a group as it would have labelled me as a *stupid* physics student. Yet, at that point I had found science fiction as a resource for inclusion and was prepared. By now I had watched the movies and films and could follow the conversation on hyper drive and Kessel run. And I could join in on the laughs over the remark that Millennium Falcon ‘made the Kessel run in less than 12 parsecs’ because in our joking it became clear that parsecs are a reference to distance not time. I never explicitly asked what a parsec was – or the Coriolis force for that matter – but I learned just by being present in practiced place. I did not understand all that was said about time-dilation effects and how humans could disintegrate in the process of space travel, but I understood enough to stay a member of the study group.

All types of cultural resources are social. Ethnographers enter an empirical field with a number of cultural resources, but they may not be relevant for learning about the local collective consciousness. At the physics institute I never dreamed of how important science fiction would prove to be for my longitudinal study of physics education. And the only way to learn what constituted cultural resources were through engaged participation.

The theory of cultural models (following Vygotsky) states that:

Thought, feelings, will and motivation are *formed* as the individual develops. In the context of social interaction, the individual comes to internalize cultural resources, such as cultural models, language and symbols, as means to organize and control her thoughts and emotions. (Holland 1992: 63)

This is one way of explaining alignment. Through cultural learning processes persons learn to recognize and create self-evident and hence foreseeable cultural markers in the material surroundings, which gradually not so much *control* as engage our thoughts and emotions.

Cultural markers are associated with predictable storylines (or as defined in Chap. 4, cultural models), which are organized and internalized as clusters of connections with a directional force that affects people’s actions. Yet this approach of cultural models, just like Harry Collins’ ‘interactional expertise’ (Collins 2004), puts too much emphasis on language and too little on the materials in which we anchor thinking.

The more material concept of cultural markers I shall build on Bateson’s analytical concept of ‘context markers’ embedded in a system (Bateson 1972: 289). I follow Anne Edwards in her argument that we should take the good points in systemic theories and make them relevant for people with feelings and real problems, as we do not learn in systems, but in relations (Edwards 2010) or rather, following Barad, in relations as iterated relata-within-phenomena (Barad 2007). Rather than strictly following Bateson’s systemic approach and Barad’s posthuman

feminism, however, I find it useful to understand context markers as material and conceptual markers connecting the embodied cultural models that provide emotions and directional force to expected actions and meaning of material artefacts in organizational cultures. This process of forming connections (as agential cuts) could be seen as the fabric which underlies and creates fringes of organizations. Cultural markers function as outlines through dynamic inclusion and exclusions of artefacts from the organization. The production of cultural markers as relata-within-phenomena is a practice of differentiation, where ‘exclusions matter both to bodies that come to matter and those excluded from mattering’ (Barad 2007: 57). Connected with cultural learning theory, this is also a matter of being excluded from *learning* to understand the agential cuts collectively shared by others. In a sometimes collectively shared cultural mattering, those humans who fail to learn how stone piles and chairs matter to others may be frictioned out of the anthropological as well as geometrical space. Cultural markers can cause friction which may well lead to expulsion or change the internal fabric of the dust bunny. Those who learn to read material cultural markers collectively learn about cultural resources and get access to an affective, resourceful, common language, which, on the one hand, may strengthen the attraction between the fibres holding cultures together and, on the other, be used deliberately as a resource to challenge and change the given cultures.

Artefacts can be any phenomenon with a materiality embedded in a network of conceptual connections and meshed up in cultural ecologies. Reading a book on Lucretius in the physicists’ lunchroom is simultaneously a physical being-in-the-world experienced by the reader and, perceived by the other physicists, a *cultural marker* to be read collectively as connected with invisible lines to other *cultural markers* in a specific context. As argued elsewhere (Hasse 2008), classical philosophy and humanistic approaches are not considered cultural resources in the Danish physics culture. In an Italian context, Lucretius is connected with being classically educated, and being classically educated is connected with both the glorious past of the Roman Empire, a versed philosophical mind and being clever, smart and able at physics. In Denmark, the same artefact would, in the physicists’ lunchroom, at least according to our research in 2000–2007, be associated with *humanities*, and humanities is connected with being female, soft and unable to become a clever physicist (Hasse 2008). It is a point in case that these connections not only *may* but *will* change over time.

Before venturing into an understanding of how cultural markers work on us over time and make us *care*, I explore how we come to know about cultural resources in the process of learning through social designation and practice-based learning.

5.2 Context Markers

The process of social designation begins with the designation of a specific emergence of cultural markers in collective fields of attention, which are material instantiations of potential cultural resources. Cultural markers mark a cultural learning context that itself has to be learned, e.g. through iterative social designations. Bateson's concept of contextual markers is signals of differences, whose main function is to classify contexts (Bateson 1972: 294–295). The concept of context markers is associated with a systemic learning theory. Bateson illustrates the learning process with an example taken from a water park in the USA where a trainer teaches a porpoise to jump through rings and strike somersaults. As a systems theorist, weaving together insights from biology, anthropology and psychology, Bateson takes hold of a general mechanism tied to a deep understanding of the basic difference between beings who are capable of exchanging information of difference and the *dead* world of materiality with no capacity of information exchange (Bateson 1972). In developing his theory of how systems learn, he analyses an emerging system consisting of a trainer, a porpoise and a few physical material artefacts such as a flute and fish. These elements can very simply be said to constitute a context created through context markers. In this system, the porpoise undergoes a gradual learning process that teaches it the importance of material artefacts, like the sound of whistles, fish and certain movements. The porpoise gradually learns to decode a systematic pattern of important differences. The learning process changes the porpoise's contextual understanding and ties together the trainer's wishes, the porpoise's actions and material, meaningful artefacts in a common systemic contextual structure.

When Bateson enters the water park's training pool, the trainer has just been given a new porpoise, which is to be trained to learn tricks. Bateson observes the process and notes the following about the systemic pattern of structure under construction: in the first interaction (context I) between the trainer and the porpoise, the porpoise learns there is a pattern of connections between the sound of the trainer's flute, the reward in shape of a fish and certain movements made by the porpoise. Bateson is, like Vygotsky before him, inspired by Pavlov's discussion of the conditional reflexes. Pavlov experimented with how conditioned reflexes in, for example, dogs were formed by mediating means. First, he studied how dogs salivated when presented with bowls of food (the direct stimuli). Then the stimuli of food were connected with the sound of a bell ringing just before the food was served, and the dog's salivation was then again measured. Subsequently he only rang the bell (the conditioned stimuli) but measured salivation levels as if the food had been served (Pavlov 1927).

In contrast to Pavlov, Bateson sees the process as an emergent total system, where the porpoise, the artefacts in the study and the *trainer* together create, as a coherent whole, the conditions for the *right* and *wrong*. Bateson, however, sees the system from a particular point of view: the porpoise. It is the porpoise who

gradually learns the wider context of the activity comprising the trainer as well as the artefacts.

Over time the porpoise learns a simple rule: First, it discovers that when it lifts its head out of water, a whistle sounds and it is given a fish. Over time, it forms the pattern of *whistle–lift–head–fish* into a habit. The porpoise learns to expect a fish each time the whistle sounds and its head is lifted up. The learned rule connects the whistle, the fish and the trainer into an overall pattern: a ‘contextual structure’ is formed (Bateson 1972: 276).

Now the trainer decides to break the learned pattern and a new context (context II) is under formation. In Bateson’s system the porpoise gradually learns (through a frustrating process) that the past habitual behaviour is no longer rewarded. In the new context II the porpoise lifts its head again in anticipation of reward, but although the whistle sounds, no fish appears. The porpoise becomes more and more frustrated as it raises his head again only to be disappointed by not receiving the expected reward.

Finally, in sheer frustration, the porpoise flaps its flipper so the water splashes. All of a sudden the whistle sounds and it gets a fish. Again it makes the water splash with its flipper; there is a whistling sound and it gets a fish. Gradually it learns that the whistle can be connected with the splashing behaviour and that this releases a fish. It is learning a new pattern; new connections are formed and a new context emerges. A new habit is formed in which the porpoise stops lifting its head and only makes flipper splashes when it hears the whistle. The porpoise has learned that certain behaviours (lifting his head and flapping the flipper) have triggered a reward, but it has not learned the difference between what triggered the fish before and now.

All of a sudden no fish appears although it beats the water with the flipper. For a while the porpoise alternates between lifting the head (old habits are hard to get rid of) and splashing the water with the flipper. It gradually becomes aware that none of these behaviours release a reward. The porpoise is frustrated and confused because it cannot understand what triggers a reward from the trainer. It is almost in, what Bateson called, a ‘double bind’ situation (Bateson 1972: 276), where everything the porpoise has learned about the first context (head above water) and in the second context (beat water with flipper) is wrong. The porpoise becomes very frustrated because *doing the right thing* has previously been rewarded. Now the new learning is also wrong (i.e. it is not rewarded).

What does the fish-reward signal? The porpoise has no idea and keeps making the water splash with his flipping, but there is no whistle sound. Then it sticks its head out of the water. No whistle. Accidently it turns the tail; suddenly the whistle sounds and it gets a fish. The whistle sounds and it makes a somersault in the water and gets a fish. Finally, after many trials and errors, the porpoise learns to learn, concludes Bateson. It begins to understand the context of the contexts, namely, that the system of whistle, fish and performed acts is wider than it thought and includes the trainer’s expectations of *innovation*. To earn more fish the porpoise must learn to learn ‘the larger context of contexts’ (Bateson 1972: 277).

Now the porpoise understands that what triggers the reward is that when it has done a certain act a certain number of times, it must invent a new one. A new 'contextual structure' is formed (Bateson 1972: 276).

It may be too human-centred to talk about frustration and expectation when it comes to an animal, but in a cultural psychological perspective, we can place a person in the porpoise's place and thereby understand the situation as an example of our own reaction pattern in an unpredictable cultural organization. In the human world of organizational cultures, we learn connections in much more subtle ways. No trainer will sound a whistle to guide us. And unlike the porpoise, we might begin to negotiate or ask questions when we do not understand the reactions of others. We might, however, also refrain from asking questions if we sense that it might not be rewarded. Although Bateson does not deal with power issues in the porpoise example, the trainer obviously defines the context. The cooperative porpoise helps to maintain the system through its reactions. Once the porpoise has learned the trainer's contextual understanding, it compliantly contributes to create a common context. In summary, the simple contextual structure Bateson presents us with (and repeats in his theory of 'learning stages' (Bateson 1972: 284)) is a simple model of a newcomers' learning process in the meeting with an already formed cultural dust bunny of connections between artefacts and meanings in an organization.

Newcomers, however, do not learn a fixed system but a culture in motion. Cultural learning processes, through which we learn to make connections between material artefacts, actions and meanings, create dynamic, nested cultures rather than systems. All artefacts (material objects, words, actions) can be markers of the cultural frictions that hold fringes and fibres in place and in that process may expulse certain participants. Newcomers must learn to detect how material artefacts and physical actions are connected with meaning (i.e. signalling *something*) in complex ways. They must learn that some connections are of higher importance than others. Eventually, newcomers learn the context of contexts – i.e. the culture – that makes aligned expectations possible. In Bateson's example, frustration is in a systemic understanding just a way to learn to make adjustments to a possible change.

In a cultural analytical perspective, social designation of cultural markers and possible subsequent frustrations (if expectations are not met) become a benchmark for newcoming participants as well as for the researcher. This leads to the question of who has the right to define cultural resources and thereby values and conditions for how newcomers become legitimate participants in the organization.

Although certain individuals may appear powerful to newcomers, there is always more at stake in organizational cultures than an individual's exercise of power. The power of an individual is sustained by the collective meanings. In Bateson's system theory *information* makes a difference, while power, emotion or meaning construction are not used to explain why a difference makes a difference for someone like a human being among other human beings. For humans in social organizations, it may have consequences if their reading of the collective context markers is not identical to the aligned collective consciousness of the other

participants. In terms of getting access to learning the nested way, they must read the material markers that inform them about the local genesis of available positions. When that learning process evolves, markers of a cultural consciousness may be transformed to markers of cultural resources.

5.3 Learning Cultural Markers

When we talk of *context*, we operate at a meta-level above actual information messages and this level can also be learned (Bateson 1972: 166). The meaning of the concept of *context* is in itself determined by its contextualized use (Goodwin and Duranti 1992). This analytical notion of context is defined by the practical work done in the analytical field, when we work on specific analytical problems, rather than having a formal definition. It is the *analytical cut* that marks the contextual borders of the analysis. Some may see context as the wider geographical context of a nation state or a continent (a Danish or African context); others define context as associated with specific areas (political or scientific context). In an anthropology of learning, I understand *context* as a collective consciousness of material and psychological, culturally learned frameworks of connections, which exclude certain connections and strengthen others. When we look at Bateson's systemic approach from this perspective, it opens up for a new way of understanding a newcomer's learning process. Being positioned is not enough to learn; one can be placed in the same practiced place as others and not learn much about what goes on.

Bateson uses a frame as metaphor for interpreting the framing effect of contexts: 'Frames create borders and guide perception. We notice what is within the frame. There is a difference between the inside and outside' (ibid.: 186–189). What is inside the frame differs, however, depending on the learning that takes place.

With inspiration from Bateson's stepwise learning theory, the cultural learning process can be outlined as a development over four steps. This outline omits Bateson's very broad learning step number IV, as it is largely irrelevant to learning organizational culture. The learning develops in three interdependent steps and they are the same for all participants. The fourth step is my addition and serves to explain the special position of the researcher:

Level 0: The newcoming participant's immediate understanding of material artefacts is formed by familiar cultural models (interpreted through the framework formed in other cultural contexts) and it links the physical manifestation of the artefacts with the particular already formed meanings (the brought-along-apparatus) attached to materials. At this learning level, the newcomer has learned nothing new about what matters to others. We perceive phenomena with already formed agential cuts. In Bateson's systemic view of learning, this is level 0 = zero learning.

Level 1: A participant (more experienced) learns that new surprising cuts are possible from a given position and begins to perceive the cultural resources available. That is, the participant begins to think about new, possible connections, which progressively change the existing clusters of connections and pave the way

for new agential cuts, which will gradually become as self-evident as the old familiar cultural models.

Level 2: The new cuts gradually become self-evident translations formed in a new frame of transformations. In all this becomes the new cultural context for recognizing cultural markers, which the other participants are also expected to recognize in the same way.

Level 3: Experienced participants learn that within the overall context of the cultural organization, there are several possible frames of learnings connected to different clusters of connections and that they may be transformed. Over time, the experienced learner not only learns to read cultural markers of cultural resources but also to transform them.

We learn from reinforcements of connections in organized cultural models and by solving contradictions when expectations are not met. In order to understand what other people expect from words, actions and meaning-making in cultural contexts, we need to reach level 3. In this respect, the ethnographer is no different from any other participant. When Bateson's learning steps are coupled with cultural learning processes, the ethnographer, however, emerges as a special participant, as the *radical other* (see Chap. 4).

Level 4: In the special case of the ethnographer, the apparatus draws on frames of learning like the other participants – but also from learning in the analytical field. If learning takes place in the empirical field, the analytical cuts are transformed in the meeting with the empirical field. The clash between the two frames of learning adds a meta-perspective to the analytical framework; i.e. the cultural analysis in which it is attempted to, momentarily and deliberately, suspend all self-evident connections and deliberately open the apparatus to find new available connections.

In the final analysis the different frames of learning are weighted up against each other and may merge at times. The analytical field tends to take overhand when the researcher discusses and analyses research data with colleagues in the analytical field. In the analytical field certain approaches are valued more than others by some colleagues, and it may be difficult for the researcher to convince colleagues that theories appreciated in the analytical field are no longer relevant for the analysis. To prioritize only what has been learned in the empirical field is rarely an option in Academia. When the researcher discusses analysis and data with participants from the empirical field, the empirical field tends to be prevalent. This is partly because participants in the studied everyday life have a hard time learning to understand the entangled threads of connections tied to the analytical concepts used by the researcher. The interest in the analysis also differs in the empirical and the analytical field. The analysis thus enters a hierarchical relation between various parameters of learning that change according to the researcher's position. This enhances the learning possibilities of the researcher. If the researcher is sensitive to both frameworks and understands the differences between them, the result may be a meta-analytic perspective useful to participants whether or not they are concerned with the culture in their own organization or the development of particular theoretical focal points.

5.4 Social Designation

In order to avoid 0-learning and move some steps ahead in the learning process, the researcher needs to understand the kind of learning that the given position gives access to. Social designation refers to the specific process through which participants in the organization's everyday life have learned to identify the collective meanings conferred to physical artefacts (including words, human body signs and actions) because these meanings have been directly pointed out by the more experienced participants in the organization. The experienced participants point out where and what to focus on in the physical space. Social designation works through any of the senses. We use our visual, our auditory, our sense of smell and touch or even our sense of taste, when we learn about connections in a physical place (Pink 2009; Stoller 1989). We may learn a lot from handling or tinkering with the artefacts themselves (i.e. the practice-based approach), but the collective consciousness is first of all learned when we engage with other people. What makes it a process of learning a collective consciousness is the *shared* meaning ascribed to artefacts as well as the *shared* fields of attention opened by aligned agential cuts.

Vygotsky developed the idea of a 'field of attention' several places but most notably in his discussions on 'the crisis of the child age seven' (Vygotsky 1998: 289ff). The theory of how attention develops is closely connected to the discussions of the ape and the stick, which was introduced in Chap. 3. Because humans can use thinking tools, they are not entirely dependent on clues from the physical environment. They can think *stick* and go look for it, whereas the ape has to have a stick physically within sight (its field of attention).

When participants point out various artefacts in a physical environment for each other, they have or are aligning their field of attention. Social designation directs our senses towards certain corners, actions and material objects in physical space, and it opens doors for thinking in new cuts about practiced places. In Vygotsky's own discussion the field of attention is connected to difference in how younger and older children differ in their relation to the visual field before them.

For the young child the visual field is (a bit like the ape) what she perceives, and it is perception which makes her recall how she may solve different tasks. Young children are dominated by their visual fields of attention because they have not yet learned to master the 'hierarchy and synthesis of elements contained in the concepts' (Vygotsky 1998: 73). For the animal and the young child, material objects are tied to action and not to thinking in so far that, for instance, a jar you drink from is perceived as a different object than a jar rolling down a hill. 'They [animals], much more than humans, are slaves of their sensory field. This means that the attention of an animal is determined by the organization of his visual field' (Vygotsky 1998: 103).

When animals and young children perceive the world around them, take, for instance, a clock, they have not synthesized the word meaning of *clock* with the material object. Thus, they perceive a white dial with black dots and two elongated lines moving around the dial (if they perceive *dials* and *black* at all, that is. . .), but

they do not perceive a clock showing that it is time for lunch. As noted by Vygotsky humans perceive *real objects*. A phenomenon may emerge with colour and shape (a kind of cut in itself of course) but our perception is also imbued with sense and meaning of artefacts. This is why we do not just perceive ‘something round and black with two hands’ when we have learned the cut of perceiving a clock, which makes it meaningful to distinguish one hand from the other (Vygotsky 1978: 33).¹

We might think that everyone in today’s cultural organizations would be able to recognize a ‘clock’ like anyone else, but from the newcomer’s perspective (and especially the expert participant observer), it is not so. We must begin with the assumption that clocks come not only in different sizes, colour and shapes; they are also associated with subtle local meanings. The newcoming researcher and participant have to learn the local meanings even if they know the lexical word meaning. They have to learn collective understandings through social designation. Researchers enter practiced places with already formed perceptions of the visual field, but their perceptions evolve as they increasingly include the collectively shared cultural markers. Ethnographers gradually learn to align our fields of attention with those of the more experienced participants as we move through their practiced places.

The development of the ethnographers’ attention occurs in complex environments that consist of different physical stimuli with twofold value. On the one hand, the ethnographer’s attention is drawn to any phenomena; on the other hand, the ethnographer’s attention will gradually be directed by the corresponding meanings in the form of cultural markers. From the outset, the researchers’ attention is a socially controlled attention. Gradually and through social designation, the newcomers may learn to enunciate cultural markers within the *collective* organization nested in local materials, first as a primarily explicit process of (surprised) attention (see Chap. 6) then in relation to a deeper alignment with a sensitivity towards more subtle clues of cultural markers.

In my fieldwork at the Niels Bohr Institute, the introduction to the freshman year which was given to us on the first day of physics study in the shape of a paper pamphlet was of great benefit to me and the other newcomers. Here we found a whole page of ‘abbreviations, slang and oddities’ in the physics student culture: a local dictionary, which turned out to contain only a fraction of the new words, meanings and abbreviations of familiar words I had to learn as physics students.

A few examples from my fieldwork in the physics students’ culture (taken from the book *Culture in Motion*, Hasse 2002b: 122) illustrate the complexities of the learning process of a newcomer to a physics culture. The dictionary helped us (and

¹ Some, like Gibson, might claim that sharedness comes from the objects themselves in the world: they *afford* particular experiences. A dress affords dressing up; a chair affords sitting on it. A clock affords seeing what time it is. From a practice-based learning perspective, this might be true, but from the perspective of a collective consciousness, we must learn word meanings from other human beings. Gibson was inspired by Brentano, who also mentioned that our consciousness has direction and valence. Consciousness has directionality which stems from human engagements. It is not a mental process, but a collective consciousness distributed in practiced places.

was an example of an explicit social designation). We now could look up what it meant that we should meet in BEER (the physics laboratory normally named ‘Ørsted Laboratory’ – in Danish abbreviated as ØL, which is the Danish word for *beer*), in Middle Earth (i.e. the first floor of the neighbouring institute of informatics) or at DikuMUD (DIKU Multi-User Dungeons – the neighbouring institute of informatics in general).

The categories we use become cultural resources when they are recognized as intelligible, but the processes of identifying the meanings of words often mean hard labour on the part of the ethnographer. These processes often take place as, what James Wertsch called, implicit rather than explicit mediation (2007). Implicit mediation unfolds the institutional priorities that are revealed in talk, and to some extent, the development of professional reasoning and action becomes a new common ground (Edwards 2010: 7). From a cultural anthropological point of view, my point is, however, that mediation of institutional talk and, by extension, the material genres connected with it (Edwards mentions auditors’ spread sheets or social workers’ assessment forms) first begin to mediate accepted understandings in the workplace or educational setting after a learning process. Learning what a spreadsheet and an assessment form are in a local dust bunny of frictions can challenge what has been learned in many other institutional setting than the one studied by the ethnographer.

I was wrong in assuming that because I knew the language spoken at the Physics Institute, it would give me, as researcher, an advantage over Danish ethnographers studying *remote* areas like Cameroon. I expected the language spoken was Danish, and of course it was – but it was more. It was a language tied to a practiced place with local word meanings. We should not assume that one can define the world in a totality. In practiced places words always related to the perception of the physical space. The language does not represent; it is a measure (Hastrup 1995: 26).

It helped the freshmen that our tutor, Lars, took us around in the buildings and pointed out various ways we could or should not move in the social and physical space. He showed us some old-fashioned blackboards that the famous physicist Niels Bohr had written on, and he immediately turned them from being *old-fashioned blackboards* to objects of fascination. He also pointed out that there were guards at the door to the great auditorium, where we were invited to listen to *star lectures* by world-famous physicists, and of course he pointed to the area in the cantina that the physics students had designated for their meetings. This kind of explicit social designation became new cultural resources for our agency in our engagements. We could make jokes, join in the slang when referring to the ritual love–hate relationship with the Institute for Informatics and make sure we placed ourselves in the right places – and if we were not, we could make sure that it was a deliberate exploitation of the cultural resources available. In that way the visual field of attention changed and became one of manoeuvring between local cultural resources. In the Vygotskian sense, it, through learning a common language, became a ‘time field that is just as perceptible and real to him as the visual one’ (Vygotsky 1978: 36) where we made histories and learned from other people’s histories.

Vygotsky argues that our field of attention does not coincide with the visual field of perception. Unlike animals we are not dependent on our vision to be able to act. We act by thinking and our thinking is organized into specific connections between physical objects and their meanings. These statements are very general and not linked to the specific learning of culture. Vygotsky may be helpful for us to open the basic discussion of *the social* in relation to *the collective*.

In Vygotsky's major works the underlying argument is that what we may think of as the mental functions of the individual, which make us capable of communicating with other people, are always socially constructed. In many of Vygotsky's works, he emphasizes that social mediation is a basic condition for human thought and language. Thus, we create a false dichotomy when we make a distinction between *the social* and *the personal*. Social and cultural forces shape a person sounding through material surroundings. Mediating artefacts are always socially learned through an internalization process, which over time turns the external social web of meaning into the intra-social thinking tools we use to recognize the world around us. Does that mean we always act with a collective agential knowledge?

No, says Vygotsky – at least in my understanding of his early work of art. Differences in human perception of material surroundings do not occur as the difference between the personal and social, but between the personal and the collective (Vygotsky 1971: 17). Cultural raw materials are cultural resources that are generated historically through social relationships, and both the collective and the individual persons draw on these resources. Our field of attention are transformed when we learn cultural markers through social designation. The time field becomes a resource for thinking about past, present and future plans; yet these future plans are constantly transformed. Our 'fields of attention' are not one, but a series of potentially perceptual fields that form successive dynamic structures over time (Vygotsky 1978: 36). Attention is detached from perception in ways that make it possible to combine past and present fields of attention. In the process we change centre of gravity and figure-ground relationships are reversed. In my rendering cultural learning is the process a toddler goes through of gradually, through social designation, forming a new language of word meanings, which are internalized as 'floating thoughts' freed from but anchored in words and other materials. This way of learning to think (ibid.: 51) is not confined to toddlers, but to all kinds of newcomers.

It follows from this argument that positioning is crucial for the kind of social designation and attention fields we get access to. As we internalize social speech, it transforms our practical intellect (ibid.: 27) to a collective consciousness of cultural markers. What we focus on, remember and even the way we move our bodies are socially mediated, but not necessarily culturally aligned in the dust bunny of organizational culture.

5.5 Learning from Reactions

Through cultural learning process, researchers take the first steps in breaking their previously stored cultural connections and reorganize their changed foundations for reflection as they learn to form new agential cuts making new cultural connections (that become self-evident over time).

When we act and react in physical and social space, we simultaneously learn and teach others about the differences that make a difference in our shared practiced place. Newcomers learn as their actions are corrected by the experienced in subtle and often unnoticed ways. Yet, we all learn from each other to form intricate connections between physical artefacts and their local collective meaning. None of the participants know for certain what is collectively shared and what is not. It is, however, often enough for our acknowledgement of a collective consciousness that a statement or act or the appearance of a physical object is accepted without contradiction. Or is reacted to in ways which either confer acceptance or exclusion. This is also an aspect of social designation; we learn from reactions – both the expected and the unexpected (Hasse 2002b).

At a meeting in the tourist organization Pro Loco in Sardinia, the bank manager, the local leader, noticed that one of the participants, Giuseppe, wore a scarf at a rehearsal of the Mamuthones parade. Giuseppe wore the costume of sheepskin, the black wooden mask and then a red scarf around the neck. At this particular meeting the bank manager remarked harshly that next time he did not expect to find Giuseppe with a scarf around his neck. The others did not object and nobody asks amazed: ‘Why on earth can’t he wear a scarf?’ I had joined the meeting because we were going to discuss a journey to Great Britain where I was to act as their interpreter. I was still a newcomer but luckily they let me in on their discussions. I noted silently in my notebook that it was strange that the participants were not allowed to protect themselves with scarfs against the cold February wind blowing in the streets, scarfs that were barely visible under the sheepskin dress. Somehow I sensed that I should not ask the manager why Giuseppe could not wear a scarf. Only much later a pattern emerges in my analysis which connects the bank manager’s social designation of the forbidden scarf with other designated agential knowing, and the meaning of the scarf as a cultural marker takes form in the local cultural context.

At the time of the meeting, however, I had only learned that there were some curious cultural links between tangible objects, like scarfs and costumes, and their local meaning, and they were still invisible to me, wherefore I did not understand them. A potential meaning is designated; yet, I could not make the connections that were so obvious to the others. My previously stored connections would make it likely to interpret the presence of a scarf as a sign of cold weather and that the scarf is a useful artefact because it will protect against the cold (and the mountainous part of Sardinia is very cold in February when the mask parade dance is performed in the streets). However, the bank manager’s designation made me aware that something more was at stake.

When I later learned to connect many other artefacts and their meanings, I began to first form clusters of connections and then *cultural models* as I became able to predict reactions even in new situations. I learned a deeper understanding of why the bank manager was not contradicted. For the Mamuthones participants in Pro Loco, it makes a difference that masks and costumes look alike in the mask parade. The experienced members of the group, including Giuseppe, who have participated in discussions at meetings, already know this and newcomers to the group will be instructed in the *real* look, when they enter the group. The bank manager was normally a nice man who devoted his spare time and some money of his own to build up the *sfilata* the parade of masked men, so it looked ‘professional’, as he termed it. They, and I, learn to take his warning seriously through subtle designations like his harsh tone, and everything else connected to the model of Mamuthones, which I gradually learn about from the reactions of the experienced. I learn later that Giuseppe’s scarf challenged one of the core values of the Mamuthones group, a value that marks them as different from the new *darlings* of the municipality – the Gruppo Beccoi, the new group of dancers. Gruppo Beccoi does not have the same uniformed look as the Mamuthones Pro Loco Group. In fact, Gruppo Beccoi was formed in protest against the rigid dress code requirements of the Pro Loco Group.

I learned these new connections gradually from reactions (like the bank manager’s response to Giuseppe, who violated the unwritten rule by donning a scarf), from listening to conversations and through emerging analytical answers to my own questions. Yet, it was primarily through the bank manager’s reaction that I became aware of new surprising cultural connections, which gradually pointed to what I came to perceive as a core element in my cultural analysis. The analysis of the background for the differences between the requirements in Gruppo Beccoi’s and Pro Locos performance of the Mamuthones parade involved a deep concern for how to connect the whole village in a shared activity.

Giuseppe, with the scarf, was an experienced participant who should know better than to wear a scarf irregularly. He was not at all surprised of the bank manager’s reprimand and he accepted it apparently as he wore no scarf at the next parade ground drill. We, i.e. he, I and other participants, can only assume the bank manager’s designation to be collectively accepted, as no one speaks up or acts against it. Secretly some members might side with the competing group, but I noticed no socially designated clues indicating that. On the contrary, they seemed to express proudness that they, the old group, kept traditions in awe. For me the scarf became a new cultural resource that deepened my understanding of the context that I might or might not use for local agency. Had I wanted to change position and move to the Gruppo Beccoi, I could now have approached them by designating how ridiculous I found the rule of no scarfs.

As a physics student I also learned what I assumed to be of collective importance through social designation. Quite explicitly, already at our first days of study, meaningful locations and student spaces were designated for us. On the way into the auditorium from the canteen, I was stopped by a guard at the Niels Bohr Institute for Physics but I did not understand why. I just wanted to hear the *star lecture*, but

without words the guard designates that I am not wanted in the auditorium. All kinds of thoughts went through my head (about being the outcast as a radical other). Our fellow student instructor Lars explained to me that it is not allowed to bring the coffee cup I hold in my hand into the auditorium. This example of social designation may seem insignificant; yet, it is through small everyday occurrences like these that patterns of cultural connections are formed.

Scarfs and cups are physical and mediating artefacts to which we learn to attribute local meaning in very subtle ways. They become cultural marks which may be used with active agency in local cultures. Often we might not even be able to retrospectively re-establish the learning process which gradually makes *their culture our culture* as the meaning becomes so obvious to us that connections between meaning and material object are neither questioned nor reflected upon.

5.6 Material Meaning

Cultural markers are not the same as symbols. Cultural markers have material appearance like symbols. They do not, however, stand for something else. They are signs in so far they mediate meaning which is something other than the material object itself. However, they do not *have* meaning like symbols do. Like speech, cultural markers *anchor* meaning. This is an underlining and extension of Vygotsky's word meaning discussed so far. The relation between words and meaning is a relation between material artefacts anchoring thought just as a cultural marker becomes an anchor of thought. Communication and negotiation where people already have obtained a common language for understanding each other (and maybe disagree) also involve understanding (and maybe disagreement) of how to use cultural markers as resources. Any frictions emerging in negotiation build on this anchored collective consciousness. Social designation may be a deliberate social process of designating meaning to particular artefacts or it may come about unintentionally as we learn through reactions. How we become *engaged* in cultural makers is tied to a deeper understanding of learning processes.

Managers can (as we have seen it recommended in the field of organizational culture) behave as *trainers* who try to *create cultural contexts* for their employees. Studies of organizational culture are packed with references to significant open, bright symbolic artefacts that allegedly signify a *strong culture*. Deal and Kennedy describe such an alleged symbol created by a business manager who distributes bronze stars to the best performing employees (Deal and Kennedy 1982). We are told the star is a token of the manager's satisfaction with industrious workers and at the same time it functions as a symbol of a strong organizational culture. Its meaning is explicitly designated by the strong management and its understanding of a reward system. Though neither newcoming participants nor researchers can learn such connections just from watching the shining bronze star and hearing the management's desire enunciated, many managers automatically assume that all employees share their view of the importance of physical artefacts. Even if this is

the case, the researcher must still study how the *bronze star* connects with motives and feelings among employees.

In the example with the bronze star, it is supposed to work as a reward–artefact in the same manner as the trainer’s fish. Yet, the assumption that a behaviouristic reward system can generate the desired employee performance fails to acknowledge the complexity of cultural learning processes.

What is the bronze star actually connected with in the organizational culture? The employees may publically express their compliant acceptance that the bronze star is an attractive award, and newcomers may believe it to be so. In the subtle learning of everyday life, however, newcomers might learn that the persons connected with the bronze star are perceived as *spies* for the manager or somebody you cannot speak honestly to. Bronze stars are frictioned. Many connections are possible even within the same nested organization. These *hidden connections* are also important in the dust bunny of complex and entangled network of culture. Organizational culture creates, transforms, breaks down and in and expels many kinds of emergent becoming – including the becoming of collective values shared by a collective consciousness. Some people, like management, have the attributed power to verbally articulate cultural values and desired norms and acts in organizations. Although these values are articulated by management, we do not know how people in general (and employees in particular) internalize cultural values that are discursively formed in a company. This also means that management may be surprised to learn the employees do not comply, because it may not know what creates frustration or pride. When the management verbally designates a cultural connection between the *symbolic token* of the bronze star and its positive intelligibility, it might start a frictioned course of reactions, which might eventually lead to their own downfall. The star is intended as a positive symbolic context marker for all staff. In reality, it becomes a culture marker that may well create negative emotions in the organization’s complex network of cultural connections.

As signs, cultural markers may, on the one hand, be seen as eliciting *information* as in Bateson’s systemic theory. On the other hand, in practiced places *information* is always entangled with a local situated meaningfulness which points to collective affects and motives. As signs of information, cultural markers are reduced to a relation between elements (discussed, for instance, in the tradition of semiotic signs by, e.g. Ferdinand de Saussure and Charles S. Peirce). In Saussure’s work the semiotic relation is a dyadic relation understood as the signifier (i.e. the form of the sign) and the signified (i.e. its meaning), and signs were primarily seen as linguistic signs. In Peirce’s work we find a triadic relation between the sign as form (e.g. a vehicle), the object (i.e. the meaning that refers to particular material aspects of the world) and the interpretant (i.e. the effect of the sign by an interpreter). According to Peirce (and in my rendering), signs may be subdivided into icons (where the physical sign attempts similarity to its physical reference), indices (where a physical appearance may be interpreted as a direct sign of something else) or symbols (that signify through general social convention).

There is more to be said about the meaning of signs in the analytical field than the simplified version rendered here, however. In relation to an anthropology of

learning, we must study how signs *come to matter* for people in practiced places. What is missing from general perspectives on symbols, representations, signs and signifiers is the *learned* collective consciousness anchored in materials. What drives the learning in Bateson's example is not a *system* but the learned emotional responses of the porpoise to materials like flute and fish. Whatever a sign is, it is a process within-phenomena involving the materials as well as the meaningful discourse. Phenomena is (going further than Barad) perceived by learning humans. In line with this thinking, signs can be understood as argued by Vygotsky: 'psychological tools' that work on humans through agential cuts. As signs, materials may not need to be perceived as lexical *words*. Meaningful materials do not simply constitute *information* but motives, emotions and cultural resources to be used in local cultural contexts.

When the expected implicit rules of how to act with artefacts are challenged – as when a scarf is worn in the wrong place, or in some Muslim countries, no scarfs is worn at all – it makes a difference for the participants. They have learned that it makes a difference when artefacts are in the wrong places. By breaking implicit rules we challenge multifarious cultural self-evident notions of what we have learned to take for granted. The ethnographer must constantly be alert in detecting new unexpected cultural markers. This is an important part of the learning process that underlies ethnographers' cultural analysis. Though some self-evident expectations are immediately observable for the newcomer, most are of a more subtle and hidden character. When Giuseppe wears a scarf at the parade, it no longer simply signifies protection against the cold; it can be interpreted as an act of provocation. From our tour guide and tutor at the physics institute, I have learned that if I, or someone else, bring a cup into the auditorium, I engage in a deliberately provocative act.

I also learn that there are differences in how the other students at the Niels Bohr Institute now align the cultural markers of authorized or not allowable connections that have been more or less explicitly designated. There are clusters of cultural models for *good behaviour*; short dresses are, for instance, acceptable for women to wear on festive occasions, but just like cups, short dresses are not welcome in the auditorium. I also learn that it is okay to giggle during breaks, but not during lectures. Vianna, one of my female classmates, repeatedly does not adhere to the social designations, and as a result we learn to read her body signs, which also include short dresses, as cultural artefacts that do not belong in physics education.

As I learn, I begin to act accordingly. And in the process I become a slightly different person because my intra-actions transform not just me, but the world in which I act. '[T]he dialectic of internalisation and externalization that makes up the process of learning results in qualitative changes in people's relationships with their worlds' (Edwards 2010: 82).

Moving between fields puts a special demand on the researcher's cultural literacy. If the researcher is to make a responsible analysis of the collective culture, it is not enough to bow to demands from either the empirical or the analytical field. The researcher may take the management or a few selected employees' interpretation of what is connected with the bronze stars as a starting point, but as researcher

participant, or participant researcher, it will be necessary to move around in the practised place to get a wider perspective on the perceptions of bronze stars in the organization. For some employees the bronze star might be interpreted as a sign of a selective and unjust management. From this point of view, the stars are not given to the *best* employees, but to those who befriend the boss or are compliant. In this culture, the latter points of views will not be explicitly enunciated because everyone pretends to accept the officially enunciated culture. The result is silence, and the analysis may thus identify a culture of *hypocrisy* with reference the practised place where everyone hides their feeling and does not dare to speak up against the boss.

The management tries to create a cultural model for *the good employee*, who they define as those that can be linked with the bronze stars. This model, however, is not shared collectively, although all collectively know about the star and its intended meaning. Consequently, it does not achieve what Holland calls ‘salience’ (Holland 1992: 79) and thus it has no directive force for all.

5.7 Practice-Based Learning

Social designation can be but is not always collectively shared by a group of people sharing a geometrical (physical and virtual) space. A practised place is however also connected with practice-based learning, which align people in a different way. Apart from learning about attention fields through socially designated cultural markers, we also learn agential knowing by doing and practicing skills. The two kinds of learning are connected but not the same, though they often overlap. An ethnographer can learn through social designation just by observing others and their reactions. Yet, the ethnographer can also learn by doing – without having to rely on reactions from others. Practice-based learning is a well-established analytical field within ethnographic studies of work and organizations (Hasse 2014). It has developed from the work of John Dewey (*learning by doing*, e.g. Dewey and Dewey 1915), the ensuing theory of experiential learning or *experienced-based learning* (e.g. Wolfe and Byrne 1975) and a Vygotskian approach to peer learning without formal instruction. The field has many connections to Jean Lave’s work on *situated learning* and Engeström’s version of *activity theory*. As already noted I see learning as the base for experience and thus prefer *learning by doing* to *experiencing by doing*.

Stephen Billett has made an effort to define practice-based learning as the learning that is inseparable from practice. There is no separation between doing, learning and remaking practice. Even in virtual environments, when professionals practice their skills in simulators, learning and practice are tied together because practice is defined as ‘that which occurs through the usual or everyday exercise of the occupation’ (Billett 2010: 18). In this definition practice is something that is ‘enacted through access to and exercise of forms of conceptual, procedural, and dispositional knowledge that underpin competent practice’ and learning through practice is ‘a process that arises through the exercise of the occupational practice,

and there is no distinction between engaging in practice and learning' (ibid.: 2). Because learning in practice is recognized as ubiquitous, in the work of Jean Lave and Etienne Wenger (1991), learning and practice are inseparable. From this perspective, we still need to develop an account of how learning emerges through practices from the newcomer's perspective.

In order to understand what an anthropology of learning has to offer the analytical field of practice-based learning, I will continue my exploration of the use of the Vygotskian framework in relation to defining practices. Practice has always been an important concept in cultural–historical activity theory. It has never meant just *what people do*. What people do in practice is embedded in a much deeper understanding of practices as cultural and historical and driven by object–motives, which are themselves ever-changing. This framework has focused on agency and how people, through their own agency, can always find ways to change their seemingly hopeless situation (Edwards 2010). Different researchers focus on different aspects of practice. Following de Certeau, the movements of people and things in geometrical space transform the physical areas we occupy and engage with into bodily *practiced places*. Inspired by Bateson, we can say that we learn how cultural markers make us not only recognize a frame of learning but they also make us active creators of cultural resources important for a practice (which may change the frame of learning eventually). Following Anne Edwards, this process involves alignment of motives. These perspectives are aligned in a process of social designation, but they are often combined with a person's practice-based learning.

In order to understand what is meant by practice-based learning, let us first address what is meant by practice, since the concept of learning has already been discussed extensively. Apart from *culture*, the concept of *practice* is one of the most contested in the analytical field. Between different analytical fields we find huge diversity in how the concept is defined. Sometimes it is referred to as an embodied *doing* – i.e. practicing a craft. In other aspects it is a more abstract concept referring to institutional practices. Between these two poles we find as many different ways of conceiving practice as of culture. Following the discussion of the newcomer's learning process, practice cannot be reduced to neither institutional practices, which infer knowing the traditional ways of institutional practices (Hedegaard 2009), nor an embodied *doing* isolated in time and place. In Certeau's theories, practice is connected to a practiced place as *movements* or *vectors*, as already discussed (see e.g. Chap. 1). This discussion is connected with the master of practice theory, Pierre Bourdieu, who combined the *embodied practices* of, e.g. the Berber people's way of building houses with notions of 'habitus' (i.e. systems of durable, transposable dispositions) and 'structure' (i.e. the consequences of human practices) (Bourdieu 1990). The practice of decorating Berber houses in certain ways has, for instance, been maintained over generations (the men plaster the walls with a trowel from the outside and from the inside the walls are painted white and hand-decorated by the women (Bourdieu 1970: 152). Why do the Berbers keep up this tradition? According to Bourdieu, it is not a state of mind nor is it adherence to a rule or a set of doctrines. It is a common sense state of the body tied to agential knowing.

Practical sense, social necessity turned into nature, converted into motor schemes and body automatism, is what causes practices, in an through what makes them obscure to the eyes of their producers, to be *sensible*, that is, informed by a common sense. It is because agents never know completely what they are doing that what they do has more sense than they know. (Bourdieu 1990: 69)

This definition of practice opens up for an understanding of how newcomers may perceive (with all senses and not just visually) practices that are habitually played out in the empirical field. This is how Bourdieu himself comes to see the inner and outer walls of houses as deeply entrenched and inseparable from all aspects of Berber life. The inner rooms belong to the women, the outer practiced places to the men. Both groups uphold the cultural practices through bodily dispositions. Together the bodily dispositions and structures form a frame of learning forming expectations of how a Berber woman or man ought to move about in practiced place.

The notion of practice in cultural–historical activity theory (CHAT) hinges on internally different notions of practice, but in relation to Bourdieu, there is more emphasis on human creativity and processes of internalization as well as externalization. One understanding of practice in CHAT is practice in relation to activity systems, as found in Yrjö Engeström’s work, and another is the institutional practices proposed by Mariane Hedegaard (2009), Seth Chaiklin (2009) and Anne Edwards (2010). Since all draw on the same basic theories and often publish together (e.g. Chaiklin et al. 1999; Lave and Chaiklin 1993; Daniels et al. 2007), these differences become disagreements within an analytical field.²

Hedegaard and Chaiklin suggest that we distinguish the concept of an activity from the concept of practice (Hedegaard and Chaiklin 2005; Chaiklin 2009) in order to emphasize that activities are organized in relation to an institutional practice based on traditions (Hedegaard 2008, 2012). Practice is reserved for analyses of the institutional perspective, while activity is reserved for the analysis of a person perspective (Hedegaard 2008: 16). Edwards adopts this perspective on practice as institutionalized and activities as a person’s perspective rather than taking a system approach (Edwards 2010). Contrary to Engeström’s notion of activity as a system of a collectively shared activity, Hedegaard and Edwards have been in need of a theoretical approach acknowledging individuals moving between institutional practices.

Hedegaard’s theoretical framework is a kind of nested framework of a society providing the conditions for institutions like *families* and *schools* to be upheld. The ‘practiced traditions’ (Fleer and Hedegaard 2010) in schools differ from those of

² Though other anthropologists have been very influential in the field (notably Jean Lave, Dorothy Holland, Ed Hutchins and Ray McDermott), few (if any) in the analytical field of cultural–historical activity theory have attempted a connection between Vygotsky’s basic framework and analytical fields like postphenomenology or material feminism, which I have tried out over the years (e.g. Hasse and Hojer 2008; Hasse 2008). As argued throughout this book, I believe that this kind of diffracted reading across analytical fields brings us closer to an understanding of human practice in the empirical field.

families, but both schools and families are institutions building on traditions. What concerns Hedegaard and Flear are above all persons' actions and activities and developments within and across the traditional cultural practices in institutions which are tied to societal condition.

People learn when their activities change their social relations in a practice and thereby give them possibilities for new activities. Development occurs when a person's learning takes place across institutional practices and changes the person's relation qualitatively across all the practices in which the person participates. (Hedegaard 2012: 12)

Taking her point of departure in Vygotsky's concept of the 'social situation' and the crisis children experience, when they enter school (Vygotsky 1998: 22), Hedegaard adds to the Vygotskian framework and suggests that when newcomers enter a 'new institutional context, where expectations and practices are unfamiliar, children experience demands which can result in a crisis in their social situation' (Flear and Hedegaard 2010: 152).

In the Finnish organizational psychologist Yrjö Engeström's version of the CHAT approach, developed with his crew at Helsinki University, practice is also separated from activity as analytical concepts. Yet, practice is tied to activity as a long-term collective, object-oriented conglomeration of short term actions and bodily operations directed by collective motives. Actions embedded in the activity system are directed by goals that again are directed by overall collective motives. Bodily operations are mostly unreflected body movements carrying out the actions, which move activities forward (Engeström 1987). These analytical levels refer to different levels of analysing 'continuously proceeding transformations' (Leont'ev 1978: 67). Practice is defined as a recurrent pattern formed by strings of actions (Kerosuo 2006).

Edwards' work opts for the relational turn (2010, 2012) when people from established institutional practices meet to work on a shared problem space across institutions and the need for relational agency arises.

My own work builds on, but also combines, many aspects of these perspectives in the analytical field. Both Hedegaard and Edwards (2010), and before them the anthropologist Ray McDermott, operate with persons who move between institutional frameworks and experience arising frictions (McDermott 1993). What I add to their work is the acknowledgement that this also goes for researchers, when they move not only between universities and the empirical fields but also between practices in the analytical field and the practices of the empirical field. I furthermore underline the importance of positioned (placed and socially situated bodies) in research and the importance of aligning *relata* (in CHAT-lingo: artefacts) with ethnographic subjects.

This perspective underlines the importance of persons moving into new practiced places where people move familiarly around in physical environments. The experienced participants, who are engaged in activity settings in the organizations, are already formed by social designations, which are constantly changed or maintained through encounters that cause frictions if expectations are not met. Frictions do emerge in a system – as in Engeström's approach – but in much

more messy processes than envisioned by Engeström. However, I would like to tightly tie both Engeström and Edwards' perspective of aligned *collective* motives and actions to the newcomer's learning process in already established cultural dust bunnies.

In an anthropology of learning, all practitioners become learners when they engage in a new learning context and begin to move between institutional practices (like a child's first day at kindergarten or school). This implies learning new cultural markers. An institutional practice, understood as a practiced place, is only in certain instances tied to a material institution with walls around it and fixed traditions. In a globalized world, we must assume people move in and out of practiced places to a greater extent than previously, and former theories (like Bourdieu's) that assume that dispositions may develop over generations break down and leave behind a theoretical gap also in CHAT-theorizing.

5.8 Emotional Frictions

In a nonsystemic but relational perspective, frictions arise when *collective expectations* are not met in activity settings. No matter how institutionalized, traditions must constantly be practiced to be upheld and that can cause frictions, just as we saw with the two competing *Mamuthones* groups in Mamoiada.

Whatever we define as established *traditions* in institutions framed by societal laws and regulations and upheld by sedimented cultural models, frames of learning can be seen as the *foundation* of expectancies for frictions in activities in cultural organizations. In cultural organizations people may become engaged with each other and learn to share word meaning and material artefacts for many reasons. Newcomers need to find ways of aligning themselves to the practices of others; to learn to understand their emotions and motives. And professional newcomers, like ethnographers, need to develop relational agency to be able to find and connect different kinds of expertise and motives within the same practiced place.

Whether practices refer to already established traditions or to strings of actions or embodied *habitus*, we need a deeper understanding of the learning processes behind these dynamics.

From the point of view of the *newcomer's* practiced-based learning, it is clear that we most probably move between practices as we move in physical space, but practices cannot be delineated by physical space.

From the perspective of the ethnographer, moving between institutional practices can be challenging because it may confront the newcomer with new ways of understanding activities and their associated motives. In this sense, practice-based learning implies that a move between institutional practices is upsetting and troubling.

However, following the process of the newcomer *within* an institution also makes us aware of the *collective* aspects of learning. Though cultural markers may be socially designated for some and not all participants in a geometrically

shared space, some aspects of the geometrical space may become collectively meaningful for *all* participants. Engeström and his colleagues take an interventionist approach to learning in practical activity coined by the phrase ‘expansive learning’ (Engeström 1987). Using his version of CHAT as a framework for analysing and redesigning work (Engeström 2000), Engeström also takes his point of departure in Vygotsky’s theory of mediation and practical activity (as the basic principles of cultural–historical activity theory, Cole 1996: 117–118), but he develops a larger and more systemic version of practical activity.

His framework is, like most in the Vygotskian tradition, aimed at transcending the dichotomies of micro and macro, mental and material. In interventions, the new theory is used to redesign work (Engeström 2000). Following Leont’ev in his wider discussions of Vygotsky’s work, Leont’ev’s approach distinguishes between different levels of activities: body operations, everyday goal-directed actions and more durable, object-oriented activity systems (1978). These activity systems are collective because they are driven by communal motives that are most often as imperceptible to the participants as Bourdieu’s structures. A system of activity consists of the *original* mediating triangle introduced by Cole (following Vygotsky). Engeström enlarges the system with the following elements: ‘rules’, ‘community’ and ‘divisions of labour’ (Engeström 1987: 78). Systemic ‘contradictions’ (a concept partly developed by use of Bateson’s notion of double bind and frustrations) emerge between these elements.

Instead of viewing these contradictions (or we could call them frictions) as problematic, Engeström sees them as potential possibilities for expansive learning – in line with Bateson’s theory of how to solve a double bind situation. The activity system is driven ahead in its activities by a collectively shared communal motive.

The motive is embedded in the object of the activity. The object and motive give actions their ultimate continuity, coherence and meaning, even when the ostensible object of many actions [...] does not coincide with the object of the overall activity. (Engeström 2000: 964)

The notion of an activity system does not take the newcomer’s position into account. Everything begins with already established practices.

The situation of the newcomer’s practice-based learning is easier related to Anne Edwards’ discussion of how practitioners across established and institutional practices struggle to create new meaning together.

Though emotion lies at the core of a cultural–historical understanding of practices, the perspectives outlined above have not thoroughly dealt with how practices, in this framework of analysis, are not just historically accumulated and knowledge-laden but also ‘emotionally freighted’ (Edwards 2012: 23, 2010: 110). Anne Edwards explicitly unfolds this perspective in her book on professional expertise (2010). Though she follows Engeström a good deal of the way and acknowledges his ground-breaking contribution to the Vygotskian framework, her own experiences as a researcher in the analytical field nevertheless make her leave the notion of an activity as a closed system. In her own work and together with her colleague Harry Daniels (Edwards and Daniels 2012), she has taken up the question of what

matters to professionals when they work together to help children with special needs across, what she first took to be, different activity systems and later identified as different professional institutional practices. By following the individual child's trajectory and the professionals' meetings in inter-professional negotiations, she noted that first the child in need of help was 'interpreted in ways which are mediated by the concepts that matter for each profession, with the result that the social worker may focus on safety while the psychologist on mental stability' (Edwards 2012: 26). But after a while

... we observed efforts at alignment that grew out of growing understandings of what mattered for each profession. Interpretations of problems and alignments of practices were mediated by common knowledge which was made up of what mattered for each collaborating professional (Edwards 2012: 26).

In working with others the practitioners must both exercise their core expertise (e.g. as social worker or psychologist) and demonstrate relational expertise. In such inter-professional collaborations, it makes no sense to talk of common knowledge as embedded in an established system of activity. All present practitioners are newcomers and work together on the child's problems from each of their point of view. Because they are all relationally engaged in the same *problem space*, i.e. they have a common object of attention, a new type of common knowledge gradually evolves across fields of expertise, as the participants exercise what Edwards calls 'relational agency' (Edwards 2005, 2009, 2010). Relational agency is a capacity that can (but not necessarily will):

... emerge in a two stage process within a constant dynamic as people engage together in activities. It involves: (i) working with others to expand the object of activity so that its complexity is revealed, by recognising the motives and the resources that others bring to bear as they too interpret it; (ii) aligning one's own responses to the newly enhanced interpretations, with the responses being made by the other professionals as they act on the expanded object. (Edwards 2012: 26)

This process of alignment is best understood through Hedegaard's notion of institutional 'activity settings' being, e.g. a kindergarten or a school. When taking the perspective of the institution, we may refer to these settings as embedded in traditional institutional practices and when referring to settings from the person's perspective as processes of activities (Hedegaard 2008: 16). Practitioners from different institutions come together across institutional practices that are shaped by historically accumulated object-motives. When people come together across areas of expertise and institutional practices, they must develop what Edwards, with reference to Karin Knorr-Cetina's term 'engrossment' (Cetina 2001: 275), defines as a relational expertise that 'involves recognising what engrosses others, taking their standpoint and mutually aligning motives so that engagement continues' (Edwards 2012: 25). In other words, institutional practices evolve within institutions like *families* and *schools* or *physics science* that are shaped by accumulated historical object-motives. The main thing, which distinguishes one activity from another, is the difference of their objects, according to Leont'ev (1978: 62). People engage in activities within the institutional practices framed by societies. Activities

can be of many kinds within the same institutional practice, but Edwards gives us an important addition that brings the framework back to Vygotsky's original notion of word meaning: whatever activity we engage in, it must be *meaningful* from our perspective. It involves emotions and motives entangled with what we do.

In my discussion, practice is connected to learning word meanings tied to material artefacts for the newcoming practitioner and researcher. Learning how the physical position of the researcher is connected with meaning for the other local participants is not only a prerequisite for learning processes, it is also part of the researcher's analysis. Agential knowing presupposes a cultural literacy, which includes not only having learned new agential cuts forming connections between physical artefacts and their meaning but also how this mediation conveys more or less public meanings that affect participants.

We may expect certain institutional practices to be *traditions*. The object of the institution of school is a tradition for educating pupils regulated by a society. Like in Benedict Anderson's 'imagined communities' (Anderson 2006), these practices may be a kind of 'imagined traditions' in so far they can never in a totality be experienced in face-to-face interactions (ibid.: 6). But is that really what drives the school institutions? The closer we move to the physically shared spaces of institutions, the more the practiced place is allowed to emerge as confusing in our agential cuts. The overall object motive of 'educating pupils' become blurred as cultural markers emerge, which may privilege getting pupils through exams rather than educating them. A traditional practice can never be taken for granted, even when it is defined as institutionalized traditions. Tradition may in anthropology be defined as broad as a *traditum* meaning 'anything which is transmitted or handed down from the past to the present' (Shils 2006: 12) or as cultural patterns in the sense of being 'historically derived and selected' (Kroeber and Kluckhohns 1952: 181). Nevertheless, we still have to account for the processes through which traditions become so salient and/or so self-evident for people that they are upheld. Keeping up traditions takes an effort, as the example with the Mamuthones has shown. It requires us to care about how things are done, not just personally but as a collective consciousness. Participants' 'activity is never direct, but is always mediated by "what matters"' (Edwards 2010: 67).

Thus, engaging in activities is both an emotional and sometimes collectively shared experience with cultural markers. In my meeting with the social designation of physical and social space at the physics institute, my basis for reflection and thinking was not a passive reception of new information about the cultural artefacts (the people, tables or words) in the landscape. As I moved along, I also learned something about physics, and a new materialized *mindscapes* of cultural markers took form. Following classes and solving exercises began to have an effect on me, and as a basic transformation, I began to view the world in a physical way. Yet, my learning was not confined to thinking with the new connections between material objects and their meanings. The new way of thinking did not confine itself to the brick walls of the physics institute nor to stand-alone artefacts or their stand-alone, complex word meaning. *I* as a person changed. When I rode my bicycle to and from the institute, I began to feel and think about *friction*.

Anna Tsing (2005) discusses frictions as a metaphor for the differences and controversies in global political and economic connections. In my use of the metaphor, I also include the alignment taking place when the engagement in practiced places literally changed my being-in-the-world. I became embedded, gradually and, as all others, partially in the meshwork of a collective consciousness, where I began to perceive the material world as a physics student. Whatever I did, I began to think about the forces of physics being with me. I began to think with abstract physics concepts; the Coriolis effect moving my body on the bicycle, which I had never known about before. The force that deflects winds took on a reality, and I wondered how it would affect my movements.

My notes changed and so did my engagements. I gradually built up a whole new foundation of reflection. I even seriously began to consider studying physics, though I knew it would be too hard. Just like so many ethnographers, who, before me, have *gone native* – a term often poorly defined in the anthropological literature. It has been described in many places and stands out as the other end of the spectrum from the *radical other*. As so beautifully described by the American anthropologist Hortense Powdermaker, a student of Malinowski at London School of Economics, who made fieldwork in New Ireland in Melanesia, *going native* implies that you become emotionally part of what you study. She describes how she, to dispel loneliness, for a while participated in practicing a dance with the local women. All of a sudden she realizes that the dance is to take place at full moon and that she is expected to participate. She becomes very nervous and aware of the awkwardness of the situation and she imagines various remarks from her family back in America. ‘Hortense, dancing with savages!’ Then the miracle happens, she writes. Inside the circle of dancing, Hortense senses a transformation taking place: ‘I ceased to be an anthropologist from a modern society. I danced. When it was over I realized that, for this short period, I had been emotionally part of a rite. Then out came my notebook’ (Powdermaker 1966: 112). She remains the radical other, but she learned from participating in practices.

Powdermaker and I are typical single ethnographers who are positioned in other people’s practiced place. We do not claim to do ‘collaborative ethnography’ or use new experimental methods (Marcus 2007). Being there, we cannot help gradually becoming engaged in what is no longer just *other* peoples’ life (what Geertz calls ‘his’ culture (Geertz 1973: 15)) studied with a detached look; it becomes real participation with engagement in the same local practices that concern the other participants.

This is an exposed position. Powdermaker expects her family to condemn her *dancing with savages*, but at the same time she is engaged in an activity in which she hopes to do well. When we enmesh ourselves in new practices, we are exposed to other people’s judgments while judging ourselves. We are caught in tensions between creativity, moral purpose and expectations – that of others and our own. Edwards discusses how professionals ‘exercise agency as they work with others; and that is at the heart of the alignment work’ (2012: 26). Though Edwards here speaks of leaders of complex organizations, such as children’s services, I believe the notion of *alignment* is adequate for describing the ethnographer’s practice-

based and socially designed learning in the empirical field. We learn with all our senses as embodied beings engaging in activities in a practiced place, which gradually becomes a collective consciousness directing our fields of attention to what matters for the other participants.

5.9 Agential Knowing

There is a difference between learning collective culture markers through an embodied knowledge tied to doings and learning information as lexical knowledge, which is assumed to be static and transferrable. Instead of speaking of knowledge in the analytical field, we can speak of *knowing*, which refers to knowledge as situated and connected with local acts. Silvia Gherardi contends that practice-based learning in organizations is associated with situational knowledge in organizations. In organization studies, knowledge is often perceived in either a mentalistic manner, dualistic perspective (mind–body, individual–organization) or a functionalist perspective as a product and production of knowledge related to management decisions. Both of these positions are rejected by Gherardi and should be replaced with knowledge as practice-based learning (Gherardi 2000: 212–213).

Practice-based learning is learning an agential knowing. In a practice-based perspective, learning is perceived as interwoven with the actual work and the innovative processes in a local, cultural practice (Gherardi and Nicolini 2001). For the newcomer learning is an integral and inseparable part of the local practices that include the making of identities and situational knowledge (Lave and Wenger 1991).

In a practice-based learning perspective, knowledge of cultural markers is neither a substance, an object or positioned in the minds of the individual. Knowledge does not exist separately from subjects, but is embedded in materials, situations and institutional practices. It is also an embodied process. As an example Gherardi mentions a carpenter hammering a nail into a piece of wood (possibly inspired by the phenomenology of Heidegger). In this practical activity the hammer is not perceived as an object with special properties. The carpenter does not think *hammer* and its properties, when he uses it to knock the nail in the wood. The hammer takes part in the carpenter’s environment in the same way as his arm makes use of it. His application of the hammer is a situational practice embedded in a context that renders *hammering* and *lumber business* meaningful. Gherardi calls this action pre-reflexive. Once we have learned to master instruments like a hammer, we simply do not notice them. We become conscious of them when they do not work; in such cases we have to call forth our reflexive knowledge (Gherardi 2000: 214).

Wanda Orlikowski prefer ‘knowing’ to ‘knowledge’ precisely because knowing is emerging ‘from the ongoing and situated actions of organizational members as they engage the world’ and ‘knowing in practice’ ‘highlights the essential role of

human action in knowing how to get things done in complex organizational work' (Orlikowski 2002: 249).

If the researcher is to say something about other people's agential knowing, the knowing of the researcher must include local agential knowing. In the case of cultural analysis, agency is tied to cultural markers and the researcher thus has to learn to read cultural markers as any other newcoming participant.

We may know the lexical meanings of artefacts, but what matters is that we know from our everyday experience how the material artefacts attain practical importance in an organization of human practices. Do we stack skimmed milk with chocolate milk in assembly work? Should the Pro Loco masks have curved or flat noses? Should calculations be made with a pocket calculator or slide rule? Material artefacts are cultural markers that connect past negotiations and disputes with the emotional struggles and values behind the negotiations and disputes.

We learn to know material objects as we learn about the sensuous nature of the material through our physical, bodily engagements, which incorporate the hardness, softness, warmth, coldness, docility and rebelliousness of the material artefacts as we engage with them. All these physical connections, which are learned through the lived body's intra-actions, help to create our organized agential knowing of the objects.

Sylvia Scribner noted in her study of a US dairy in the 1980s that common and well-known organizations such as dairies form their own little cultural universe of milk products with all sorts of properties. In the storehouse of dairy products, where the products were stacked, they appeared as a palette of colourful containers in all shapes, sizes and with all types of substances (Scribner 1997: 346).

One of the things Scribner learned during her fieldwork was that the many colourful products could be connected in different ways, and the connection between products made a big difference for the stacks.

Scribner uses the example of the quart carton of chocolate milk based on skimmed milk. The skimmed milk can be connected with the category of *milk* and it can be associated with *chocolate*, of which we have an abundance of products from chocolate yogurt to chocolate milk to chocolate chips. They all share tastes and colour with cocoa milk. The quart carton can be also associated with quart cartons of orange juice when it is organized from its size. The mentioned opportunities far from exhaust all the many other possible connections that can be made to an artefact like a quarter of a litre skimmed chocolate milk in a dairy company.

But, Scribner asks, does everyone who knows about cocoa milk have the same access as the dairy employees to recognize the countless connections associated with quart cardboard boxes and fluids, or is that organization of connections associated with different daily practices within and outside the company? Do employees and the general public organize their knowledge of dairy products differently when they have to recall the product properties? Through a test Scribner and her research team analysed the difference in the connections the company's employees and a group of consumers drew between dairy products. How would they connect two lactic products in relation to form, taste quality, size or other properties? They examined differences in the entire group of respondents

(including different kinds of employees) and found the greatest difference between consumers and employees. Contrary to the employees' varied and extensive combinations, consumers were much less varied in their connections. Consumers had an 'impoverished product network' and could, on average, only connect products in relation to three or four properties, while dairy workers, on average, came up with four or eight different ways of connecting the products (Scribner 1985b: 201). Scribner then asks:

What do these findings suggest? Even when we are concerned with a domain of common knowledge in our society, we cannot assume that the richness of such knowledge or the attributes by which it is organized is uniform across population groups. Even within one social sub-system – exemplified here in the dairy, the structuring of a domain of common knowledge takes different forms for groups that are related functionally to that domain in different ways. (Scribner 1985b: 203)

Through daily cultural learning processes, both consumers and dairy workers learn what I call agential knowing when they handle dairy products. This adult workplace learning follows the same basic patterns as learning in general (Scribner 1985a). The consumers and workers all learn about the relationships between dairy products, but the staff's network of agential knowing of connections runs deeper than that of the average consumer and is more complex and extended. It is reasonable to assume that the cultural knowledge of how to act in relation to stacking the products is developed through the daily learning process. As learning becomes deeper, the rooted connections and lines are strengthened into recognizable stable organizations, which create obvious and self-evident understandings, recognitions and expectations.

Artefacts are cultural markers in so far they mediate that certain agencies are possible whereas others will call for reactions. Artefacts mediate differently for a dairy employee than for a customer in a supermarket. Culture is, in this perspective, changed from being something we have learned while we solve problems to something we learn to do when we act in a context where it matters whether skimmed milk is stacked with juices or not.

By doing what other people do and by learning from our bodily engagements, we may not only learn about other cultures, we can also learn as a new and transformed cultural apparatuses emerge. We learn about connections through practice-based learning. 'What you learn is bound up with what you have to do' (Scribner 1985b: 203). Our attention field becomes refined as we learn. Not only can we perceive the physical world before our eyes in more detail, we can also make more detailed inferences from what we perceive. It is these cultural connections that can be analysed as the root background of cultural studies dealing with other aspects than what we normally associate with analyses of culture in organizations: rituals, symbols, narratives, negotiation forms, discourses, identities, material artefacts, basic assumptions, *strong cultures*, etc. Cultural connections are cultural because they are not related to individual (indivisible) learning processes, but refer to (shared) collective learning processes.

In relation to Ardener's concept of semantic density, we can talk about an extended collective form of density where a collective of active people working

together develop similar agential knowing and learn to draw the same connections. Consequently they pay more attention to certain aspects of physical and social place and find more significance in certain physical artefacts, auditory descriptions and meaningful reactions than people would normally do.

Artefacts, whether skimmed milk or technologies like microscopes, do different things, and what we can do with things is limited to *what things can do* (Verbeek 2005). Quarters of milk and juice come in certain shapes and forms that allow for certain ways of stacking. Objects are, however, not stable in their relation between material form and meaning – they become multistable in their meeting with local cultural–historical activities. Following Ihde, we may add to Scribner’s description that all artefacts, like the technologies Ihde refers to, display ambiguous multistable possibilities (Ihde 2002: 106). In postphenomenology, multistability refers to technologies that vary in how their meanings are stabilized when they cross time, space or bodily positions (Rosenberger 2011). Though postphenomenology does not refer to artefacts in general, even the quarters of juice and milk could be said to display multistability when handled by a dairy worker or a general customer. This adds to the phenomenological variation tied to artefacts that are perceived as meaningful. Multistability emerges in the meeting of different kinds of practices in relation to the affordances offered by the design.

Scribner’s example fits with another example provided by Bruno Latour, who discusses how we learn to be affected by perfume (Latour 2004). To have a body is to learn to be affected: ‘[M]eaning ‘effectuated’, moved, put into motion by other entities, humans or non-humans. If you are not engaged in this learning you become insensitive, dumb, you drop dead’ (Latour 2004: 205). The body is thus to be understood as ‘an interface that becomes more and more describable as it learns to be affected by more and more elements’ (Latour 2004: 206).

Using your senses to become ‘more and more describable’ is a question of learning over time. Affection is not just a matter of sharpening your sense of smell or sight. It affects more than our fields of attention. In order for us to be affected, we must involve ourselves in the social engagements shared by other participants and that may involve *invisible* or *secret* knowing, which, opposite learning by doing with non-human artefacts, is about social consequences and expectations. The process through which we learn is tied to the materialized collective consciousness, and it cannot be reduced to learning how to handle materials in isolation from social space.

Although I learned that Pro Loco does not want scarves under the Mamuthones costumes, it takes me a long time before I begin to internalize an emotional commitment to the uniform look. The more I learn in Pro Loco’s practiced space, the more important their cultural model of the mask parade becomes for me, and I begin to identify myself as an *old-school* Pro Loco rather than a Gruppo Beccoï. By consistently limiting my participation to the Mamuthones group and not participating in the Gruppo Beccoï’s meetings, I come to feel more and more attached to the Mamuthones group’s attempt to keep the mask parade in a particular uniform style.

As a researcher I learn from this position that when researchers participate in a way so that we can learn agential knowing, we do not learn in propositional terms

(propositional knowledge). We learn the agential knowing connected with the opportunities and emotional concerns over restrictions, and as for the other participants, this learning stems from a growing commitment. As researchers we become participants because we ‘not only know but care’ (Strauss and Quinn 1994: 285).

I did not choose to have feelings for mask parades when I planned my research. Engaged learning in organizational cultures may be an epiphenomenon in connection with the daily activities – even for a participating researcher. It is when we begin to feel the consequences of our engagements in the form of reactions to our presences that we begin to align, not just out of good will or because we refine and sharpen our senses, but of social necessity.

5.10 Learning Consequence

Let us return to the village of the Mamuthones to scratch the surface of a social process that gradually generates a deeper knowledge of how learning processes not only give new meanings to words but also to the materialities in our surroundings – i.e. anchor the collective consciousness.

Already at my first visit to the city, I noticed a house in one of the village piazzas. It was quite dilapidated. The upper floor of the house appeared with raw beams and unfinished masonry, and it seemed in a poor condition. I interpreted it immediately as an expression of the poverty of the village. The house owners had probably not been able to afford to finish building the house and now it was dilapidating.

Over time my learning process opened up a wide range of new attention fields, a series of potentially perceptual fields that successively formed a dynamic perception of what was before my eyes and became a new time field of perception (Vygotsky 1978: 36). I began to expect certain reactions from others, and I began to think about these reactions as either cultural resources or something to be avoided in order to escape the moral judgments of the villagers. I knew by now that if I wanted to go for a walk outside the confines of the village, they would consider it dangerous because single women should not walk alone outside villages. If I went out after all, I was prepared for the reactions – and when I got them they confirmed my understanding of the cultural connections we had learned to share (whether I agreed or not in confining women to the village). I began to interpret the physical space as the villagers did; I practiced the place.

The learning process was assisted by social designation and reactions, and new hitherto invisible meanings with actions began to make sense to me as I was transformed by learning (Hasse 2002a: 251). I did not only become able to interpret differences between eye contractions and conspiracy (what in standard anthropology goes by the name of ‘thick description’ (Geertz 1973: 6)), but I developed a practiced eye in order to survive in a physical and social space imbued with invisible, but real, forces that threatened to cross my paths or even eliminate my presence in the village.

If we return to the house on the piazza in the village, the house was designated a new meaning to me and it made me learn, not from a verbal statement, but physical action. I stayed with a local family and I often went with my landlady to the grocery store or bakery a few streets down from where we lived. I began to wonder about my hostess' reaction when we were to cross the piazza. Instead of choosing the shortest path to the bakery, she walked around the square, so we walked on the pavement on the opposite side of the piazza with the dilapidated house. Her reaction to my questions about the house made me wonder even more. Her answers were not about poverty; they were dilatory and hesitant but revolved somehow around something about a general tax-evasion law.

An area of attention gradually appeared through other social designations, which showed me a new connection in the physical space. I gradually learned that the city was plagued by a vendetta between two families. One evening, when I passed the house with a friend who happened to live in a house on the same piazza, I told him about my landlady's behaviour and asked him to explain what was so mysterious about the house – and why she would not walk on the pavement in front of it. I finally got the story of the collapsed house.

One day, he told me, as he stood in his kitchen from where he could see the entire piazza, the house suddenly blew up in retaliation for another showdown between two families. The residents were away, but sofas and tables flew through the air. It happened approx. 2 months before I arrived in the village. The house that I had previously so effortlessly passed when I walked alone now became a material manifestation of a latent threat to my stay in the village, the vendetta. I never really feared for my own life, but the house made me uneasy. Now, when I walked by myself I too chose the opposite pavement when I was going to cross the square. I was no bystander but implicated in the practiced place of the village. From being an implicit comparison of how I would have crossed the geometrical space between the baker and our house, the materiality of the village became a practiced place through social designations and emotive frictions emerging within this frame of negotiations.

Cultural analysis is not created through what we, with a reference to Dewey's pragmatics, might call a *spectator approach* in the empirical field. Dewey has criticized his philosophical colleagues for what he calls 'a spectator theory of knowledge' – i.e. a spectator approach to knowledge. Dewey argues there is no neutral spectator position from which we can become knowledgeable. In a showdown with non-pragmatic philosophy, Dewey notes that the former dualism between body and soul seems superseded by a new dualism between body and brain (Dewey 1997: 208). Philosophers think they can imagine other people's world without engaging in it. Dewey argues against this detached *spectator standpoint*, and his view can be connected to the situated position later proposed by Haraway and postphenomenology. When we learn about the world, we learn not just from activating our physiological system but also from a continuous and concentrated involvement in our world with our engaged bodies. Dewey's notion of engagement underlines that any prior action paves the way for the next and that acts do have significant consequences (Dewey 1916: 124–125).

From Dewey's perspective, it does influence the culture analysis whether a researcher's attention field is directed towards and engaged in the same cultural markers that engage the other people in the empirical field or is primarily focused on the markers that occupy the colleagues in the analytical field. Dewey emphasizes that we internalize the socially based moral ideals when we interact with our surroundings. We achieve membership in a social group by learning that group's shared understanding (Dewey 1916: 30). That is not to say that the social designation of the world has the same meaning for us all, but when knowledge of the social world becomes important to us, we learn to look at ourselves in certain ways and are thus motivated to act accordingly.

We can to some extent come to share moral understandings of the world through learning from social designation, reactions and practice based. Without culturally embodied knowledge, what is good or bad comes to have no motivational force for us. The more we engage ourselves in the practiced place, the more morally engaged we become – without recognizing how the moral values of others come to matter for us. We begin to be able to judge the statements of others from our own learning experiences, which is an important step both in making and analysing field interviews, not least because what people say and identify as essential should not always be taken at face value (Strauss 1997: 241).

When we reach a position where practice-based learning is possible, we learn to see the world in new moral ways; we create new attention fields which may challenge and change the analytical field.

To be morally engaged means to be concerned with the outcome of actions. Dewey presents us with a simple example: felling a tree with an axe. If it was a real activity linked to an organizational everyday life and the researcher participant was present as an observer, the difference between the spectator and the man cutting down the tree is, according to Dewey, that the spectator does not care about the outcome of tree-cutting activity while the participant is engaged in the act because the outcome makes a difference to him. The participant wants to act so as to ensure the best outcome and avoid unpleasant consequences (Dewey 1997: 124–125). If the spectator's observation is to lead to pragmatic validity of the analysis, the researcher may go further than just being engaged in the observation.

We have to put ourselves in the other's place. In methodological terms this means an awareness of people's own explanations and conscious intentions, and to direct the researchers' attention to what engages the other participants, we must learn to share the attention field with our ethnographic subjects by aligning our learned connections. In this sense 'the anthropological mode of knowing' becomes a generalization 'from our own experience in the field, not from some abstract ideas that are then backed by evidence' (Hastrup 2004: 464).

In this case, research takes place on the participants' terms (in the empirical field) rather than for the sake of research colleagues (in the analytical field) (Hasse 2002b: 27). What occupies us as researchers is not only the results of the research but also the concerns that engage the other participants in the everyday life of the organization.

When a young midwife apprentice in the Yucatan Peninsula learns how to apply certain herbs and use knives from her more experienced counterparts, she does so, argues the researcher, because the acts make a difference to future children and maternal survival (Jordan 1989). An active and experienced participant engaging in that world of midwives is in a practice-based learning perspective ‘... a mode of participation, valuable in the degree in which it is effective’ (Dewey 1997: 210). Something is *effective* because it is *affective*. It will affect us, if the efficiency fails. We do not learn as passive vessels that are gradually filled with proportional and general knowledge. We learn through participation, and it is through participation that knowledge becomes situated knowledge with implications for our situated practice. We learn in practice how physical objects intra-act with our skin and alert our senses. Through the use of our entire body, we learn what we can expect as consequences of our experimental dealings with the material artefacts: ‘To learn from experience is to make a backward and forward connection between what we do to things and what we enjoy or suffer from things in consequence’ (Dewey 1916: 140).

Differences in cultural practice-based learning perspectives not only make a difference when we learn in practice, but they also make a difference for somebody. Differences make a difference (Bateson 1972: 276) because the cultural learning process has created new meaning for someone or something. When we create networks of connected materials and meanings in dust bunnies, our networks accumulate the differences that matter to us because the connections have consequences. Networks are *nested* in personal engagements before they extend into globally practiced places.

For the man who wants to build a house, it is important to cut down the tree because the outcome of that process means something to the man. It makes a difference for him. When we participate in collective activities, we learn that our actions make a difference, not only for us but for the collective community. Thus, it matters whether we learn to connect to the same differences as the other participants do, and newcomers must learn the experienced ways of creating differences. The learning process is deeply complex and we are not aware of its consequences. For the participant researcher learning may have the same deep implications as for the other participants.

I became aware of all the many new ways of creating connections that I had learned when I analysed the physics student’s whereabouts at the Niels Bohr Institute. Many times I discovered new significant, amazing and confusing ways to create differences. In the meeting with the empirical field, I had ample opportunities to learn that specific material artefacts had a very particular (sometimes even symbolic) meaning, as in the example with the *boss’ chair*. At the Niels Bohr Institute, I learned as a participant in the student’s everyday life that physics students attribute meaning to inanimate objects like chairs in the canteen. I learned that it made a difference whether a physicist sat down, in the sea of apparently similar chairs, on the right or the wrong side of the invisible area between the physics student space and the mathematics student space.

This situated knowledge also affected my own actions because I tried my best, along with the other physics students, to sit on the right side of the practiced space; I had internalized the social space as a meaningful practiced place.

Researchers who participate in the empirical field may, as any other newly arrived, experience organizational life as unmanageable, and in Joanne Martin's words, it can be described as follows:

As individuals come into contact with organizations, they come into contact with dress norms, stories people tell about what goes on, the organization's formal rules and procedures, its informal codes of behaviour, rituals, tasks, pay systems, jargon and jokes only understood by insiders, and so on. These elements are some of the manifestations of organizational culture. When cultural members interpret the meanings of these manifestations, their perceptions, memories, beliefs, experiences, and values will vary, so interpretations will differ – even of the same phenomenon. The patterns or configurations of these interpretations, and the ways they are enacted, constitute culture. (Martin 1992: 3)

The researcher and the other newcomers in the organization are met with manifestations which include websites, rituals, stories, humour and payroll systems. Whether the manifestations refer to abstract or concrete evidence, they always manifest themselves as physical artefacts to the researcher and the other participants. When the researcher notes words that have been said (e.g. jokes told in the lunch room) and refers to acts (like certain Christmas rituals of chain dancing through the company's board room) or payroll systems and management regulations (in books or on websites), these are all manifestations rooted in physicality. Researchers and newcomers can acquire immediate access to hear, see and feel the organization physically, but they should not take what the artefacts tell us at face value. As newcomers we cannot take the relation between materiality and meaning for granted. It must be learned over time, and it requires some degree of presence.

The cultural markers and the meanings of certain chairs and actions among the other chairs seemed initially ambiguous and fragmented for a newcomer like myself, but I could not help learning the collective meanings because it was important for me to participate. Knowledge of cultural connections was not just created in the meeting between me, what I saw and my notebook but also in the practical actions that led to my position as *physics student*.

I could learn to see and note the different meanings the physics students ascribed to various garments and thereby differentiated the group of students according to the clothes worn.

For some it was important to show that they were not nerds and flashed a new leather jacket or, for the men, had ponytails. This group differentiated itself as a subgroup of the many that went around in neutral clothing like jeans and T-shirts. Over time, I could note that the subgroup was changing and becoming more like the main group as they responded to local and subtle frictions; after 3 months the men, for instance, had aligned with the cultural expectancies and cut off their ponytails. It was not only the newly arrived students who felt the force of the cultural learning process and complied with expected dress code and body signs. I also customized my clothing so it corresponded to what I learned was expected (Hasse 2002b: 335). I did that not as a physicist to be, but as a participant in a practiced place where acts

and reactions taught me that I might take up the position as outsider to the culture (even more than I was), if I did not change my style of appearance. Many anthropologists have noted the same kind of changes in their own appearance over the years in the empirical field, without being able to give any deeper explanation for why they changed.

However, it is not just researchers who, as outsiders, may have difficulties learning the cultural differences that connect physicality, signs and meanings in relevant ways because they have implications for the community; some of the students who dropped out could be argued to have had difficulties learning the cultural markers at the physics institute.

It is difficult to call up all the details of my learning that had implications for my own position as a participant researcher. I did change appearance and my position did shift as I gradually achieved some kind of acceptance in the group of physics students, as I learned the cultural requirements for attendance in the empirical field. In this process, I became embodied as a reader and maker of the cultural markers that create an outside and thus inside in the organization. In the analytical field I have discussed culture as a force that includes and expels. This argument can only be made by showing the effects of culture, like physicists argue for *gravity*: gravity cannot be conclusively proved, but must be argued for based on its effects (Hasse 2002a: 364).

5.11 Summary

Researchers learn to make agential cuts in the analytical field but they also learn from their embodied position in the empirical field. With the presented theoretical definitions of cultural learning in mind, we can, as a synthesis, say that cultural agential knowing is the result of a specific physical, positioned, situated learning that leads to cultural literacy of how to *read* or *understand* material and conceptual artefacts as markers of a frame of learning in the local physical and cultural space. Instead of just 'iterated enactments' of agential cuts (Barad 2003), we get learned frames of agential cuts tied together in intelligible patterns of recurring cultural markers (rather than fixed systems), with expectations of the frictioned lines to follow.

Ethnographers may be newcomers to both societies, their institutions and traditional practices. Through their engagement in activities, they learn through social designation and practice-based learning about available cultural markers. They learn an agential knowing, which is not abstract *spectator* knowledge, but practical knowledge about agential opportunities and limitations associated with the connections we have learned as we learn to make a difference in physical and social space through cultural learning processes. It involves the gradual learning of how cultural markers cause frictions in local practiced places.

Irrespective of the traditions, the lines holding dust bunnies together are invisible and only noticeable through the frictions that are created. This theoretical

perspective opens up an opportunity to scrutinize the movement between research and practice and the way researchers learn to align with the organized collective consciousness as they gradually become more and more affected by local frictions. In a cultural perspective, the researcher may first explore cultural markers as a detached, observing apparatus. In the course of the cultural learning processes, the apparatus will, however, become more fine-tuned as the ethnographer become engaged and emotionally affected. Attention fields will change as the consequences of the learning emerge as the researcher's embodied agential knowing of the practiced place.

When researchers and newcoming participants learn through social designation in an organizational practice, the experienced participants point out the culture markers in the field of attention to which they themselves attach importance. This cultural learning process is not equivalent to the concept of learning we find in Bateson's more abstract and systemic theory of markers of messages and information. It is rather a cultural theory where the learning of cultural markers has consequences for social organizations and people with an emotional response to acts and reactions. Cultural markers are not mere signs but agential cuts with the power to transform when participants learn new connections, understandings of connections and frameworks of connections (i.e. cultural models), which increasingly make them experts in expecting consequence of agentic cuts.

What is special about the transformed research approach is that although it destabilizes the researcher's mind-body and subject-object (and culture-nature) distinctions, it reinstates a new kind of diversity between the social and the collective. The social and the collective can metaphorically be seen as networks or meshworks of intersecting lines creating bonds between non-humans, animals and humans. This has already been argued by, e.g. Latour and Ingold in different ways. What I add is the distinction between the social and the collective and a focus on the human learner moving in a space of uncertainty gradually transforming into practiced place through cultural markers. Lines are never stable in the intermeshed dust bunnies. The collective is a special case of the social in the organization. Where the social is only organized by any kind of connection points, the collective is organized through processes of engagements that organize frictions in more and more *collectively* entangled ways.

Social connections are aligned, and collective alignments may be like the felt bottom of the dust bunny on top of which new frictions arise. The researcher can access common meanings through explicit designation of significance; the participants will identify and explain the importance of material artefacts. However, the researcher and other participants can also learn by themselves through reactions, and thereby gain agential knowing in relation to attention fields and markers of the common culture. When researchers engage (through relational agency) in what the other participants do, they learn to improve what we, with Scribner, could call our 'impooverished' network of connections (Scribner 1985b).

We can participate in many ways. Although I never got access to participate in Pro Loco's male mask parade, I learned a lot about the masks by being present at the group's meetings. So much that I even began to internalize the same emotions and

motivations they associated with the masks. The locally situated social designation and the knowledge I learn about masks are not listed in any dictionary.

The ethnographer has felt the cultural force sounding through his or her embodied being and has changed the research apparatus (including changes in bodily posture and body signs) through a cultural learning process. The embodied learning also changes the ethnographer's perception, attention field and knowledge about the cultural markers that have consequences in the local context.

How does the ethnographer translate a frictioned agential knowing to the analytical field when knowledge is not propositional, but situated? By drawing on the process of learning and unfolding it in texts about situated and agential knowing, the specific episodes lose their emotive and motivational force and become generalized insights into human, cultural diversity.

This translation is in no way to be understood as a transfer, like a fax sent from one location appearing as an identical model in another. Rather, the researcher is to be thought of as a translating device that can learn (some of) the connections attached to material artefacts in local cultural models of agential knowing. What is important is not how experimentally we write or which new experimental methods we employ (Marcus 2007), but how much we have been able to learn before we begin writing. Here, ethnographers must, as part of their core expertise, open themselves to new surprising agential cuts mattering to their ethnographic subjects. This is the topic of the next chapter.

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Chapter 6

Learning from Culture Contrast

Much has been written about the pain and confusion caused by students engaging in fieldwork, and some perspectives have scrutinised how informants have felt offended by the fieldwork done by ethnographers (e.g. Brettell 1993). Yet, very little effort has been put into understanding the actual process that creates the outcome: the more or less accepted cultural analysis. In this chapter, I will take a closer look at the types of surprises that arise when fieldworkers meet other people's practiced places, which may cause frictions.

In the complex everyday practice-based learning, social designation of important clusters of cultural markers is more subtle than in Bateson's example where the importance of the trainer's fish is given and known in advance by all in the system (see Chap. 5). *Fish* is recognised as a *reward* even before the porpoise begins to learn tricks. In fact it is this recognition which makes new learning possible. The porpoise learns to expect the fish when it strikes with the flipper. People are entangled into much more complex networks of connections which form our expectations of own and other person's actions.

In Bateson's system, the fish is already established as a message and means of communication. Both trainer and porpoise recognise fish as something attractive for the porpoise. Fish served as a marker for the trainer's context-generated ideas about what should trigger the reward, because the porpoise already recognised that *fish is good*. The *relata* are already collectively shared. When it comes to people, it is more difficult to determine the artefacts and their importance as cultural markers. People constantly create contexts for each other through the introduction of new artefacts, but even if artefacts are recognised as markers, they may not have the same values, trigger the same feelings or create the same motives for all. In fact, the mere presence of material artefacts makes it far from certain that they function as cultural markers in the same way for everyone in an organisation.

When a business owner hands out bronze stars in order to culturally mark the best employees, it signals that this company wishes to recognise and reward the best, but it also signals a competitive culture. Not all employees commit themselves to this culture of competition and they might also question the manager's

designation of the *best*. The bronze stars of the organisation are, thus, associated with many and maybe conflicting lines of connections and emotions, which make them unstable as context markers. They are, however, culture markers that designate a culture where all of these conflicting meanings must be learned by the newcoming researcher.

Cultural markers have consequences for people engaging in the empirical field, which cannot be imagined in the analytical field. When ethnographers practise *everyday life* with our ethnographic subjects, they position themselves to learn by social designation. Sometimes the social designations surprise us – and these surprises become an important asset for our cultural analysis.

For instance, my landlady's reaction became empirical data for my cultural analysis of what went on in Mamoiada, and it eventually led to a reorganisation of my analytical object. It was no longer the innocent mask parade constituting a men's club in the local village. My gender analysis had to be embedded in something of greater concern for the villagers: the vendetta. The mask parade took on an entirely new meaning after I learned about the real meaning of the dilapidated house. The mask parade could now be seen as an act of uniting a torn village, and it gave a new meaning to the conflicts with Gruppo Beccoi. I could not tell which understanding was the best, but learning about the vendetta gave the practiced place a new *engaged* meaning. Though my understandings may still be countered by other villagers (who may also start negotiating the meaning of the mask parade among them and refer to my analysis as a new cultural resource in their discussions), my learning process gave me new insight into local engagements which inevitably qualified my final analysis. I have 'come to know' (Edwards 2010), and our common motives, understanding what engages us, are thus aligned.

Yet before alignment we sometimes become surprised, and these surprises can in themselves become cultural resources for the ethnographer. Surprises are inseparable from implicit comparisons. The ethnographer's learning process is always implicitly comparative in the sense that we write about our own ongoing learning process, which may also be a collective learning process aligning us with ethnographic subjects. What James Clifford tried to solve by including the 'native voice' (1986) was superfluous. If the researcher has done a good job of learning, the native voice *will* be heard through the transformed apparatus.

In this chapter I will test some of the theories from my analytical field on a group of students from the Department of Education, Aarhus University, Denmark. The students test how easy it is to initiate a cultural learning process by visiting an unknown practiced place in an organisational culture, sensing frictions and becoming surprised about what you learn. In that process they also discover how difficult it is for the people who, on an everyday basis, move in the collectively shared practice to look at themselves from an outsiders' perspective. Thus this chapter also deal

with how and why a cultural analysis when presented to ethnographic subjects can cause frictions.

6.1 Surprises

The Danish anthropologist Kirsten Hastrup has argued that surprise is the path to anthropological knowledge. Seeing culture requires an external perspective (Hastrup 1992: 41), and it is this external perspective that is challenged and creates surprises in the meeting with other people's culture.

Understanding the words and actions of others requires an engaged practice, and a newcomer's engaged practice begins with surprises. There is a difference between being surprised by things and being astonished by them, as noted by Tim Ingold:

Surprise is the currency of experts who trade in plans and predictions. We are surprised when things do not turn out as predicted [...] when a result is surprising, or perhaps counterintuitive, are we supposed to take note. [...] What is not surprising is considered of no interest or historical significance. Thus history itself becomes a record of predictive failures. In a world of becoming, however, even the ordinary, the mundane or the intuitive gives cause for astonishment – the kind of astonishment that comes from treasuring every moment, as if, in that moment, we were encountering the world for the first time, sensing its pulse, marvelling at its beauty, and wondering how such a world is possible. Reanimating the western tradition of thought, I argue, means recovering the sense of astonishment banished from official science. (Ingold 2011: 63–64)

This is a beautiful statement, but while astonishment is a feeling that tends to gloss out all cultural diversity, surprise can be a tool for the ethnographer studying cultural diversity. Surprise is a process pointing to diversity in cultural learning processes. The astonished being-and-belonging in the world can also be useful for the ethnographer, because it keeps all our senses alert and ready for learning. Surprises, when our expectations are not met, are, however, an important asset for learning to become engaged in a collective consciousness. We learn by examining why we become surprised by the reactions of others.

Surprises, big or small, of how connections are made, are common in the meeting with a new organisational culture. Newcomers learn that new connections are possible and that they are not only possible but maybe essential for the other participants in the practiced place. For the experienced, surprises emerge from within the dust bunny and not from its fringes (as would be the case for the newcomer).

A researcher's surprises are of a different kind, however, because they may be used as fuel for the analysis and as reminders of the learned connections from both the analytical and the empirical field. This kind of surprises seems to be what anthropologist Laura Nader has called 'implicit comparison' (Nader 1994: 84). Nader notes that in cultural analysis there will always be cultural comparisons, albeit they often go unrecognised (1994). The accentuation of cultural extremes – the exaggeration of culture emerging in any culture contrast (Boon 1982) – is

always present in anthropology, whether we study other people in our own language area or abroad. Many anthropological analyses have been explicitly comparative, as when Margaret Mead compared youth in the USA with youth in Samoa and Ruth Benedict compared the two cultures in the USA and Japan (Mead 1928; Benedict 1947, 1934).

In anthropology the practice of participant observation has been considered a kind of ethnocentrism, as we always seem to begin any designation of *otherness* by taking our own standards as our point of departure. Furthermore, this kind of comparison has been discussed as *cultural relativism* as well as a kind of ethnically (read: Western!) and flawed *imperfect translation* of other cultures. When viewed from the perspective of the newcomer, implicit comparisons are, however, a sensual matter involving all senses and a resource for cultural analysis. What has been defined as making implicit comparison in anthropology (Nader 1994; Gingrich and Fox 2002) is to contrast what one already knows with what one cannot recognise as self-evident. Consequently, surprises (or mild wonderings) are signs of learning something *not* expected and thus an indication of new cultural connections to be explored. Surprises (in milder or stronger versions) become in themselves markers of culture. In implicit comparisons, surprises emerge when what is perceived runs counter to established cultural models of expectations.

When my landlady crossed the square in Mamoiada, she did what I considered to be something unexpected. She challenged my agential knowing of how to move about in the practiced place of the village. I learned to connect her reaction with the dilapidated house on the square, but at first her reaction simply caused a mild surprise that made me aware I was facing something unexpected. At a later stage in my learning process in Mamoiada, I would have become surprised if she had entered the house or not crossed the square. Put differently, surprises do not continue to surprise – they become sedimented and expected lines. As Drew Leder notes (with a reference to Paul Ricoeur), bodily transformations are akin to a sedimentary process, where we first drift wilfully, analyse and think and then ‘bit by bit’ drift into acting ‘from not just my present organs, but a bodily past that tacitly structures my responses’ (Leder 1990: 32).

Though this process of bodily sedimentation for the most part takes place unnoticed, we may try to make our implicit comparisons explicit as cultural resources to access a deeper level of understanding of the fields of attention that shape the practiced place for our ethnographic subjects. Researchers can use such surprises as a valuable tool in the research process through a method of *culture contrast* (Hasse and Trøntemøller 2009), in which they agree to gradually change their understanding so it aligns, but never conflates, with what goes on in the local culture. Surprises are nested frictions that are not felt to the same extent by detached spectators as by engaged participants. Surprises are ongoing. Though comparison always implies some kind of translation (Fox and Gingrich 2002: 9), an ethnographer’s learning in the empirical field should increasingly *translate* from the premises of the empirical field and align surprises with those of the ethnographic subjects. Learning how to identify new frictions and connections in practiced places is a constantly evolving transformation of not just word meanings but also artefact-

meaning. We learn from contrasting what is already learned with what does not conform to our attempts of alignments. We learn from surprising backlashes. Most of all, we learn when other people's self-evident connections challenge our expectations (Hasse and Trentemøller 2009).

In *explicit* comparisons between cultures, it has always been challenging to define *culture* so that it could form the basis for comparisons. In social studies this problem has been named 'Galton's problem', following Sir Francis Galton's critique of the weaknesses of the comparative cultural analysis, a method that prevailed towards the end of the 1800s. Galton criticised Edward B. Tylor because he tried to compare ethnic and national cultures by identifying specific traits, which Galton considered to be incommensurable sizes. Specific traits and features could be created by diffusion, rather than being built into a culture defined by fixed boundaries, Galton claimed, according to Tylor (1871). This old debate has also discredited the work by Benedict and Mead, and the methods of the so-called American culture and personality school have for some time seemingly deterred anthropologists from new attempts to make comparative cultural analysis.

It seems impossible to compare two entities that are not clearly demarcated (Strathern 1991, 2011), but they may be contrasted as practiced places opening up for an analysis of which artefacts (relata-within-phenomena) spur engagement in the different practiced places.

Instead of giving up on such explicit attempts, Nader's notion of implicit comparisons offers something special to the discussion of an anthropology of learning because she points to what I believe is a common feature for all researchers working in cultural studies. When we learn new connections, we learn them not only as new connections but as connections which surprise us because we have learned to expect something else.

This *other* learning – the earlier connections from which surprises emerge – could become apparent (although it often remains implicit) when we reflect upon *how* we identify culture. Cultural connections are formed in a special way as implicit comparisons, which create a reverse mirror effect in which the *others* appear as what you are not yourselves. Just when we think we write about others, we do in fact write about ourselves, Nader explains (1994). Comparisons are simply a condition for reflexive cultural activities. Comparisons are not between binary equivalent opposition pairs (Strathern 2011), but, in a phenomenological sense, the foreground compared to the background. Nader depicts in particular how Arab historians of the crusading period described a meeting between the culturally superior East, in which people read books, and the barbarous but technologically superior West that, as true barbarians, burns books. The Arab historians are confronted with Western bonfires of books (the crusaders burned piles of books), and their disgust for the barbarian *bookless* Western culture is fuelled by their own joy of producing and reading books. When Western culture fixates the Muslim culture as oppressive to women (because it apparently accepts forced marriages, polygamy and the obligation to wear the veil), it signifies an implicit comparison. Seen through Western eyes, Arab women are subdued because they are forced to cover their bodies in ways Western women are not. Since the Western woman with

little clothes on is considered to be free, the covered Arab woman is considered unfree. Conversely, Nader describes how the Muslim woman view the American woman as oppressed because she is forced to be a sex object, threatened with rape and is referred to without respect for her gender – problems which (in principle, as seen from the Muslim perspective) are considered absent in Muslim countries (Nader 1994: 92).

We create each other by seeing culture as the opposite of what we expect in our own. Books are a culture marker in Arab culture for Arab historians – a way to differentiate themselves from others. Any comparison is asymmetrical; it is a contrast that becomes explicit when we contrast what we expect with what is not found. It is not easy to detect one's own implicit comparisons and thus difficult to face the fact that the culture we see in others is a reversed mirror picture of ourselves.

In relation to the theory of cultural learning processes, Nader's points get a specific twist. Cultural learning processes are more than just perceiving a contrast between binary oppositions, because the process of making implicit comparisons is not static. It is a starting point for a process that includes transforming existing connections to fit the new background or to *cut* them differently. What surprises us changes when we participate in practiced places. We may say we align our surprises with others. Our 'implicit mediations' (Wertsch 2007) change as we learn. After a long stay in a religious Muslim town, to meet a woman who does not wear a veil becomes as surprising (from within the Muslim dust bunnies) as it is to meet a woman who wants to be veiled (from a Western point of view).

Learning entails not just learning that in some geometrical spaces particular materials, words and acts (like wearing veil) are present and in others they are not. It is also that in some geometrical spaces word, acts and materials have a density and appear with a frequency different from other practiced places. This leads to identifications of cultural markers and expectations of how the practices will evolve. These expectations change our implicit comparisons in a constantly evolving cultural learning process from being what we see to what we see *with* (Hutchins 1980: 12; Hasse 2008a).

Learning culture is a general incremental process of transforming what surprises us. We begin our learning through comparisons with our previously so familiar foundation for reflection, but gradually a new level of self-evidence is established, on which to become surprised anew.

Researchers basically learn in the same way as other newcomers. It is therefore necessary to know more about the implicit contrast and connections that are common for all types of participants entering a so-called nested culture.

For the researcher, the implicit comparisons may be a shortcut to cultural understanding, if one learns to explicate at least some of the connections formed in the learning process. Making the implicit comparisons explicit is a tool to capture the process leading to alignment, and thereby to more engaged frictions, shared by the experienced, on which new implicit comparisons can be based. When the transformed connections become self-evident as cultural models, new kinds of moral expectations and agential knowing develop.

You could say ethnographers have an expertise in becoming surprised as they *look across* familiar activities (inspired by Edwards 2010 and Hedegaard 2012). Researchers do *go between* activities in the analytical and empirical field. The type of learning this chapter primarily centres around is how much you can learn from our initial implicit comparisons if we find ways to make them explicit.

6.2 Project ‘Surprising Practices’

In a student training experiment conducted at the Department of Education (DPU – then a university in its own right) in 2003–2005, we created certain conditions to make explicit and use the students’ cultural learning based on implicit comparisons in a simple manner.¹ The course spanned 10 weeks and was titled ‘Learning and Cognition’. The idea was to let the students learn from cultural surprises, not by visiting *exotic cultures* in which surprises are expected, but by visiting a practitioner (a so-called host) at his or her workplace – which was unknown to the visitors. Though the visiting newcomer (acting as ‘participant observer’) and the host both spoke Danish, knew and worked in public organisation like schools and hospitals, we predicted that our students would be able to make small cultural analyses based on their surprises.

The students were divided into two groups: most students were participant observers but a small group functioned as hosts with access to a workplace. The students with the role as participant observers were asked to find a host (perhaps one of their fellow students) who could open the gates to a workplace for a short visit (ranging from 2 h to a day). The first criterion was that the participant observers should *not* have first-hand experience with the visited practice. Many students at DPU bring practical experiences from hospitals, schools and other professions into their education because most hold a bachelor in nursing, teaching or another profession. Some students continue to work part-time jobs in their field and could easily take on the role as host in primary schools, hospitals, kindergartens, etc. Nevertheless, some of the participant observers made contact with employees from outside the student group, at, e.g. fire stations, military barracks, libraries or a ballet school, who agreed to host a visit to their workplace.

The projects were to be understood as a primitive form of trying out the position as a newcoming participant observer experiencing a transformed research apparatus. Though surprises and implicit comparisons were not expected to be as salient as when Margaret Mead visited Samoa, the process of visiting an unfamiliar geometrical space was basically supposed to make the students aware that our surprise by

¹The training course was conducted together with my late colleague Kirsten Fink-Jensen who wrote a book in Danish inspired by the course named “Forbløffende Praksisser” in which she explored surprises from a more phenomenological point of view (Fink-Jensen 2013). The students granted us permission to use their materials. All personal and place names are omitted and the groups and study-sites are not identified.

other people's cultural everyday life is always tied to our own learning processes. The proceeding of the learning project can be briefly summarised as having the following purposes:

- The participant observers should, through their own learning experience, acknowledge their cultural expectations of others (who also have expectations of them). The brief meeting with a more or less unknown practiced place should illustrate that in researchers' meeting with their empirical field of research, such expectations are always challenged and called forth, when implicit comparisons are made explicit.
- The participant observers should, through their own learning experience, acknowledge that ethnographers, as newcomers, often create analytical generalisations about practices formed by the engagement in the analytical field as well as our *common sense* considerations. Theories and hypotheses from the analytical field may bias observations and reflections of practice and bar us from learning about the complexities of the practices that engage the people we visit. Acknowledgement of an open approach does not necessarily lead to grounded theory (Strauss and Corbin 1998), but we must be attentive that some implicit comparisons are more theory based than others.
- The participant observers should, through their own learning experience, acknowledge that even when we expect to recognise most of what goes on, meetings in new practiced places are always 'event-rich' (Ardener 2012) for the newcomer, because she has yet to learn the self-evident cultural markers of that place. For the experienced practitioners, much of 'what passes has for the participants an automaton-like quality. Events are defined within the space by a certain quality which, to avoid a special terminology, we may for the moment call 'significance' (Ardener 2012: 531). The newcomer perceives many events which are not perceived as such as significant by the experienced participants, and that adds to the surprises, which gradually change the newcomer's perceptions.
- The participant observers should, through their own learning experience, acknowledge that when we, as newcomers, visit new geometrical spaces, we learn through all of our senses (Stoller 1989; Pink 2009). Our expectations can be challenged even through a brief period of participant observation and give room for a more experienced cultural learning process.
- Finally, the participant observers should learn to reflect on the fact that the geometrical space we immediately perceive as researchers tends to be experienced and sensed differently by the established practitioners, who engage with the physical artefacts and anthropological space on a daily basis, using their agential knowing in a habitual practice.

The host, who knew the practiced place well, had the following obligations:

1. Accept the group of students visiting his or her workplace for a day or a couple of hours. The students were not allowed to ask the host questions about what they observed during the visit.

2. In the following week the host should agree to meet with the participant observers and listen to their edited comments on the participant observing experience and finally comment on the participant observers' observations.

In these discussions, the host's experiences of the habitual everyday work were contrasted with the immediate sensually embodied experiences of the newcomers. Instead of asking the host about things they found surprising, the participant observers had to make notes on a pre-prepared sheet of paper with questions addressing their own surprises, their meaning-making of sensed materials, forcing them to explicate their implicit comparisons.

The hosts arranged the visit (of typically 3–5 h) on a particular day. The students were asked to formulate and write down their expectations or preconceptions of the workplace and the practitioners they were going to visit before their visit. These expectations were to be used, at a later stage, as a contrast to the notes written down after the visit.

In this context, participant observation was simply presence through positioned attendance, which, as argued in Chap. 4, is also a form of participation, albeit different from that of the other participants in the physical practiced place.

The students would complete the workplace visit by writing down what they learned about how to use theories from the analytical field – e.g. making new connections in cultural models (or other concepts from the analytical field) that either stunned them, because they did not meet their expectations or because they discovered something totally unexpected. Equipped with few material tools (a chart to record surprises and the conversion of their reflection base including their shifting implicit comparisons), the students were to write down their impressions without communicating with the host. After the visit the participant observers met, discussed and collectively wrote a summary of approximately five to ten pages describing their experiences. They described how they as newcomers had perceived the culture and practiced place so familiar to the host and which type of surprises the visit had elicited.

Next, the students met with the host to present their notes on surprises and observations. The host was expected to comment on the students' observations as well as their abilities as participant observers perceived from the point of view of the practitioner (equivalent to an ethnographic subject) in the practiced place. This process generally called forth a great wealth of newly formed cultural connections for both the hosts and observers. They were discussed and finally recorded in a shared document, which was handed in for examination.

I have chosen to highlight a number of examples from the project to shed light on general issues in surprising cultural encounters between the exogenous, newcomers participant observers, the physical space and practiced places they visited and the reactions from the hosts well versed in the workplace routines.

6.3 Surprises: Implicit Comparisons

A group of students (with a background as primary teachers and nurses) chose to visit an environment that immediately seemed very strange to them: the Royal Ballet School in Copenhagen. They had noted many expectations about how ballet children acted like upper-class children, who just cared about ballet and nothing else. They assumed, in advance, that they would meet an elitist and highly competitive environment. So it was a great surprise to them that the children seemed so motivated to learn the general primary school curriculum and that they were very social and talked much with each other. Some had noted that they had expectations about the children's clothes and hairstyles beforehand. The group later noted that preconceived judgments can inhibit the observation as expectations can turn out to be co-creators of the image formed, not just as implicit comparisons, but because we tend to look for things that confirm our expectations. Expectations may be reinforced if participant observers have a narrow field of attention and thus only see a small part of the existing complexities and fail to learn about all the practitioners own engagements, which might challenge the expectations of the observers. What helped the group was that they were a group with different perspectives among themselves. Because of internal differences in the participant observer group's preconceptions and observations, they learned that their own individual perceptions of the ballet children's appearances could be challenged and expanded. In the end they had, as a group, to review their expectations about children studying ballet. In their written statements, the children now emerged as very social and very *down-to-earth*. This was later challenged by the host (a teacher at the ballet school) who explained that the children could also be unfriendly and competitive. In this case, as in many others, the students gradually became aware of how we build up our understandings of other people and their engagements from implicit comparisons, which may make us exaggerate what we perceive. The group agreed that had they stayed longer, their perspectives would have aligned more with each other and the host and that a longer process would open up for learning complexities at a deeper level than first impressions. Yet, they also concluded that it probably takes a long time to really learn about local frictions.

In the meta-reflections following our joint discussions with all the groups, this group also acknowledged that they had focused more on observing behaviour than materiality and that their notes did not reveal *how* they came to perceive the pupils as social (had they observed pats on the shoulder or smiles?).

Many of the students had chosen to visit more ordinary schools and most of them were convinced that they knew about the schools from their own childhood, and they were thus initially doubtful whether the project would lead to outstanding examples of culture contrasts. However, a basis for a cultural analysis emerged in several situations.

One notable implicit comparison appeared in the notes of a group of participant observers with a background as kindergarten pedagogues, who visited a school with a primary school teacher as their host. They witnessed a situation where the teacher

got angry because some of the younger pupils had not submitted their homework properly, and he rigorously stated that the tasks had to be handed in at once! The participant observers noted that they believed the situation should have been handled very differently. The teacher's focus on the pupils in relation to their technical skills and delivering their homework on time surprised the participant observers, as it would not have been so important for them that the tasks were delivered on time. Instead, they would immediately begin to ask about the child's situation. They all agreed on this and recognised that their agreement might be based on their common background as pedagogues. They became aware that they, *as pedagogues*, were surprised by the teacher's lack of interest in *why* the pupil had failed to deliver the homework on time? They noted similar considerations in their observation of the teacher's response to a growing unrest in the class. The teacher interpreted the unrest as *now it's time for a break*. Here, the pedagogues noted, they would have interpreted the unrest as *now it's time for a new activity*. They also note that these situations made them aware that their professional background as pedagogues had taught them to think like this.

Yet, there is more to it than *thinking*. The two examples show how their thinking is connected to two different kinds of agential knowing that are called forth by the situations and only reflected explicitly in contrast to each other. Being presented with this, the host regretted that there was no teacher in the participant observer group who could understand the teacher's actions on his own terms. He was, he stated, a little hurt by what he perceived as the pedagogues' covert criticism of his work. Reading the host's notes, the group began to discuss differences in the work done in primary schools and kindergartens. An awareness emerged of how the teacher culture and pedagogue culture build on different engagements with the pupils and draw on different cultural resources and how they may learn from each other. The *meta-reflections* of this group on their work also showed that the participant observers had been attentive to *behaviour* – the behaviour of the teacher, though. Discussions furthermore focused on how participant observers are also tied to the skills we bring with us to the empirical field. In this case, being pedagogues seemed to frame the participant observers' perception in a certain way. The group agreed it is important to call forth all the relevant resources we draw on in our cultural analysis.

Another group of participant observers also happened to be former kindergarten pedagogues, and this group had very similar experiences in their meeting with a host from a primary school. The group notes explicitly: 'It is self-evident that we come from two cultures. A *teacher culture* and a *pedagogue culture*. They should be pretty similar, but in reality they are quite far apart'.

This is a classic example of implicit comparisons that the participant observers make explicit; the pedagogues judged the teachers' work from their own standards rather than simply observing what the teacher actually did. Their field of attention also made them see the teachers' behaviour as the opposite of what they would have done. They learned to reflect upon their own culture as pedagogues, and their critical remarks made it possible for the teachers to reflect of their self-evident connections.

Culture, we concluded, is not just what we perceive but also what we have learned to see and perceive with as we learn through practice. Our agential knowing is based on all the invisible connections that are sedimented over time. When a newcomer questions our agential knowing, we may become aware that our connections are not self-evident for all. This may open new possibilities for changes. On the part of the participant observers, it takes an effort to use surprises explicitly and make the implicit comparisons explicit. It also requires awareness how your analysis may have a transformative effect on an established practice. For the host (i.e. the ethnographic subjects), it takes openness and willingness to put oneself at risk and be responsive to the newcomer's comments. Many of the hosts in our experiment were offended at first, but later they began to appreciate the newcomers' observations and comments.

There are general lessons to be learned from this small experiment with students. One is that participant observers tend to initially notice what they, from their own background, have as their attention field. This attention creates the most salient features perceived in the physical space: those that challenge or confirm existing preconceptions and expectations. Learning about matters we could not even imagine beforehand comes at the later stages of cultural learning processes. Over time, our initial surprises become embodied as our new frame of learning, which we can apply to new phenomena in our struggle to understand other people's actions and reactions. Very short-term observations may, however, not lead to any new insights.

As researchers it is both difficult and necessary to ensure that we obtain a certain cultural literacy for reading cultural markers on the local premises. This requires our openness for learning new connections and openness to accept that our already formed self-evident connections may be challenged. Ideally this process of openness includes both the hosts (ethnographic subjects) and the visiting researchers (participant observers).

6.4 Surprises: The Sensory Room

In addition to the transformed cultural expectations, we expected the students to have initial sensory experiences (available from their bodily positions) in their encounter with materials in the hosts practiced place and that these experiences could be used to question the unreflective self-evident bodily intra-actions of the hosts. This turned out to be the case. Many of the students had the experience that they *observe* with all of their senses and not just by using their sight. As newcomers they formed relations between odours and what they usually associate with such smells. Smell plays a much bigger role in our experience in the empirical field than we normally assume (Stoller 1989; Pink 2009).

For instance, we use odours to connect physical space and feelings of pleasure. A group of participant observers, with work experiences as schoolteachers, visited a nursing home and found that some visits are easier to handle than others . . . because of the smells. It was generally challenging for the schoolteachers to observe old and

sick people and it affected the group strongly. None of them had prior experience with nursing homes. Their fresh look and new sensory experiences created surprises, which subsequently had consequences in the meeting with the host.

The group had previously noted that they expected the nursing home to be an ugly place with fluorescent light and boring posters on the walls; and this was also what they observed. Yet, they were amazed at how thick the air was from disgusting smells of fart and vomit. Against this background, they noted their own joy when the staff began to bake cinnamon buns because it created a nicer smell. The scent of cinnamon buns made a big difference to the participant observers as they could hardly endure the fetid odour, which they associated with old age and illness, but the cinnamon buns created a life-affirming smell.

The host was pleased with their visit and carefully read the group's notes from the visit. During the reading he stopped to express his amazement that all of a sudden he became aware of the described sensory experiences, which were highly recognisable to him but taken for granted in the everyday life by both him and the rest of the staff.

The smell became a culture marker for the participant observers, but for the host it was self-evident culture. At the oral exam, the host remarked that 'my group has [after the visits] directed my attention to the horrible atmosphere: the long corridors, the lighting and the odour. Before I took it for granted. Now I've become aware of it, and it sure was uncomfortable to get an increased attention of our daily atmosphere'.

This exemplifies how people who have internalised cultural connections lose awareness of the impact on their senses. The smells and sensual markers become a background for their being-in-the-world: the self-evident point of departure for negotiations rather than something to be negotiated. This is the culture that emerges through the implicit comparisons of the students. In schools, the teachers now realised you do not have to put up with similar kinds of smells and sensual impressions.

When the host returned to his workplace with the report, the rest of the employee group discussed the observations. Although the report was very critical, it was favourably received by the staff. The report made them aware of many cultural truisms they had learned to take for granted as underlying sensual experiences for engagements in everyday life in the nursing home. Now these impressions were called forward as something they could reflect on. In this case, the visit made an impact; the staff expressed a desire to change the circumstances in the organisation so the atmosphere would become more welcoming.

The example also shows that what we might perceive as pure sensory experiences is associated with agential knowing related to cultural habits, values and feelings. What emerges as cultural markers to newcomers are often deeply internalised, redundant cultural truisms for the experienced practitioners – and thus not in their explicit awareness. In everyday life, before the visit of the participant observers, the practitioners acted on the basis of sedimented habits (gradually transformed through daily actions). In this iterated process, the daily smell of vomit and fart is not a consciously debated cultural marker and does not

provoke negative feelings among the practitioners. Only with the guests' visit were the atmosphere and smells noticed as an explicit field of attention and thus reflected upon in a way that the host experienced as emotionally uncomfortable, because he had not previously attributed a negative value to the smell, which he now acknowledged as bad.

In what sense is the odour a cultural marker? For the participant observers, the odour marks a culture in which old people are left to die in a sad and demeaning atmosphere without a caring staff, the group explained. For the staff and the host, the odour was not a reflected cultural marker. It had been internalised as something *not* to notice. The staff noticed if the cinnamon buns smelled burned, but they did not notice the everyday smell of fart. Most cultural markers that are so apparent to newcomers cease to be noticed by the experienced once they are internalised; they become the sedimented layer of former frictions, the habit, *tradition* or *cultural norms* from which new frictions may emerge. Such markers are only questioned by outsiders who consider them cultural because they mark a difference from their own lifeworld.

Our senses also cover sounds (Ihde 1990). Another group, also with a background in basic education, visited a nurse while she performed her daily work at a hospital department. In the notes on expectations, which were written down in advance, the group described nurses as dutiful, smiling, caring and the physicians' willing helpers. In their written observations from the visit, the group noticed a cacophony of loud noises, surprisingly many more sounds than they expected to find in the small hospital room; they visited for some hours. In this space patients lie behind draperies, and many nurses run in and out of the room with different stuffs in their hands. The group meticulously noted the many different sounds such as bells and beeps. At some point a bell rang again and again but no one came to help the patient, and the participant observers wrote in their notes: 'We became very stressed just from listening to the sounds'. They underlined that they pitied the patients, who had to put up with all the noises.

Later when they presented the notes to their host, the nurse laconically explained: 'It is because they [the guests] lack background knowledge of the practical work and that is why they think the bells ring a lot'.

In the ensuing group discussion, the nurse first refused to accept their observation that the bells were beeping and ringing a lot. She explained that she was actually a little annoyed by the group's comments on the many sounds and thought they had put too much emphasis on the unpleasant noises. In fact, she resented that they equated beeping with no help for the patients. She would have preferred if the group had been more aware of the great work the nurses were performing in a very busy everyday life. She also felt a need to explain that what the students had observed did not mean she did a bad job as a nurse. The reason was, she said, in an irritated voice: 'It was not my bell ringing'. The other students did not understand what she meant. Later, the nurse wrote a further comment:

I was not even aware of all the sounds before [the participant observers wrote about them], and I had not before thought about how the sounds would influence others. For example our patients, who also come from outside like the observers. Phone calls, pain pumps which

beeps and our bells. I realized that our patients might hear it in the same way – as an inferno of sounds creating stress. I also became aware that when it does not stress us [the nurses], it is because we know the meaning of the sounds. Some patients, for instance, lie on a mattress that makes a sound all the time. We know this. It is only if the sound changes that we come to them. Otherwise we do not notice the sounds. I felt they attacked my professional pride when they said the red bell rang for ten minutes (perceived as an *hour* by the group) without anyone responding to it. My professional pride welled up in me, and I would have liked to explain to them that the bells are divided between us and that it was not *my* bell ringing.

Only when reading the nurse's comments did the group of participant observers realise what 'not my bell ringing' meant. Beeps and bells offer a distinction that makes a difference for nurses in the practiced place, although the sounds sound like a hotchpotch of unpleasant sounds to the newcomers. Each bell has its own sound known to the nurses because each bell, and sound, is connected to a special meaning and particular patient whom a certain nurse is responsible for. The host explained that the nurses have their own bells (and thus patients) to respond to, wherefore they only notice and respond to those bells. Consequently, it was not as stressful for her to listen to the other bells as for the newcomers, because to some extent the nurse only noticed their own bells.

In the subsequent mini-cultural analysis, which developed from the student's experiences, the whole group and the nurse discuss how the notion of cultural *blindness* must be extended to include cultural *deafness*. The bells are actively engaging artefacts for nurses, but the bells do not call forth the same agential knowing in the external participant observers, and therefore the bells act as different artefacts in the practiced place. The nurses do not hear the bells in the same way as the guests (and presumably also the patients). The nurses have learned to make the sounds *invisible* as background noise (Ihde 1990), whereas for the newcomers, the sounds are in the foreground of their sensing experiences. They have not yet internalised the practiced place but rely on impressions from the geometrical space and their already formed connections. This time field becomes their first field of attention, but it will change once the meaning of the bells is internalised.

The nurses' bell is an example of cultural truisms that are so self-evidently sedimented in the bodies of the practitioners (i.e. the nurses) that the artefacts' material physicality becomes invisible to the experienced practitioners, even though they are visible (and audible) for the newcomers. This is the sedimented connection forming the foundation of new connections made in dust bunnies. Frictions emerge from this foundation. A nurse may hear that her bell is not answered and rebuke herself for that, whereby a friction between an agential knowing and a meaningful artefact emerges. She does not, however, hear the entire soundscape as it is heard from a newcomer's position (or the patients). The group concluded that the possible connection between the bell and the fact that it is shameful for a nurse to ignore a patient's bell is crucial in the cultural model of good nursing. The group concluded that to *overhear* bells is a form of managing an otherwise stressful workday and the turbulent emotions it could elicit if all senses were open to the space. What is invisible to the newcomers is the internalised

practiced connection between certain bell sounds, patients and nurses. The newcomers only learn about this connection when speaking to the nurse. A more prolonged period of field observations might, however, have taught the onlookers about the connection without verbal explanations. In the process of learning, newcomers might internalise and sediment the system of connections and forget how the bells annoyed them in the beginning in the first days of sensuous experiences. They learn to make use of surprises and turn the implicit comparisons into a resource for explicit analysis before they become the sedimented cultural foundation that nurses already have internalised.

Our experiment offered several examples of students who noted a difference in hearing sounds with practice-experience and without practice-experience, although they, in a physical sense, heard the *same* sound in the physical place. Sound is, like other artefacts, both conceptual and material. The acoustic oscillations reach both the host and participant observers' ears, but the meaning of the sounds must be learned in practice. Experiencing sounds is for the research apparatus, like other participants' sensory experience (sight, smell, taste), culturally selective. It is an aspect of the cultural learning that when we learn collective cultures through our bodily embedded agential knowing, we gradually learn to organise our sensory experiences so they become aligned to other participants. Senses are social! Nurses negotiating or quarrelling about who should take care of particular patients have already sedimented the underlying meaning of the various sounds and the differences between them. Metaphorically speaking, this is the felted layer of any dust bunny from which new frictions arise. It is through the felted layer, i.e. a common basis of understanding, that these frictioned negotiations become possible.

However, the newcomers, including professional newcomers like ethnographers, are in a position to question the basic foundations. What was taken for granted becomes an object to be reflected upon. This is one of the strengths of cultural analysis. In the situation where the nurse is confronted with the participant observers' observations, it dawns on her that maybe the patients interpret the sounds as stressful as the participant observers did, since the patients have also not learned the same frame of learning as the nurses. This acknowledgement is a precondition for making explicit changes in everyday practices.

When newcoming participant observers visit established cultural spaces such as hospitals and nursing homes and analyse their surprises, they are likely to call forth the experienced participants' self-evident agential knowing, values and emotions for conscious re-reflection. From being the culture they see *with*, artefacts become reflected upon as cultural markers recognised by the newcomers.

6.5 Radical Analysis

Many disciplines have battles between scholars giving primacy to, respectively, ontology or epistemology in their theoretical concerns. Anthropology is a much more down-to-earth discipline which gives primacy to the *relation* between

epistemology and ontology. Contrary to philosophy, physics and other disciplines, anthropology is not concerned with the world as it is in itself, but with human access to the world. In a critical realist perspective, the construction of the culture analysis is the transformed learning of the ethnographer caused by social expectations that are not met. The social reality is responsible for creating *real objects*, and these can be used as cultural markers and cultural resources. It is a theoretical position to claim there is a social reality and that ethnographers can learn about it. In the analytical field, the agential realism of Barad, the actor realism of Latour and the realism of De Landa all could connect with this position. Yet, the point of departure for an anthropology of learning is very different in so far as it takes human exceptionalism into account. Whatever argument for multiple ontologies can be made, it is a *classical* anthropological discussion, renewed recently by Latour and Annemarie Mol (e.g. Mol 2002), that the ethnographer's own position must be taken into account. In doing so, the decentred human is re-centred. Without denying the effects of vibrant matters forming assemblages (Bennett 2010) in which humans are moulded and transformed as ethnographers, our wayfaring is informed by more than the materials encountered on our way. Our theories also form what we, as ethnographers, perceive as moving in and out of practiced places.

The expectations and perceptions of ethnographers can be formed by their former life story and skills, as in the case of the skilled sailor Ed Hutchins (1995), a schoolteacher or pedagogue like the students in our experiment. This applies to any newcomer. What makes professional newcomers (i.e. ethnographers) a special case is that their expectations can also be formed by theories in the analytical field. Expectations play an important role because they constitute the difference between the newcomer and experienced in relation to perceiving cultural markers and reactions.

Only a few of the students in the above examples knew of anthropological theories before the experiment. They knew about learning theory, educational theory and theories of learning styles. In anthropology, our theories often simultaneously address methodological concerns and general forms of cultural and social relations.

The research apparatus carries experiences that are formed in advance in the practiced place of the researcher – which includes the analytical field. Practices are formed together with colleagues reading, discussing and developing theory. Theories are never *innocent* tools but direct the researcher's focus towards particular fields of attention. This may influence our sensual being-in-the-world in ways which make us not only focus on but also interpret what we see according to already formed theoretical perspectives. Thus, theories also co-create engaged perceptions of attention fields in geometrical space. In this way, we can force the empirical field to verify a lot of theoretical expectations at the cost of not learning new surprises, which could lead to a more nuanced cultural analysis.

What is important in the anthropological realist perspective (which is neither entirely critical realism nor speculative realism, but a realism founded in learning about other people's socio-material reality) is that ethnography may lead to new theories. In his book on the Naven ritual performed by the Iatmul people based on

the banks of the Sepik River in New Guinea, Gregory Bateson developed a new general theory for what he called ‘schismogenesis’ (Bateson 1958/1936). Schismogenesis arises ‘as a process of differentiations in the norms of individual behaviour resulting from cumulative interactions between individuals ‘building on’ the reactions of individuals to the reactions of other individuals’ (Bateson 1958/1936: 175ff). Though the theory of accumulating differentiations is hacked in an analysis of gender relations in this small society in New Guinea, Bateson describes it as a general theory applicable in many different disciplines to understand developments in, e.g. the growing unstable situation in Europe at the time of writing (the 1930s). It was seen as a general theory concerning a specific process of human development. This theory was developed in a dialectical process (a metaphor could be the court dance of two cranes moving back and forth affecting each other without becoming one figure) between observable features in geometrical space and the theories Bateson brought with him to the field. Along the way he made an important discovery, however.

Very often, when in the field, we make a note of something without knowing what this particular piece of information is good for. At some point, Bateson makes the note: ‘That Woli-ndambwi had a big nose’. It later became a key information in his cultural analysis of the Naven ritual (Bateson 1958/1936: 258). Big noses, Bateson later found, were phallus symbols pointing to a preference for violent and aggressive behaviour. This discovery eventually led him to develop a new general theory of schismogenesis. The theory both drew on cultural resources from the empirical field (such as field notes and headnotes) and theories developed in the analytical field. The important insight Bateson gained from contrasting empirical data with different frames of theorising was that the data changed when perceived through a particular analytical lens. And all data could be picked uncannily to fit any chosen theory.

Therefore, and in order to develop his own theory, Bateson stresses his lack of method. His theory emerged from the empirical data about noses and about those who gave food to whom, without having ‘selected my facts to fit my theories’ (ibid.: 258). When structuring his ‘diverse and disconnected material’, Bateson starts to organise his data material with the aim of constructing a picture of the Iatmul culture (ibid.: 259). He begins to organise *culture* leaning on anthropological concepts like *ethos* and *structure* and found that the theoretical concepts influenced his perception of data.

‘If a man scolded his wife, his behaviour was ethos; but if he married his father’s sister’s daughter, it was structure’ (ibid.: 261), and from this organisation of data, Bateson starts to speculate about structure as a network of channels guiding ethos.

In his 1958 epilogue, he already finds it ‘quite difficult to write of my early theories without caricature’ (ibid.: 261). Later he added ‘pragmatic function’ = individual needs and societal integration. Not until he finally wrote the last chapter did he discover that he had established no clear discrimination criteria for how these elements of culture fitted on to one or another. Doubting the validity of the analytical categories, he chose three theoretical bids of culture: (1) a pragmatic (man gives food to nephew), (2) an ethological (man scolds his wife) and

Table 6.1 Bateson's diagram

	Pragmatic	Ethos	Structure
Incidence 1	X	X	X
Incidence 2	X	X	X
Incidence 3	X	X	X

(3) a structural (man marries father's sister's daughter). Subsequently he arranged them in a diagram that would look more or less like the one below to test if they could have been placed under other subcategories of culture (Table 6.1).

This could be done in every case of analysis. This exercise taught Bateson that neither *structure* nor *ethos*, *kinship* or any other analytical category (or in more recent terms 'analytical cuts' – see Chap. 5) acts as a concrete part of a culture. Rather they 'resolve themselves into labels for points of view from which all behaviour may be seen' (ibid.: 262). This classification scheme goes for the native as well as the researcher. So this is what analytical categories boil down to: labels for points of view. When we ascribe concreteness to analytical tools, we suffer from what Bateson calls 'misplaced concreteness' (ibid.: 253). During his further work with his analysis, the ordering principles called for new ways of understanding the material, and following his analysis, he had to invent the new analytical concept of *schismogenesis*. 'In fact, whatever our method, our material is the same (. . .) but the order in which we investigate the different aspects are by no means immaterial' (ibid.: 266–267). By this, Bateson means that we shall not try to attribute emotions or motives before we have a picture of the whole. This is the connection between the analytical and empirical field.

Bateson tells the story of the philosopher Whitehead, who after a lecture by his colleague Bertrand Russell greeted him by saying that it was an excellent lecture especially because Russell had left 'unobscured [...] the vast darkness of the subject' (ibid.: 280). Whatever theories we apply or develop in the analytical field, they should not pretend to represent the whole, but must acknowledge complexity and leave unobscured the vast darkness of the subject. Bateson continues:

All science is an attempt to cover with explanatory devices – and thereby to obscure - the vast darkness of the subject [...] and the purpose is really to discover which parts of darkness still remain, uncovered by explanation. But this game [of playing with different theoretical perspectives] also has a deeper, more philosophical purpose; to learn something about the very nature of explanation, to make clear some part of that most obscure matter – the processes of knowing. (Ibid.: 280)

Bateson thus denounced his own work, when he wrote a foreword to his book in 1958:

The book is clumsy and awkward, in parts almost unreadable. For this reason: that when I wrote it, I was trying not only to explain by fitting data together, but also to use this explanatory process as an example within which the principles of explanation could be seen and studied. (Ibid.: 281)

This relation between the analytical and empirical field was intensely studied in the student groups. They tried to let others see and study their explanatory processes

and discovered, in the process, that it is a very difficult task. Few groups had time to make an in-depth cultural analysis of their own observations, where they used the theories from the analytical field and discussed their relevance in relation to their observations. Most just had time to reflect upon how their observations were not only biased by implicit comparisons with former experiences but also by the theories studied in class. The observations were what we might call ‘theory-laden’ observations (Crusius 1991: 27–28). Here, theory-laden refers to letting the theories we have read and discussed with colleagues, teachers or fellow students, and thereby internalised in the analytical field, become the primary field of attention when we perceive our surroundings.

Whatever we may define as *facts* in our cultural analysis, some observations are more theory-laden than others. Yet, when we let go of the armoury of theory and open ourselves to a wayfaring into an unexpected world (Ingold 2011), we come to a place where new theories are created in a dialectic process between the analytical and the empirical field. Theories are not objective. This was the argument presented by Bruno Latour and Karin Knorr Cetina in their studies of the work of natural scientists (Latour and Woolgar 1979; Cetina 1981), and that is equally true of the ethnographer’s fieldwork.

The most striking result of our work in the project *Surprising Practices* was that whatever theories the students chose to work with, they were applicable to various empirical fields of attention – with different results, of course. Theory raises awareness of fields of attention in the empirical field, but theory may also risk blocking for new surprising learning processes that could have induced locally relevant cultural markers. The research apparatus is responsible for obtaining a cultural literacy, which presupposes knowledge of the implications of theories for cultural analysis.

A group of students is visiting a classroom where they note that the children do not know the importance of concepts such as *square mile*, *plus* and *minus*, and, with Piaget in mind, they note that these concepts are not yet assimilated in the children’s own cognitive structures. The group also discusses behaviourism and notes that when the teacher says ‘If all arrive at page 100 before Christmas, the whole class will get candy’ and ‘When you have finished the task, you may run along and play’, the participant observers note that these are classical examples of a behaviouristic approach, because the teacher offers candy as a reward for a certain behaviour. The participant observers connect candy with a theory from their analytical field that connects the motivation for learning with a reward. Candy, as a material artefact, then acquires a special analytical significance for the observers because it is now recognisable as a physical example in the empirical field of the behaviourist theory. There is a *fit* between the analytical and empirical field, apparently.

This is the way many students use theory: to create and select specific attention fields and deselect and focus on particular differences in the complex empirical field, which is then unfolded in the analysis as empirical data confirming the theory.

This analysis, however, does not say anything about what the pupils actually connect with the candy. Is it in fact considered a reward? The visiting participant

observers might be surprised if it turned out *candy* was connected with *snitch* and not *reward*.

The group visiting the ballet school spends much time discussing the role of the theory of learning styles in relation to the observed practice. They classify the ballet school pupils on the basis of a theory of different learning styles (Dunn and Dunn 1999) and conclude that the school could probably benefit from using that theory of learning styles as a pedagogical basis. The two groups of participant observers could have swapped empirical field without changing their analytical field of attention; the ballet school could have been analysed with Piaget's theories or theories of behaviourism, and the mathematics class could have been analysed with theories on learning styles. In both cases the analysis rests on the premises from the analytical field. Consequently, we do not learn much new about what the participants connect with the artefacts *candy*, *plus* or *ballet shoes*.

To elicit empirical data on how participants connect their actions and meanings to materials like *ballet shoes*, *candy* or the word *plus* draws on yet another field of attention from the analytical field to be used in the analysis. The lesson learned from Bateson is not to discard theory or always create our own but to be aware of the limits of any analytical attempt to cover an empirical field.

The theories from the analytical field are *not* unknown in many empirical fields; in fact they are already highly familiar. This proved true for a group of students who visited a home for the mentally ill. They became aware that they *shared* their theoretical framework with the staff of the institution. In this case it was Schein's theory of organisational culture which the staff considered a cultural resource in their attempt to better the culture through an improved design of physical space. The visiting group of participant observers reflected on how the staff's approach to Schein might affect their own theoretical approach (which was activity theory), and they discuss how their own field of attention would have been different if they had used Schein's organisational theory instead of activity theory. The group conclude that their focus on cultural-historical activity theory would direct the attention at the organisation's culture and *collective* history, including the importance of artefacts and objects, people and motives that drive the everyday practice, whereas Schein's theoretical focus would point to *problems* and the *individual* founder as the main *author* of the culture. The activity theoretical perspective, however, does not imbue the research apparatus with an awareness of the physical elements and their intra-action with humans in space, though it does imply a focus on materiality in addition to human relationship. Artefacts become a focal point from which the physical practiced place is observed in another attentive way than Schein's perspective, in so far that artefacts in activity theory are tied to collective motives. Theoretical attention can, no matter how good the theory, bar for a deeper understanding of what the participants perceive as relevant attention fields.

It is a significant point in the meetings between the hosts and participant observers that not only the *researchers* use theories to understand and improve practice. The practitioners at the visited organisations also have stories and theories about the world, which they interpret and use to change their physical world.

Theories and analysis do not in themselves create change, however. A group visits a hospital and notes a patient who does not communicate well in Danish. The participant observers note that her attempts to communicate are often misunderstood and that she shows signs of growing frustration. The group had chosen activity theory as their theoretical reference, and they thus analyse the patient's frustrations based on what they have learned in the analytical field about *frustration* as an analytical concept in both activity theory and Bateson's theory of frustration. They note that analysing with these theories the female patient's frustration is not being used to create expansive collective learning processes at work, as Engeström's activity theory suggests. Yet, when confronted with the group's analysis, the host and her colleagues express that they cannot do much about the situation. The group learns that it is not enough to analyse the potentials for change. It is not cultural analysis in itself that creates change, no matter how much innovation potential the analysis calls forth.

In the empirical situations presented in Engeström's own work, researchers are invited into the organisation to change it from within. In the DPU-case no external researchers are invited in to solve the situation, and the patient's frustration is seemingly not enough to create a new context awareness for the participating staff when she reiterates her frustration. This kind of experience in the empirical field can be used to improve the theories in the analytical field. The group discusses how Engeström's theories of expansive learning hinge on the participation of outsiders like researchers. The researchers' presence is a prerequisite for expansive learning. Such reflection, initiated in the empirical field, points back to the analytical field with new questions to Engeström's theory. "Can it really explain why and how expansive learning takes place?", the students asked. Does the theory maybe have a weak point when it only refers to expansive learning initiated by outsiders?

The students also learn that it is problematic just to apply theory from the analytical field to the empirical field. They also learn to question theory in the empirical field and use what we learn to challenge and develop the analytical field.

It is difficult for the students to go into a crane dance between the empirical and the analytical field, and it is only becoming more difficult because the analytical field is increasingly politicised. Organisation members are perhaps not only knowledgeable about certain theories; they might also want to determine the requirements for their use or deselect some. In the analytical field, theoretical landscapes appear as a kind of semantic densities (Ardener 1989: 168–169). Some theories, such as gender theory, are so charged with political aspects that it can make a cultural analysis problematic.

6.6 Surprises: Positions in Time and Space

For some ethnographers the method become problematic because they become embarrassed when the ethnographic subjects in the studied organisation read and criticise what the ethnographers write about *their* culture (Brettell 1993). When

researchers meet with informants, who know the analytical field, in the empirical field, this knowledge of theoretical knowledge is sometimes a surprise that may lead researchers to abandon the idea of the need for an external researcher's contribution to cultural analysis. Shared knowledge of theories from the analytical field is also sometimes used to define research as a collaborative effort.

It is important to emphasise two matters: (a) the basic difference between the researcher and other participants is not knowledge about cultural theory, and (b) *collaboration* is never among equal partners even if the ethnographic subjects partake in the cultural analytical work and the anthropological writing process.

The main difference between the researcher and other participants is that the researcher is the *radical other* in the empirical field. He or she participates in the everyday life with a fundamentally different motive, and this is precisely what makes cultural analysis possible. People who aim at making a cultural analysis of their own organisation always run into problems of motive. Why do they want to make the analysis? Can they erase all their expectations about colleagues, histories and emotional attachments? They already know all that the newcomer has to learn. It will be more than difficult for them to learn to perceive what is *cultural* because they have already internalised the sedimented self-evident connections in their organisation. To perceive culture you must be able to see from an external perspective (Hastrup 1995). This fundamental difference between the research apparatus and the other participants does not exclude close collaborations between the two in the empirical field. Nor does it exclude researchers from learning theory from the participants in the organisational everyday life. In terms of social role, researchers (including ethnographers) can become ethnographic subjects and ethnographic subjects become researchers – but they cannot be both at the same time. What is crucial is that the researcher is capable as the radical other to add 'more' (Despret 2004: 16–17) to the analysis, because the researcher, independently of organisational participants' narrow interests, can learn about the culture from a newcomer's perspective. From this position, theories from the analytical field can give researchers access to the invisible cultural connections and creative potential of the organisation.

The research apparatus, as the radical other, does not aim at obtaining access to the material – the ontology, in a philosophical sense (Das Ding an Sich) – but to a collective consciousness. Although some phenomenologists in the analytical field might claim that epoché is possible – i.e. what Husserl called 'einklammerung' (Smith 2013: 441) where phenomena are explored in a certain sense outside of culture – it is, in a phenomenological psychological sense, very difficult to perceive phenomena without already perceiving your own culture from the sedimented collective learning perspective. Therefore, no matter how the analytical object is defined, the researcher must work his or her way into the dust bunny by learning from being a newcomer to becoming an experienced participant.

Position also mattered in the students' analysis. A participant observer visited a host in a primary school in, what the participant observer perceived as, a large, dark room that was used for lecturers. From the host's perspective, it was a well-lit room and he could see all the pupils clearly. Nevertheless, the participant observer notes

from his seat in the back of the room that the pupils do not take notes though they write a lot. The host subsequently concedes that the ‘pupils seemed so sleepy today’, but he had not seen the situation from the pupils’ perspective. The pupils were not sleepy but active on Facebook and the like as the participant observer noted from his position among them in class. From there, he could observe what was invisible to the host.

It is a great strength for the cultural analysis that the students from DPU, to some degree, can take a position which resemble that of other ethnographic subjects (e.g. patients or pupils) and thus challenge the practitioner-hosts’ perception of the situations from the *host*-position in geometrical space. To begin with the situations are typically perceived to be unproblematic by the hosts because their understanding is based on their own agential knowing, but the situations may prove problematic when they are perceived from the guest’s new physical position.

However, a participant observer’s very short and superficial observations may also result in premature conclusions. Time is a prerequisite for in-depth observations and learning. The more time in the empirical field, the more in-depth learning and the more thorough the participant observers will be in their cultural analysis.

Time is time spent within the walls of the organisation and includes *time spans* that make the participant observer aware of changes in the practiced place over time. In-depth learning may include visiting the same place more than once to find new surprises building on what was learned from the first visit.

A group of students who followed patients in a dialysis treatment (which takes 6 h) could only follow the practice for 2 h. After 2 h of attendance, they noted that the room (where the patients received treatment) was a quiet room. The practitioner’s response was that they had participated in the most peaceful 2 h of the day and that the atmosphere was hectic at other times.

Time plays a role in the ability to understand the practice of others, because the learning process, i.e. forming cultural connections, unfolds as we act and react in physical space.

When we do not do as the other participants, or do not have time to follow their whereabouts, we get a very limited insight into the types of agential knowing developed in the culture. When longer stays in the physical spaces are not possible, it is difficult to learn the more fundamental meanings of artefacts or the values and emotions attached to them locally. Actions and physical artefacts mean something different over time, and it thus takes time to learn about the frame of learning shared by the other participants, which makes patterns of changes in meaning meaningful for the local hosts.

Even when participant observation takes place in our *own* language area, there will be many word meanings an outsider does not manage to get to know. One group observed precisely this circumstance; i.e. as researchers they were not able to join local conversations because they have not yet learned the specific word meaning, although they recognised the words. This group of participant observers visited a group of people who met to talk about common problems of alcohol addiction. In the group conversation, the following statement was uttered: ‘So, I went over . . . and do not come anymore’. Based on their reactions, everyone in the

group seemed to understand the importance of this statement, except the guests – the outsiders. Later, the host explained how the client had referred to a place serving liqueur which he visited to see if he could *stand it* after he ‘went over’ (i.e. became sober) and then he never returned to that place again.

The same host notes that the participant observers had an effect on the clients. The clients (mostly men) had been flirting with a female participant observer, and they spoke longer than usual, the host noted. Other hosts also noted that their own behaviour changed (e.g. became more *correct* or *formal*) in the situation. Some of the participant observers who had longer stay in the practiced place noted that the initial attention to their position as newcomers gradually waned – even after just a few visits. Two points can be made from these observations:

1. The participant observers were strangers even to well-known words. Although all communication was in Danish, words are not just words. They may have a local significance associated with a local practice that is not initially comprehensible for a visiting participant observer. Such problems of transparency in language usage can only be solved by longitudinal presence during which we gradually learn new meanings of known words.
2. As a participant observer, one always constitutes a new presence, often a stranger, in the geometrical space and may have an unexpected affect that changes the existing everyday practice. It may feel uncomfortable to be a newcomer affecting others, but it can also help to elicit insights into relevant problems in practice. The position a visiting researcher is assigned by the practitioners (old-timers) and their reactions to the researcher’s presence may in itself become relevant substance for analysis. Yet, this position may change over time as the newcomer becomes an old-timer.

Reflective awareness of how one’s position is reacted to in the meeting with a practiced place and awareness of how that position changes over time can lead to realisation of one’s own limited understanding of local agential knowing.

This awareness of *ignorance* should be kept intact even in long-term studies. Being present in other people’s practiced place is *the* approach to cultural analysis that relies most on the premises of the other participants. It can be an unpleasant experience to become involved in this way and it demands many ethical considerations. It is, however, the most direct way to learn like any other participant. The use of any other method than participation (e.g. interviews, focus group interviews, questionnaires, diaries, body microphones or disposable cameras) works more on the premises of the researcher (Hasse 2002: 27). What is written in the ethnographic subject’s own diary, shown in pictures or recorded by the audio device can of course be interpreted by researchers, but when the researcher *also* participates in the practiced place, on the premises of the ethnographic subjects, as a positioned bodily research apparatus, agential cuts are more likely to be made on the premises of the empirical than the analytical field.

The students in our experiment obtained access to and became present in other people’s practiced lifeworld in many different ways. It was generally difficult for the groups to observe people who felt bad at nursing homes and hospitals. In these

contexts the participant observers perceived themselves as clear outsiders in relation to the host/practitioners. In fact, the group that visited a nursing home felt so embarrassed that they just sat in a corner and watched. They were relieved when they eventually had to go, because they felt so redundant and outside of an important practice. The other group that visited a hospital also found it hard to see sick patients, and even during their brief visit, they found themselves transgressing certain ethical limits when they were asked to observe a patient who was given a bath. They felt it too intimate and it countered their agential knowing, as participant observers, of how to behave.

Yet, in the subsequent meeting, the host explained that following the practitioner into the bathroom was quite normal, whereas not following a patient in the bath could, in this practice, be seen as more offending and might affect the patient's sense of integrity. Only a longer fieldwork with patient contact could have clarified whether this is actually the case. Participant observation can be an unpleasant and often physically abusive experience, both for the participant observers and for the hosts they visit. It may seem easy to welcome a researcher studying one's everyday practice, but it is, in fact, not always easy to be the practitioner, who, in that situation, becomes the *victim* of a *stranger's* perception and analysis. Some of the hosts explained that being scrutinised by outsiders made them feel uncomfortable and insecure as they were being 'looked over the shoulder'.

The research apparatus must balance and reflect on its own position in the field, thus ensuring sensitive engagement with the sometimes precarious knowledge it obtains about people's life in often stressful situations. The research apparatus is not a participant like any other in so far as the knowledge it obtains is not directly tied to what is meaningful for other participants and is often not to be used for personal gain in the empirical field. The apparatus must be aware of its own sensitivity to understand that of others. The hosts (like any ethnographic subject) are put in a vulnerable situation, where they might feel criticised and might feel the need to defend themselves against an analysis they see as a personal judgment. This proved to be the case in many of the subsequent reflections between the students and their hosts, and it may be even more so in actual fieldwork where the researcher is usually even closer to their main ethnographic subjects.

Friendships may be formed in the close interaction between researcher and ethnographic subject, and sometimes it can be a very sensitive process. Here, it is important that researchers take careful stock of the situation, consider its potential and seek the general in the analyses. There are areas where the researcher's identification of the cultural self-evident is deemed completely irrelevant (or only relevant for the analytical field), for instance, if matters cannot be changed even when reflected upon in the empirical field. The degree to which one as researcher must enquire about sensitive issues in the empirical field depends on the specific task and context.

Ethnographers are professional newcomers, and as such they should be prepared for surprises that might cause frictions among the practitioners. What surprises the ethnographer may be the very foundation on which the other practitioners build

their own surprises and play out their games of friction. By exposing the underlying, nested connections, new frictions may emerge.

6.7 Contrasting Cultures

When Eduardo Viveiros de Castro discussed the ontology of Amazonian spirits in *The Crystal Forest* (Viveiros de Castro 2007), the very acceptance of spirits may come as a surprise at first. However, the spirits are the real foundation for surprise for the participants when, for instance, these spirits are not shown the required respect. If the anthropologist does not pay appropriate respect, he or she may *inadvertently* rock the underlying basic taken-for-granted assumptions shared by the participants. Yet surprised reaction from ethnographic subjects may also be a first awareness of the local unexpected agential cuts as well as a source for the further analytical work for the expert ethnographer. Such an analysis, built on transformed agential cuts of the ethnographer, may help local ethnographic subjects acknowledge their own basic assumptions and frames of learning. Anthropology has several examples of such surprises in *event-rich* and exotic places (Ardener 1989), seen from a Western point of view. Surprises become much harder to obtain for a Western ethnographer when fieldwork is conducted in less exotic practiced places, like schools, hospitals and laboratories in your own country. Yet, fieldwork in a laboratory may also, in a classical anthropological way, shake the foundation on which the practitioners base their practices. This was shown by Bruno Latour when he exposed the basic assumptions behind frictions in laboratory settings in the USA (1987).

Beginning with implicit comparisons from the initial learning position, we gradually learn a relational agency which creates a new frame of negotiations from within a practice. The geometrical spaces, we perceive with our theoretically practiced eye, gradually become the same place which engages other practitioners.

When the experienced designate new connections in the empirical fields, I not only use theories from the analytical field to understand my experiences. I implicitly, and often unconsciously, contrast with other situations and relationships that have become familiar in other cultural contexts. At my old Institute of Anthropology, we were allowed to bring cups into the classroom, as long as we cleared up after us. We were not controlled by guards. We could easily wear short dresses (and other exotic garbs, such as scarves or sarongs from Kenya), and we did not discuss science fiction. It is on this learning basis that I become surprised that science fiction emerges as having salience or 'significance' (Ardener 2012: 531) in the local practiced place of physics studies. Giving significance to what others perceive as self-evident is to touch upon the local collective consciousness that holds local dust bunnies together. It may cause friction, but it adds depth to cultural analysis. In-depth analysis comes from explicating the gradual transformations of external meaning-making practices in learned intra-actions in practiced places.

A similar process can explain why I am initially amazed by the strict rules of Pro Loco, because I am accustomed to a Danish culture of debate. In Danish culture, my exaggerated argument goes, Giuseppe would not have accepted the bank manager's orders without demanding arguments for his seemingly unnecessary decision. Here, the starting point is the primary agential knowing that cannot be captured by research without a prolonged fieldwork and good theory. Many other similar theories of practice are based on what is called *tradition* or *habit* (e.g. Bourdieu 1977). One of the main problems with such theories is that they implicitly assume a collectivity of learning without scrutinising how, when and for whom learning upholds traditions without causing surprises that jeopardise the foundation.

Japanese students might have an easier time finding surprises in Danish public organisations than the Danish students. For the Danish students, it would have been easier to identify a particular culture of connections if their cultural learning processes had included, for example, visits to nursing homes and orphanages in India or Japan. Yet, our Danish students learned something new from simply visiting other Danish people's cultural practice for a few hours. Words and other materials changed meaning in the learning process. Vygotsky's view of learning recognises this 'continuous refining of the conceptual tools which we use to act on the world' (Edwards 2010: 113), but he did not foresee the culture contrasts making agential cuts when learning new fields of attention.

In the meeting with other people's everyday lives, we often pay particular attention to everything that shows up as different from our own everyday life. We perceive, as Laura Nader noted (1994), the opposite of that we usually do when we perceive *the other's* culture. Culture is not just what we do; it is also the learned connections that make us see the *other's* culture as a contrast to our own.

The process of the research apparatus is basically the same, I contend, whether Danes study Danish or Indian institutions. When we learn new connections, it often happens in a process of implicit comparisons that are contrasted with previously learned connections. The implicit comparisons are called forth when our previously transformed and sedimented connections are contrasted (which happens when expectations are not met), and we see *cultural differences*. In this comparative learning process, we emphasise differences between artefacts, agential knowing and meanings that appear as different from our own learned connections. We are surprised when what we learn moves us out of our usual routines. Intruding researchers may function as catalysts for cultural change through a carefully performed cultural analysis, which, even after a short-term observation, may move practitioners out of their habitual ways of life. The researcher must thus be responsible for presenting the empirical field with a cultural analysis after they have allowed the empirical field to be disturbed by the researcher's self-evidently performed habits and theory-laden observations. In our experiment Surprising Practices, groups of pedagogues visited a teacher in a primary school and became themselves exemplary of Nader's theory of implicit comparisons, albeit on a smaller scale than contrasting Muslims vs. Westerners. The pedagogues learned that they had with them a kind of *pedagogue culture* of expectations in their observations of the teachers. Conversely, one of the teacher-hosts also became

aware that what he considered a self-evident teaching practice could be challenged or questioned when seen through the eyes of an outsider. Surprises go both ways in project *Surprising Practices*. Both the ethnographic subjects and the ethnographer had their foundations questioned by the cultural analysis. If the ethnographer only aligns with the field, nothing new is added.

There are many problems associated with taking on the position as participant observer regarding access to learn and thereby to become surprised on the same local premises as the ethnographic subjects. All in all, as a Western anthropologist, I am more easily surprised in the meeting with the *remote* areas of Cameroon where self-evident (Western) expectations are easier to suspend. It is thus amazing how much the Danish students got out of their short stays in practiced places in Danish public institutions such as schools, hospitals and kindergartens.

The reflections and experiences in the groups show that we can learn cultural connections from the very moment we meet the empirical field and that all we learn can be used in cultural analytical contexts. The examples also show that we constantly learn new meanings attached to artefacts and that we learn with all of our senses.

In the beginning most of the groups invariably focus on the visual observations in their meeting with practice in the physical place. However, many of the groups also refer to other types of sensory stimuli, such as the smell or the aural. In the aural zone, it is first of all words that are noticed followed by unexpected sounds. At the hospital, for instance, the participant observers noted certain aural artefacts in addition to the visual, namely, beepers and bells. Some of the groups also note odours (like the smell of vomit at the nursing home). Taste and sensibility is not mentioned, although several groups refer to the 'warm climate' of the organisation. The *Surprising Practices* project made it clear that sensory experiences are selective, as hosts and newcomers perceive smells and sounds differently. It also became clear that we attribute different emotional meanings to sensory experiences. Significance is inseparable from an organised agential knowing tying values and feelings together with the perceived material artefacts.

The nurses' agential knowing, learned through daily work at the ward, has been transformed and sedimented to such an extent that they no longer hear the sounds of the geometrical space unless they are made aware of the sounds by the group of observers. Had the newcomers previously been working as nurses, they might have learned to distinguish between the bells and would therefore not notice all the noise in the room. Or they might simply have registered the sounds as background noise only to be aware of if it sounded *wrong* in relation to their fields of attention.

The newcomers called forth the cultural background noise (i.e. the locally self-evident), but, and that is also a point in this context, the host was not pleased with that observation or explication. In the case with the nurses, the group of newcomers was first rebuked by their host, before she understood the value of the newcomers' observations and that their reflections may have relevant consequences that could change her everyday life. Likewise, participants may not value the cultural analysis offered by anthropologists, or they may differ in how useful they find it (Hasse 2000).

6.8 Summary

Culture contrasts emerge, at first, as unexpected sensually registered connections between meanings and materials. These unexpected cultural markers may be pleasant but also full of unexpected frictions and frustrations. The cultural analysis formed on the basis of such frictions may itself cause new frictions. To do responsible anthropology, the research apparatus must run the risk of critique and be open to more than first impressions. Through further dialogue with the practitioner, the participant observers in our experiment learned about the importance of their own experiences of the physical aspect of, for instance, the bell-artefacts at the hospital. They learned that new meaning can be connected with the ringing sounds, and they are thus approaching a new basis for dialogue about actions, which Suchman calls ‘the mutual intelligibility of action’ (2007: 80). To reach this level of intelligibility, newcomers must move beyond the first impressions. To do so, they must internalise the new sense of the meaning and purpose of, e.g., bell-artefacts connected with the actual working conditions and their related intentions. What is called forth is not just their own learning but the learning process of a nurse, who also had to learn the meaning of bells and sounds before the connected meaning became sedimented as the agential knowing of the nurses.

Frictions may emerge at different points when engaging with the empirical field. Apart from frictions related to a newcomer’s intrusion, *Surprising Practices* made it clear that conducting cultural analysis of other people’s lives is both sensitive and demands a high degree of ethical consideration on the part of the research apparatus.

While participant observers may call forth sedimented connections to reflect upon, and thus make it possible to deal with otherwise self-evident agential knowing, the ethnographer’s analysis of cultural markers may also evoke feelings and values, which may be difficult to handle for both host and observers. In many cases, the hosts appear happy with the external gaze – as evidenced in many reports from the groups. Yet, when made an explicit resource for cultural analysis, most of the practitioner-hosts were initially offended as their self-evident expectations were exposed and challenged. Later, they learned to align expectations and the observations were often welcomed.

In society at large, we may find a similar kind of initial offence when, for instance, immigrants criticise how things are done in the country to which they immigrated. The hosts are offended; who are they – the strangers – to criticise what they do not yet understand? In *Surprising Practices* we witnessed the same human mechanisms at a small scale. Yet, we also witnessed that critique may lead to improvements. Newcomers (and visiting researchers) are a cultural resource precisely because their surprises may become valuable for our self-analysis.

Martin Parker has emphasised that differences can always be identified in organisations and that people in organisations are never just *organisation members*. They may be perceived as gendered, ethnic and religious identities, and these identities cross and coexist with their professional identities (Parker 2000: 133).

Sometimes these images are characterised by expectations that are associated with understandings that stem from the analytical field and are concerned with body signs (sex, colour and age), class membership and their meanings (see Hasse 2008b). In our meeting with the empirical field, we may become surprised if it does not live up to the presumptions we have learned in the analytical field. Yet, we might also look for confirmation that the very difference we have chosen to emphasise on in the analytical field also makes a difference in the empirical. The research apparatus malfunctions if it perpetuates the expectations from the analytical field in an empirical field, where they are not supported. We must always aim at challenging our own presumptions so we are open to detect nuances in the participants' practiced places, even when relations between artefacts and meaning are not verbalised. Precisely because cultural analyses are not just factual descriptions made by a mechanical apparatus, but produced by a sensitive apparatus which itself is prone to change with the learning, both participants and researchers experience that cultural analysis is a sensitive area to work in. Frictions may arise at any point as research can affect the habits, values and emotions of other people. Cultural analysis is furthermore often used as political products in the empirical field, where participants with local interests tend to expect the research position to be used to *advocate* for local interests (e.g. Hasse 2000). The analysis can act as a political and management tool for selecting and applying theories in the analytical field. The more the researcher becomes associated as a participant in the empirical field (e.g. as an employee of the organisation studied), the more difficult it is to maintain a position as the radical other.

Surprising Practices made the visiting participant observers aware of how they bring their own frameworks of cultural understandings into observations of others as implicit comparisons – as they contrasted their own cultural expectations with others. Once sedimented, it takes something special to make us aware (again) of these self-evident connections between spirits and certain acts, or odours and space, or bells and patients.

Although we can analytically elicit and imagine a common collective group of *nurses*, we have to accept that not everyone in an organisation culture of a hospital has learned exactly the same connections. The more we learn, the more agential knowing is aligned with our ethnographic subjects and the more our surprises become aligned with the experienced. Being surprised by the nested frictions in the dust bunny boils down to matters of engagement; one may be surprised at the persistence with which people claim spirits exist in the Amazonian forests, but that does not mean that you are engaged in what spirits do to you and the environment. Becoming engaged moves you from being positioned as a newcomer in the dust bunny to becoming an engaged participant who is learning to expect and interpret the world as the other participants do.

In the next chapter we shall explore in more detail how newcomers become experienced in the practiced places of *collective activities*.

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Chapter 7

Towards Nested Engagement

In this chapter I shall deal with what I term ‘scalar learning’. It is meant as a means to resolve the basic question of how to reconcile individual performances with *cultural wholes*. Cultural analysis must acknowledge that at one level, cultural practices are composed of individual performances that are only intelligible within a group of practitioners. At another level cultural practices can be studied as patterns, systems and societies identified by researchers ‘against the more or less stable background of other performances’, which can be understood through practice theory (Rouse 2006: 505).

The problem is that there has been no reconciliation in the analytical field between methodological individualism and methodological holism. Methodological individualism is ‘explaining social phenomena as a result of individual actions’. Methodological holism is ‘the explanation of phenomena by means of structures or social wholes’ (Postill 2010: 6). Practice theory may be placed in the middle connecting the two. Though practice theory may be just as contested in the analytical field as theories of culture, practice opens up for ‘the intimacy of natural and human worlds’ (Rouse 2007: 676). In a cultural–historical perspective, practice is a (de)liberated agency, i.e. the human ability to act upon and change the world. It removes focus from determined constructions of structuralist and systemic models as well as ‘deterministic holism’ (Zahle 2007: 318) while avoiding the trap of methodological individualism.¹ The question boils down to this: ‘To what extent is ethnography a generalizing form of inquiry?’ (Risjord 2007: 401).

What I argue in this chapter is that even though the analysis of cultural *wholes* – known as ‘holism’ in anthropology (Risjord 2007) and named ‘wholism’ by Joseph Rouse (Rouse 2006) – is an analytical construct, it is not *just* a construction. People

¹ For a thorough discussion of the problem of methodological individualism, see Zahle 2007. In my discussion, there is no absolute distinction between methodological individualism (sometimes connected to ‘liberal values’) and methodological holism connected to espoused ‘collectivist political ideals’ (Zahle 2007: 318). On the contrary, the theory of cultural learning processes connects values and ideals, person and collectives of persons sounded through by cultural forces.

learn to share more or less collective wholes of cultural connections through what I have called ‘cultural learning processes’. Cultural learning processes align artefacts as relata-within-phenomena. Artefacts to some extent become collectively shared anchors that nest a force of cultural thinking and vectors of movement with material surroundings. This ‘more or less’ or ‘to some extent’ can be argued to be resulting from the participants’ different cultural learning processes. In a geometrical space, the people present may perceive the same phenomena, but they will most likely differ somewhat in what they perceive as relata-within-phenomena. This is a result of scalar learning. The scale I have in mind is not one of equally sized pixels in a map, where we can zoom in and out – diversity in humans is non-scalable in any scientific sense (Tsing 2012). It is a scale of more or less aligned agential cuts (Barad 2007), where newcomers are most ignorant of what counts as cultural markers while expert practitioners have become more or less aligned in their nested being-in-the-world.

One way to describe how participants become scalarly engaged and directed in their nested practiced everyday lives through learning in organisational cultures is through a diffracted reading of Barad’s agential cuts and intra-action with cultural–historical activity theory (CHAT). The notions of ‘practice’ and ‘the collective’ are undertheorised in Barad’s, though she does mention that claims of collectivity must take account of both the practices that produce distinctions between humans and non-humans as well as the practices ‘through which their differential constitution is produced’ (Barad 2007: 59). I believe CHAT has important insights to offer here, keeping in mind that any ‘collective’ must be accounted for.

There are different versions of CHAT, but most connect being engaged by addressing how humans rally around collective object motives. Interlocutors from the analytical field are all joined in making interventions and extensive fieldwork the basis of their analysis of activities. Such interventions often take place in workplaces or public institutions like schools, kindergartens, hospitals, court houses or municipalities, but they may also include private workplaces and even family life. Most often these places of empirical research are based in the researcher’s own country, though the research may include persons from many nationalities. The analytical cuts in an activity theoretical analysis are, in my rendering, connected with the individual researchers slightly different fields of attention, which make the empirical field of practical collectively shared activity emerge in different ways: as a system of activity bounded by a collective object motive (e.g. Engeström 2001), as a person moving between activity settings in societally supported institutions run by traditions for performing particular activities (e.g. Hedegaard 2009) and in the collaborative activity of expert professionals trying to develop a common knowledge and align their object motive – e.g. different perspectives on vulnerable children (e.g. Edwards 2010, 2012).

7.1 Fields of Attentions

When we are nested in a familiar practiced place, we act with habitual confidence in the geometrical space. The artefacts we engage with are rarely considered separate from the practical activities we engage in. The expectation of how materials move about (or stay put) adheres to the whole of our experiences. We inhabit the practiced place. We have become ‘expert practitioners’ in the sense proposed by Anne Edwards:

A cultural–historical account of expertise is based in the Vygotskian view of learning as a process of internalisation and externalisation, during which people reconfigure their relationships with the practices they inhabit. Importantly, learning or developing expertise in a practice is not a neutral process: it involves a dialectical engagement in activities where what matters for people as individuals is highlighted by them as they interpret and respond to the tasks they encounter. (Edwards 2012: 23)

To inhabit a practice, the involved people must at some point, over time, have learned the connections that, to some extent, make them collectively expect the same kind of actions and reactions from each other. What is missing in most practice theory (see, e.g. Bourdieu 1977, 1990; Rouse 2007; Schatzki et al. 2001) is the Vygotskian insight into the *learning processes* that make it possible for newcomers to align culturally and become expert practitioners. Friction emerges in the energised practiced place whenever learned expectations of how newcomers should walk, talk, dress and move around artefacts are not met.

The Vygotskian approach helps us understand that many social practices, but not all, take place within an organised cultural dust bunny of sometimes collectively shared relata-within-phenomena. Each single human being’s agential knowing and attention fields, in which intra-actions make materiality emerge, are unique, because there are differences in the cultural connections each person has learned. These differences are not just connected to personal life stories, but also to the emotional and affective fields of attention tied to the practitioners’ doings in the physical place. Field of attention is (as discussed in Chaps. 3 and 5) a concept developed by Vygotsky (e.g. 1998: 73; 1978: 36) to make us aware that learning, thinking and practice are tied together. With Barad we can say that our agential cuts creating relata-within-phenomena are a learned attention field. When, for instance, directors walk into a boardroom, they may not check whether the bins are filled nor notice the coffee stains on the tables. The staff in charge of the char work may pass the boardroom with their cleaning materials without casting a glance at the folders on the table. The cleaning staff sweep the boardroom, wipe off the table and remove coffee cups. For them it is a problem that the board members wasted crumbs from lunch on the white carpet. It affects their work and thus engages them. They may move a stack of papers in a blue manila folder to get to the dust beneath it, but they may not look attentively at the title on the blue folder saying *crisis strategy*. More importantly, the board members do not expect them to. Spy stories are full of examples of how our expectations of behaviour make us overlook unexpected behaviour (as when, for instance, a woman can walk out of a company with secret

documents in a ladies handbag, because the guards connect spying with men and thus watch out for a man with a briefcase). We are expected to live up to certain social roles in cultures (see Chap. 4), and most often we meet the expectations because it is what matters to us. The title at the blue manila folder matters to the secretary, who takes the minutes of the board meeting, and the members of the board, who participate in the meeting, are likely to look at the title with curiosity. For the board members, like those Schein encountered (see Chap. 2), it might cause friction if they had not heard of a *crisis* before the board meeting or if they had not been involved in developing an emergency plan. For the cleaning staff, friction may emerge when they pick up breadcrumbs from the carpet.

Material artefacts, like cigar ash and manila folders, are cultural markers in the sense that they point to the daily incorporated practices which might be different for the participants; in so far they have different kinds of fields of attention. The material artefacts mark a culture in the sense that they are collectively intelligible though they are connected with different values, feelings and moral evaluations.

Work and mattering matter in cultural organisations are distributed. Fields of attention are usually distributed across work tasks, and they are, to some extent, collectively learned by a particular group of employees engaged in similar work.

Although material artefacts have been connected with shared public cultural meanings (and most people can recognise a container of chocolate milk and a blue folder), it does not mean that we always organise our cultural knowledge of cultural artefacts in uniform, shared cultural models. The employees in a company do not share common basic assumptions about everything, just because they are employed and thus positioned in the same geometrical space. Neither do they live in solipsistic nor discrete worlds filled with stand-alone objects (in which case communication between humans would not be possible at all).

When practitioners are nested in a familiar practiced place, they seem in harmony with each other and the materials around them. Their intra-actions evolve smoothly at least as long as they stick to their own fields of attention in the practiced place and meet the expectations of the others.

Many analyses of practice underline the notion of harmony, as is the case in many analyses of organisational cultures. The harmony is often analysed in an *integration perspective* (see Chap. 2) as an internal harmony that can be threatened by an uncomprehending world. Harmoniously integrated organisational cultures are often directed towards the production of one particular object. Many different actors' contributions are required, and expertise and work are distributed but function together without friction.

Yanow describes such a collective of flute makers, who create flutes in a harmonious community where each works from their own knowledge about flute making (2000). Similar distributed knowledge is found in Hutchins' analysis of the distributed human and non-human agency necessary to make a ship sail (1995). In this line of work our cognition is distributed not just socially but in 'whole environments':

We think the theory of distributed cognition has a special role to play in understanding interactions between people and technologies, for its focus has always been on whole environments: what we really do in them and how we coordinate our activity in them. (Hollan et al. 2000: 174)

This *distributed cognition* is formed in a group where people do not do the same, but together they contribute to a common activity. Hutchins' own examples are often taken from the world of sailing where marine officers, deck boys, the captain and various instruments have different tasks. Each perceives the ship from their individual cognitive knowledge, and together their distributed cognition makes the ship sail.

The internal harmony is found in Jean Lave's analyses of the tailors in Liberia (Lave 2011; Lave and Wenger 1991). External conflicts may threaten harmony – as when tailored clothes and handmade flutes are replaced by commercial products – but internally the machinery works and is understood through theories of *distribution*.

Although a participant in Lave and Wenger's practice-based learning perspective approaches a theory of the collective in a different way, the starting point is, in this perspective too, a common overall understanding of the community (1991). In their work focus is explicitly not on cognition (as in Hutchins) but on *situated practice*. The participants in the tailors' community of practice do not learn distributed cognition, but follow apprentice learning through different stages of the learning process leading to full mastering of sewing a suit. In other words, the apprentices all engage in the same kind of practice-based learning and thus learn the same kind of agential knowing in relation to the mediating artefacts as they learn to become more legitimate participants in tailoring. Different body operations gradually lead to a more inclusive position in the community of practice, as the tailor apprentices learn to sew parts of the suit piece by piece. Finally, they have been through all the bodily operations and master sewing the whole suit from what we can call an incorporated agential knowing that includes not only cutting and sewing but also learning in the entire social space of the community.

The perspectives of Hutchins, Yanow and Lave appear close to Edgar Schein's 'integrative' and harmonious analysis of organisational culture. In that respect, the analysis of the anthropologists Lave and Hutchins does not differ much from general anthropological descriptions of cultures as *wholes*, though it offers us tools to better understand the inner workings of these organisational cultural *wholes* as either distributed or apprentice learning.

7.2 Harmony and Frictions

In such integrative, harmonious cultural analysis, researchers may easily overlook the underlying *invisible* frustration and invisible exclusions. Engeström and Cole also connect the activity system with the notion of distributed cognition (Cole and Engeström 1993). Where Hutchins focuses on the smooth operation, Engeström

adds frustration and how that becomes a driver of a collective process of developing a new object through an expansive learning process (1987). Thus, harmony is somewhat restored – although Engeström underlines that expansive learning builds on destruction of harmony (e.g. 1987). With Engeström and Bateson, we are given tools to understand frustration and how harmony can be restored. Yet, all of these approaches, from the analytical field, gloss over the differences between each participant's continuous scalar learning processes. Some participants are never included in the harmonious cooperative communities of practice, distributed cognition or expansive learning processes. In activity systems, communities of practices and distributed cognition, we find an underlying assumption that participants eventually understand the whole of which they are a part. By drawing attention to the organisational culture as a learning process for each participant, the research apparatus opens up for an analysis of how some participants may simply not be aware that their material anchors are not entirely perceived as the majority mostly perceives them.

Those who have an overview of anthropological space may also become masters of reading cultural markers in geometrical space. They are placed on a scale of learning, which give them advantages manoeuvring in cultural ecologies. There are no absolute boundaries between insiders and outsiders – all participants' connections are distributed different places in a scalar space. When sharing a geometrical space for longer periods of time, people gradually align their perceptions from wherever their positions take them. Char staff to some extent learn how board members direct their fields of attention and sometimes vice versa, though power relations may make learning a one-way road.

Yet there is also another problem. Some people are good at and some people less apt at learning cultural markers and what matters to others. What is shared by the rest of the collective may never be shared by particular participants. Such invisible scalar learning processes do not necessarily lead to expansive learning and subsequent harmony. Instead of expansive learning, it forms a subtle background for expulsion and transformation of humans, which are rarely explicitly acknowledged in the analytical field. They take place in everyday activities in ways that are much less obvious than the expressed *stigma* often described in sociological studies (e.g. Goffman 1963). Stigma is defined as already acknowledged signs of not belonging to a social group. Such signs may be defects of the body (wrong skin colour), defects of character (mental illness), wrong age, religious beliefs or membership of a particular outcast group such as an ethnic minority, racial group or even being female in a masculine power culture. These defects could all be seen as physical manifestations acting as cultural markers in a particular organisational culture.

Like other practitioners, researchers also have specific fields of attention tied to their core expertise; as research apparatuses they make certain theoretically informed agential cuts in their analysis of other people's engaged practices. Following Dorte Marie Søndergaard in her use of Barad's notion of agential cuts, human subjects, such as researchers, are part of the intra-action processes that make up the world (Søndergaard 2013). On a very deep level, Barad's analysis of

entanglements signifies the mutual constitution of entangled agencies and outlines, as mentioned in Chap. 1. Mutual entanglements do not presuppose individual elements, but personal engagements. To capture this dimension, Barad's conceptualisations of agential cuts may be expanded by a diffracted reading of a cultural–historical constitution of fields of attention. The notion of *agential cuts* indicates how material emerges as:

... performative and agentive – as an intra-active force that enacts open-ended processes of agential cuts that produce distinctions, boundaries, differences and thereby 'phenomena' of the kind that often seem self-evident to most of us. The distinctions and boundaries are 'real effects' of the intra-active enactments, and real effects are the effects of intra-active forces that constantly mingle and re-mingle; they are effects of entangled intra-relating and, in that capacity, they sustain open-ended processes of reconfiguration, reconstitution, re-enactment. (Søndergaard 2013: 60)

In an eloquent analysis of Tony and Peter's virtual gaming, Søndergaard uses the deeply philosophical vocabulary of Barad to show us the emergence of her own analytical cuts into an analysis of children's reality in virtual gaming.

The question from the theory of cultural learning processes is whether agential cuts are sensitive to expected reactions in the empirical field. An analysis focusing on the harmony perspective of culture could be seen as tied to the secure, insensitive and ignorant position of the researcher far from the subtle exclusions within the group of ethnographic subjects.

Researchers often follow a particular group of practitioners which opens for learning about what matters *to them* and what causes friction *for them*. Yet frictions may arise between groups with different fields of attention, for instance, when board members learn that the char staff have been reading the papers in the blue manila folder, or when the char staff learn that board members deliberately place cigarette buds in the windowsills instead of ashtrays. In other words, frictions arise when someone behaves in unexpected ways in relation to the other participants' expectations of their social position in the organisation. What researchers cannot assume, however, before we learn as research apparatuses is how artefactual signs actually mediate. Gender, age and skin colour may be signs of inclusion rather than stigma. Many other subtle mediating artefacts, or lack hereof, may friction people out of practiced places. From the perspective of cultural learning processes, each newcomer, as well as the researcher, has to learn the relevant cultural literacy of reading cultural markers including the reading of the collective meaning ascribed to body signs.

When the ethnographer is not confused or surprised by ensuing actions and reactions, he or she can be said to have achieved a kind of expert overview of the possible connections in the organisational culture. It has learned some of the collectively shared connections between materiality and the local meanings tied to words, actions and things. At this stage, ethnographers and ethnographic subjects alike have aligned a certain level of *cultural literacy* in reading cultural markers. Cultural literacy is here a cultural version of Barad's concept 'agential literacy' (2000) which captures how to learn the frameworks of learning that make certain local and collective reactions seem self-evident and expected. By shifting positions

in geometrical and anthropological space, we learn about the shifting expectations of the collective consciousness through cultural markers.

Cultural markers may be aligned through collective learning. Though the CHAT notions of collective learning might be far from Barad's point, it makes sense to talk about intra-actions as processes of more or less aligned collective meaningful perceptions of phenomena. We intra-act with *artefacts* not defined by inner essence but by all the lines of connections evolving in practiced places. These processes make the perspectives of the newcomers and the experienced differ, since newcomers in the beginning tie less locally relevant connections to artefacts. Perspectives tied to social roles also differ in this respect as well as the different perspectives of the researcher and practitioners. Yet, we can all learn to align cultural markers to some extent: we can change the positioned social designation and learn from reactions as well as our embodied practice-based learning.

To unfold the special position of the engaged researcher, I propose we need to connect these understandings of harmonious activity with Anne Edwards' notion of common knowledge, relational expertise and relational agency. Edwards gives us clues to how the position of various individuals may be aligned without becoming totally convergent. Edwards draws on Leont'ev's definition of an object motive as that which distinguishes one activity from another: 'It is exactly the object of an activity that gives it a determined direction. According to the terminology I have proposed, the object of the activity is its true motive' (Leont'ev 1978: 62).

Edwards explains that:

This line of reasoning suggests that, for example, a teacher and a social worker are likely to interpret the developmental trajectory of a vulnerable child in slightly different ways because they are located within different practices where the motives for engagement with objects of activity are also different. (Edwards 2010: 7)

Her analytical approach has been developed from both Yrjö Engeström's and Mariane Hedegaard's versions of activity theory. Neither of these relates engagement directly to researchers' learning process nor can the expulsions, which I argue, always be found in nested activities. Nevertheless, Edwards, Hedegaard and Engeström's approaches give a good estimate of what a collective process of alignment would look like, and it can help to explain how researchers, as newcomers, can learn from subtle and local frictions. In action research and *engaged* ethnography, ethnographers often try to collaborate with their interlocutors (Low and Merry 2010; Lassiter 2005). The newcoming researchers do not, like Edwards' experts, necessarily work together to expand an object of interest, but they still have to engage in learning about the object motives that engage other people. Positioned as co-contributors, ethnographers can be added to Edwards' group of experienced practitioners, who each bring their own engagements to bear on a collaborative object as they learn to align and engage with each other. This is a much more difficult process than one should think, also when the engagements take place in seemingly well-known practiced places, like schools and kindergartens.

Nesting and engaged learning is tied to cultural markers and with CHAT cultural markers could be tied to collectively shared object motives. From the point of view

of the newcomer, the question becomes how we learn to identify the object motives of others and subsequently identify with and engage in the ongoing activities. It is not an easy process for an ethnographer to become engaged in what engages others. From the outset it elicits frustrations, precisely because there is a difference between how newcomer and experienced *cut out* their field of attention.

7.3 I Came Across the Border to China

I have often played a game with my students at the Danish School of Education called ‘I came across the border to China’. It is a game that teaches students the force of cultural exclusion and thus acts as an illustration of the theory of cultural learning as a process. In the game we select one or a few students who are to play newcoming ethnographers. They are to act as visiting scholars who must learn something about a new harmonious country, China, and its inhabitants. The newcomers are asked to leave the room (and not listen at the door), while the rest of the class, the insiders or ethnographic subjects, decide what we mean defines being Chinese. In our game, being Chinese simply refers to any kind of collective agreement of how to act and react in the encounter with the newcomers (and the game thus has nothing to do with China. We could also have called the game ‘I came across the border to Denmark’ or the organisation Ciba-Geigy). We become ‘Chinese’ through a collective social designation, connecting a particular meaning to particular artefacts in our surroundings – including the agential knowing of how to act in relation to the artefacts. For example, all insiders in the room agree that those in the room wearing glasses will always answer *yes* to whatever question is asked by the newcomers and those without glasses will answer *no*. In other words, there is a pattern behind our collective reactions which are intelligible to everyone in the room but the outsiders, and the pattern can only be detected through the newcomers’ gradual learning process of a collective frame of learning.

When the newcoming ‘ethnographers’ enter, they are told they can ask any question they want in order to be included in the culture, and they begin to ask questions about what one should be able to do or say to be recognised as a Chinese (they know, of course, there is a cultural pattern to be detected behind the answers). The insiders, *the experienced ethnographic subjects*, can only answer *yes* or *no*. The newcomers ask long and elaborate questions, but they soon become confused when they receive very strange and unexpected *yes* and *nos*. Some ethnographic subjects answer *no* when asked if it is a prerequisite to be able to write Chinese to be a Chinese. The next ethnographic subject answers *yes* to the question whether everyone in the country must go to school and pass written exams in Chinese. Along the way the newcomers interpret the answers and try to build hypotheses about which country China is and what characterises its ethnographic subjects. One of the newcomers asks an insider (with glasses) if there are many schools in China, and the insider convincingly corresponds *yes*. Then follows a question to an ethnographic subject (who also happens to be wearing glasses): ‘Are there many

talented teachers in the country?’ Again the answer is a convincing ‘yes’. After these answers, the newcomers form the hypothesis that the population of the country is highly trained, and they ask a native insider (who happens to be a person without glasses) if the population is highly educated. Now the answer is an equally convincing ‘no’. Then the ethnographers discuss the hypothesis again and pose a new question: ‘Is the country’s schools reserved for the elite?’ They ask a native speaker without glasses who answered ‘no’.

The ethnographers choose a new strategy and ask a couple of inhabitants whether they are happy to learn something new. The answer is in both cases ‘no’ (they are not wearing glasses). Then they form a new hypothesis: this is a country with a government that has staked a lot on educational opportunities and good teachers, but for some reason the people in this country do not want to learn something new. So the newcomers ask one of the ethnographic subjects (a native without glasses) whether the country’s teachers are proficient. The answer is ‘no’ – and the ethnographers confusion is complete.

It is a painful process to play a newcomer ‘ethnographer’ in the game, which of course also often arouses much laughter from the audience when the newcomers’ confusion becomes apparent. It is this kind of laughter ethnographers, and any other newcomers, must prepare for in the meeting with an already established practiced place, where we do not share a common knowledge.

The game illustrates in a simple form what it means to be outside a collective semantic consciousness which form lines of connection between materials and their meanings.² The newcomers become more and more confused; they know there is a pattern behind the answers, but they cannot detect it. Like Bateson’s porpoise they become frustrated. They have difficulties understanding the motives behind the answers. The game also illustrates that people have to choose different learning strategies and have to be persistent. After many questions, rejected hypotheses and strange answers, the visiting scholars begin to suspect that the inhabitants are somehow programmed to give certain *yes* or *no* responses – without any content coherence. There is no object motive other than answering the correct way. From this point it is only a matter of time before they figure out what the nay-sayers have common (no glasses) and what distinguishes them from the yes-sayers (who wear glasses). They have captured the meta-context, like Bateson’s porpoise, and from now on they are insiders and can predict and *expect* answers.

The game is a primitive example of how a researcher must engage in cultural learning processes and overcome frustration of not knowing how a cultural community creates boundaries through already established consensus. Researchers and other newcomers cannot take for granted that they already know and understand what the other participants have learned to *expect*. They must learn to transcend their own prior understandings in order to be included in the new collective. When

² In a subtle way, it also illustrates the danger of relying on interviews as the only approach during fieldwork. Questions form answers. What the answers actually mean may be obscured by the interpretations of those who asked the questions in the first place from their own frame of learning.

the researchers, and other participants, believe they have understood the underlying collectively shaped pattern, they begin to expect certain answers. For researchers it may serve as resources for cultural analysis when reactions are as expected or not.

In the game there are simple answers to be detected. In practice it is much more difficult for researchers – as well as for other participants – to make sense of local frictions.

In trying to grasp what makes ‘China’ harmonious, we have seen students in the role as the newcomers, who at some point almost had to give up. Once a very frustrated student was about to cry because she could not understand what everyone else seemed to know. It can be a very cruel game, if not guided by a good trainer with an overview (like Bateson’s trainer in Chap. 5). Precisely when the game is *not* controlled, it will, however, play on a more realistic scale. In the empirical field, where friction and expulsion is an integral part of daily practice, there are no trainers or coaches, who ultimately decide and explicitly designate what is right or wrong. Powers of culture create frictions as they sound through persons in practiced places and draw some into practices but expel others. What holds the cultural dust bunny together cannot be predicted. It is confusing, causes anxiety and pain when you do not get the expected reactions but is joyful when you get the expected response from the field (Hasse 2008b).

In my meetings with empirical fields, I have experienced many surprising exclusions, which my theories in the analytical field had not prepared me for. Organisational cultures expel material artefacts, action, words and people. Over time we learn to expect which frictions may arise and we become better at foreseeing actions and reactions. We develop a relational expertise in coming to know what matters to others (Edwards 2010). This alignment also influences our theories in the analytical field, where what we perceive as ‘wholes’ differ with fields of attention.

7.4 Analytical Cuts

In the following discussion, I explore how three cultural–historical activity theorists change their theoretical perspective on the concepts of collective and practice, when they align their own perspectives with those of the practitioners. Engeström and his colleagues have analysed many private and public organisations, such as hospitals and post offices, as activity systems. The analysis always centres on an identification of the collective object in the collective activity, as, for example, the ‘healed patient’ in the health-care system (Engeström 2000) or ‘mail delivery’ in post offices (Engeström et al. 1996). New expansions of the collective activity can take place through an intervention strategy, which Engeström has developed under the name of ‘change laboratories’.

Engeström makes a very important addition to the original Vygotskian framework when he combines Bateson’s notion of frustration with the concept of learning in activity. This coupling gives rise to a new theory of expansive learning driven by

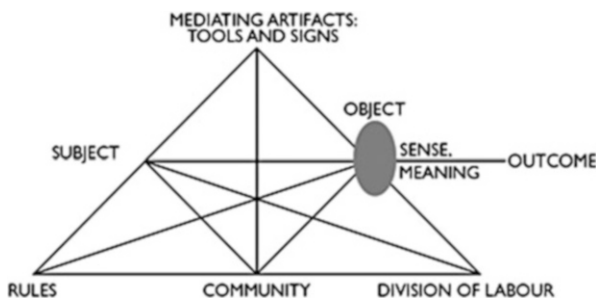
a collective attempt to solve the individual frustrations and thus move the collective on to a new state of harmony. In the analytical field of cultural psychology, this theory of expansive learning in activity has functioned as a theoretical model that systematises organisations as activity systems with focus on a common object.

Engeström develops a system theory that combines Vygotsky's theories of internalisation and development with Leont'ev's theories about levels and collective activity and Bateson's learning theories which underline that frustration is the result if we do not understand the activity context and the collective object for our actions. The activity system is often plotted in the form of a triangle, where the upper part is formed from Vygotsky's original theory of mediating artefacts, which, in a later rendering, is depicted as a small triangle with subject (S), object (O) and the mediating artefact (M) in the corners (Cole 1996). As described in Chap. 3, the triangle depicts Vygotsky's fundamental claim that the world of the individual subject is always socially mediated through artefacts. Objects, in the form of a physical materiality, are mediated through signs (words) and can be changed through physical tools (axes, hammers etc.). The upper part of Engeström's triangle repeats that humans can transform (and control) their own nature through internalised signs and tools. Mediating sign artefacts organise and systematise the connections to material artefacts, first, as social inter-psychological meaning-making processes. Later, when internalised, sign artefacts become our personalised intra-psychological thinking tools.

Vygotsky's ideas of how social and collective resources are internalised are further developed by Engeström's expansion of the smaller triangle to a larger one that places the subject, mediating artefacts and object in a community with its own rules and division of labour. What holds together this collective activity system is that the community, its division of work, rules, subjects and mediating artefacts are directed towards a common collective object that motivates collective actions.

Engeström's original model of an activity system, which has since been used as a model of analysis for organisations, was first developed (in English) in the book *Learning by Expanding: An Activity-Theoretical Approach to Developmental Research* (Engeström 1987: 78) (Table 7.1).

Table 7.1 Engeström's model



As an addition to Vygotsky's original idea, artefacts are not only mediated in the systemic theory but also collectively addressing one or another collective outcome. Engeström draws on Leont'ev's (a colleague of Vygotsky) concept of collective activity. Engagement in these activities is often taken for granted, since engagement is simply inherent in being concerned with the collective object of the activity, which is also the motive behind engagements.

A simple (and for some in the analytical field too simple yet frequently used to illustrate the basic points) example of collective activity is *hunting*. In relation to Vygotsky's original discussion of the relation between subject, object and word as mediating artefacts (see Chap. 3), this example illustrates a concept represented by the sound of the word *hunting*, which in the collective activity forges links between the subjects' action, the rules guiding the community and the distributed division of labour in the quest for a common object that everyone sees as making personal sense and to which they attach the same collective meaning. This meaning is *lexical*; in so far, language speakers can explain the basic division of labour, rules, community and the mediating artefacts necessary for *a hunt* directed at the common object, e.g. a deer – with the collectively shared motive to hunt the deer down, kill it and distribute the meat. The object, i.e. the deer, is, in this version of cultural–historical activity theory, the true motive of the activity (Leont'ev 1978), which turns the raw material into a collectively fulfilled need for meat.

In the cultural–historical activity theory presented by Engeström, the theory of expansive learning builds on the concept of *motive*, which plays a crucial role; in so far motives set the limit for the activity and its potential development. The *motive* contains the seeds of frustration and thus the potential for collective expansion.

This focus on the collective motive, which drives human activity, is inspired by Leont'ev, who also places great emphasis on how the object of the activity may constitute a rallying point for a collective community, rather than the mediating artefacts, which were the original unit of analysis for Vygotsky. In this respect, the Engeström–Leont'ev focus on the activity as the unit of analysis both enhances and diminishes the original Vygotskian theory of culture as learned through mediation. In the perspective of activity theory, *culture* is enfolded in the *collective* activities.

The leading motive – related to the object of the activity – is internalised in the individual persons so they control their own immediate impulses, interests and needs. In the hunting example, Leont'ev illustrates the collectivity of the activity by making us focus on a *clapper* (a person whose function is to clap his hands to scare the deer so it runs towards the hunters), who belongs to a hunting party. The game, the object of the activity, comes towards the clapper. Instead of trying to catch the animal (with the immediate consequence of obtaining the right for meat and skins), the clapper, in accordance with the social division of labour, claps the animal away – in the direction of the hunters (Leont'ev 1981: 212). In this simple (thought) example, the clapper has internalised not only the concept of *a deer* but also *the hunt* and thereby the other participants' positions tied to the division of labour in the whole activity. The clapper and the hunters attach the same collective significance to the hunt. They share the meaning and it makes personal sense to the clapper to hunt the game away, because he expects the hunter will shoot the animal. As in Bateson's

example, we can talk about a system theory because all elements of the system work in synergy – and harmony.

Leont’ev emphasises, from a Marxist thinking, the importance of the division of labour, providing man with a way to perceive his own standing as one among others in a collective activity system. The subject can see himself or herself as a collective subject, one of many in the process directed by the same motive, even if his or her actual actions are distributed and different. Personal actions and expertise are to be seen from the perspective of a collective whole, and collective activity has directness towards a common overall motive. Engeström defines a collective object as follows:

A collective activity is driven by a communal motive. The motive is formed when a collective need meets an object that has the potential to *fulfil* the need. The motive is thus embedded in the object of the activity. The object, in turn, is to be understood as a project under construction, moving from potential ‘raw material’ to a meaningful shape and to a result or an outcome. In this sense, the object determines the horizon of possible goals and actions. But it is truly a horizon: as soon as an intermediate goal is reached, the object escapes and must be reconstructed by means of new intermediate goals and actions. (Engeström 1999: 65)

7.5 From Body to Collectivity

An object is not perceived as a static phenomenon but as an overall collective ‘moving target, not reducible to conscious short-term goals’ (Engeström 2001: 136). The activity runs from the collective motive through personal bodies or vice versa. Body operations can become conscious actions, actions can lead to awareness of the collective activity and the motive of activity can be changed through bodily operations and actions. Motive and engaged activity construct each other in a mutual collective social process. In addition to being a theory of activity, the system model is also a tool for structural system analysis of a practice, which is not necessarily reflected as a whole by the participants. With Engeström and Leont’ev’s perspective on the activity system, there is a shift in focus from Vygotsky’s mediating artefacts to the collective object set in motion by the collective activity. The actions of the people engaged in activities are not common to all; they are *distributed*.

One and the same goal-directed action may accomplish various different activities and transfer from one activity to another. On the other hand, the object and motive of a collective activity may typically be sought after by means of multiple alternative goals and actions. (Engeström 1999: 65)

In activity theory an activity is analysed at different levels. The most basic is the corporeal level, where body operations are tied to material constraints. *Body operations* are associated with physical conditions and body skills: the agential knowing at its most basic level. *Actions* constitute the next level in the theory, where un-reflected body operations become the grounding from which we perform reflected actions as a means to achieve the momentary goals of everyday life.

This is where Engeström (but not Hedegaard or Edwards) places *practice*. When the hunter loads his gun and the naval officer knocks on his compass, they perform body operations. The hunter does not need to reflect on how to load nor does the naval officer need to reflect on how he should knock on the compass to get a response. The engagement lies not in the body operation but in the action, as the hunter loads the gun to get a prey and the naval officer knocks to gain knowledge of whether the ship is on the right track. The *clappers* do not perform the same bodily operations as the hunters, but they are equally engaged in the collective object. Though engagement is distributed, it is still directed at the same collective object motive. The sailors are engaged in other operations and actions of the body than the naval officer. They do not need to perform the *knocking* operation in order to be engaged. In the larger perspective of the system, the naval officer's action is spun into a network of connections between the sailors' actions that are associated with the actions of the other participants on board the ship because they are all engaged in the same *activity* and their joint efforts have a common overall objective: to make the ship sail (to a certain place).

This chart (where Engeström's combination of Leont'ev and Bateson, in order to enhance activity theory, is complemented by my addition of Engeström's perspective) can illustrate the complex levels of collective engagements (Table 7.2).

Though engagement is inherent in Engeström's system theory, it is frustration, and not engagement, which Engeström emphasises as the driving force of changes in an otherwise stable and harmonious system. In activity theory, tension and frustration among different participants do not lead to subcultures and expulsions, like in organisational culture theory, but, when resolved, to the development of the common shared activity. Culture is not discussed as a force in itself, but is generally reserved for discussions of cultural–historical developments of tools and signs. When frustration is allowed to become explicit in the activity system, it may be a resource for further collective expansive learning processes. The boundaries of the activity expand when the object is developed in a collective process. Contradictions are the real driving force of the collective expansive learning processes, but only when 'they are dealt with in such a way that an emerging new object is identified and turned into a motive' (Engeström and Sannino 2010: 7). The motive driving the collective activity becomes a driver for all the participants.

The most significant aspect of Engeström's theory in relation to cultural exclusion and engaged learning processes is the assumption that collective activities are directed towards a common collective object and that expansive learning processes take place within the systemically ordered organisation as a whole (where the

Table 7.2 Engeström's characterisations of the hierarchical structure of activity

Level of analysis	Leont'ev	Bateson	Engeström
Collective motive	Activity/motive	Learning 3	Collective subject
Individual action	Action/goal	Learning 2	Individual subject
Automatic body operation	Operations/conditions	Learning 1	Not conscious

Source: Hasse (2001: 205). Adapted from Engeström (1987, Table 3.1, p. 154)

activity system is the unit of analysis), rather than primarily in the subjects: ‘motives and motivation are not sought primarily inside individual subjects – they are in the object to be transformed and expanded’ (ibid.: 4).

Many scholars, who are inspired by Vygotsky’s cultural theory complex, have turned against what they perceive as Engeström’s distorted interpretation of activity (e.g. Langemeyer and Roth 2006). Some prefer to talk of *tradition* in relation to societal institutions and practice as entirely general and collective practices (such as sending children to school), while the term *activity* is being reserved for intimate relationships (e.g. Hedegaard and Chaiklin 2005).

7.6 Activity Settings

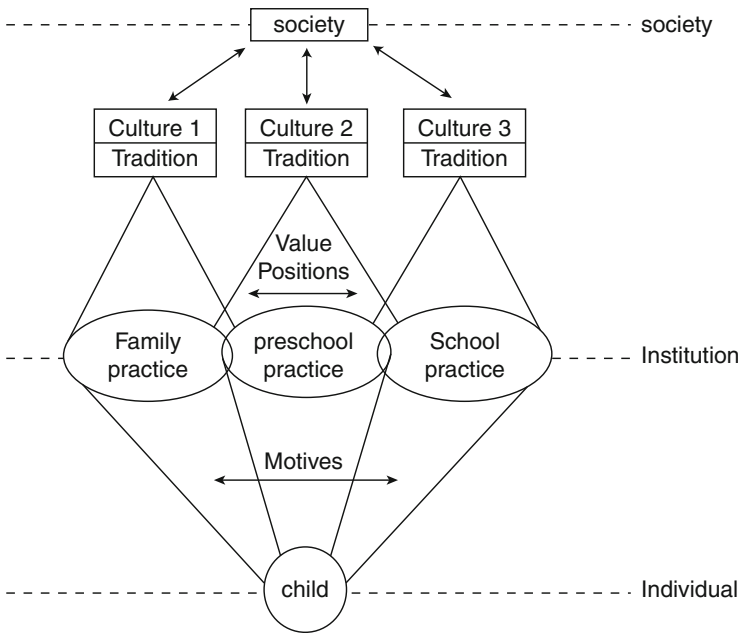
The attempts to formulate another theory of wholeness in relation to learning were initiated by Vygotsky and have been further developed by Mariane Hedegaard, who has followed persons moving *between* institutions. It differs from the anthropological discussions of *holism* as, e.g. *cultural wholes* in taking a person’s perspective and connecting it with institutional practices. With a point of departure in the child’s perspective, Hedegaard presents a model of an integrated whole subdivided in three planes depicting how children live their lives in a society in several institutions at the same time. The three planes are:

- *A formal societal* plane that reflects historically evolved traditions in a society that is formalized into laws and regulations as *conditions* for the existence of an institution (in the model depicted as cultural traditions in a society for different institutions, reflecting different value positions).
- *A general institutional* plane that reflects informal conventional traditions and demands (i.e., related to school and home), taking form as practices (in the model depicted as, respectively, home, school, and day care practice).
- *A specific* plane that reflects the shared activity settings of persons in a specific institution (i.e., a specific home or a specific school, depicted as activity settings in the model). (Hedegaard 2012: 129–130)

The notion of culture is much more salient in the version of activity theory rendered by Mariane Hedegaard (2009, 2012). Her version is not a system theory, but she has created a model to illustrate her thinking, which operates on different planes: society, institution and individual. Hedegaard follows Vygotsky more closely than Engeström when she takes her point of departure in the dynamics of child development, but moves beyond Vygotsky in her discussion of societal conditions as cultural traditions. Drawing heavily on, e.g. anthropological theory of cultural diversity in constructions of childhood, Hedegaard underlines, to a much higher degree than Engeström, how activities must be localised in cultural time and space if they are to conceptualise the variability in children’s development. Culture and activities are not perceived as systems but as persons (Table 7.3):

... participating in and creating activities that realize and contribute to the institutional practices that society provides while also contributing to changes in society. Personal

Table 7.3 Diagram of Hedegaard’s model



Source: Hedegaard (2009: 73)

activities are not systems but processes, and therefore they are not concrete manifestations of institutional practice; they are not inscribed into each other but influence each other dialectically. A person contributes to his own institutional conditions and the perspective of his society; therefore, institution and person both have to be conceptualized as contributing to practice in a theory of children’s development. (Hedegaard 2009: 65)

At the top level of the model, we find the historically developed state apparatus that has developed the conditions for a society, in the form of institution regulations through laws, statutory instruments and institutionalisation of practices. These are what Hedegaard terms the ‘frames’ for participations in activities (ibid.: 73).

At the middle level, we find the institutions living out these conditions through everyday practice in institutions. This everyday practice somehow ties traditions and values together with the participant’s personal motives and competences. Within or across institutions, Hedegaard notes, one can find more or less permanent groups that can be seen as arenas for activities (i.e. friendship groups).

Yet, what is most important for Hedegaard – which also fits my interest in the researcher’s perspective – is the bottom level of the model, where we find the individual person as an actor with, what Hedegaard calls, ‘special needs, projects, and motives in the everyday life, participating in several institutions’ (ibid.: 73).

Contrary to Vygotsky (who touched upon it in his discussions of Levy-Bruhl’s work of the historical development of logical thinking), Hedegaard underlines the

cultural variation and diversity of conditions, including traditions and values of development.

In Hedegaard's view, we find differences in the practices of, for instance, school and kindergarten that may contribute to the creation of a developmental crisis in children, when they move between institutions. This view on child development challenges dominant theories (by Piaget and Erikson) in which development is seen as *general, natural* and applicable to *all* children. Contrary to the Vygotskian approach, Hedegaard stresses that children grow up in cultural worlds influenced by traditions, norms and values *and*, she adds to this, power relations and the question for whom 'is the development important, desirable, and even moral?' (ibid.: 66). Like many others in the field of Vygotsky-inspired approaches, Hedegaard and, e.g. Engeström, Stetsenko, Wartofsky and Edwards underline the liberating aspects of Vygotsky's thinking and note that children do play an active part in constructing and producing the conditions of their own living.

While Engeström emphasises the collective aspect of learning in activity, Hedegaard centres on the individual person moving between institutional practices framed by societal laws and regulations. As persons, we learn in activity settings, and we develop when we move between institutional practices.

Though Hedegaard explicitly writes about children and their learning and development as they move between different institutions in society, researchers can easily learn from this theoretical framework if they replace the word *child* with *researcher*. The researcher is, like a child, a newcomer to cultural institutions (e.g. cultural constructions of family, schooling or work) in a society. The differences between learning and development, also strongly emphasised by Vygotsky, are defined as:

People learn when their activities change their social relations in a practice and thereby give them possibilities for new activities. Development occurs when a person's learning takes place across institutional practices and changes the person's relation qualitatively across all the practices in which the person participates. (Hedegaard 2012: 12)

Following this cultural-historical notion of learning and development, researchers are *professionally* moving between activity settings, encountering new institutional practices and even new societal demands. It is not *enough* that researchers learn about the meanings ascribed to material artefacts by other practitioners. They must also learn to anchor their thinking in the same manifestations as other ethnographic subjects in organisations as a whole. If, however, they are to learn to align with what matters for the practitioners, their learning must also dynamically change their own perception and participation in local activities.

If we, as researchers, want to understand the conditions for how we can become engaged in other practitioners' activities, we must (as in an analysis of child development) participate in the institutions in the societies we visit or live in. Which activities dominate these institutions? What do they demand of the practitioners and what kind of frictions do the practitioners encounter when moving from one institution to the next? The concept used by Hedegaard is *crisis*. This is a more psychological term, with references to the inner state of a child, than the

contradictions found by Engeström and the *frustrations* by Bateson. It is also more psychological than my concept of *friction* in relation to word meaning.

7.7 Relational Agency

In much activity theory, the legacy from Vygotsky is that '[w]e transform the world by interpreting and acting on the basis of our interpretations. Interpreting and responding involve the conceptual and material resources we have at our disposal' (Edwards 2009: 210). As I have argued, we do more than that. Interpretations could be seen as sedimented agential cuts creating relata-within-phenomena that become so embodied as to be expected. Friction occurs when practitioners' collective expectations are not met – as when a newcomer sits on the wrong chair.

As embodied research apparatuses, we must somehow make at least some of these implicit cuts visible in our analytical cuts. Using activity theory as an example, we can see that it matters whether the researcher, like Hedegaard, follows a child from the home, to school and to kindergarten or whether the researcher is positioned *in* the geometrical space of the company, kindergarten or school (and its adjacent virtual spaces) like Engeström. The researcher's position forms our field of attention.

Edwards' position, from which she develops another take on collectivity and practice, is helpful for understanding how researchers engage in learning by aligning their motives with the practitioners. Edwards' concept of *relational agency* shifts the focus of activity theory from system within an organisation to the agency found across systems. Thus, she emphasises the actions of and impact on participants as they learn how to collaborate. On that basis a theory of the capacity needed for this type of engagement can be developed (Edwards 2009, 2010, 2012).

The theories draw on the same theoretical basic Vygotskian insights, but they define *activities* and *practices* differently, so the theoretical concepts fit the researcher's changing positions.

In Hedegaard's version, we are invited to take the perspective of the child moving (and being torn) between activity settings in different institutions like schools and kindergartens. The object of the activity is seen from the child's engaged perspective, and rather than focusing on theorising the collective, Hedegaard's focus is on social and cultural variation.

In Engeström's version, we take the whole of the activity system as our point of departure and focus on the collective engagement and changes through resolution of contradictions. In both versions of activity theory, we find that potentially harmonious activities are disrupted by either contradictions within the system (Engeström) or a personal crisis (Hedegaard). Both Hedegaard and Edwards follow persons who move between different institutions, and they conclude that Engeström's *systems perspective* can be replaced by the *relational turn* (Edwards 2005b, 2009).

Edwards has used activity theory to examine ‘how practitioners from different organizations, with different belief systems and priorities, learn to work together to disrupt the trajectories of social exclusion among vulnerable young people’ (Edwards 2009: 200).

The concept of activity system does not capture the *febrile* boundaries and mixed work forms practitioners engage in today and constantly transgress and disrupt narratives of historical coherence. In our global times, practitioners as well as researchers need to learn how to ‘align their actions across time and space and learn when to interact and when to withdraw’ (ibid.).

Drawing also on Hedegaard’s work, Edwards underlines that to care for the same young people is a distributed task of practitioners tied to many different activity settings:

The education welfare officer (EWO) may act when the child doesn’t attend school, the housing charity worker will come in when her family becomes homeless, and the educational psychologist will make an assessment of her well-being in school. Others, such as teachers, social workers, and mental health workers, may have longer-term relationships with the child and may perhaps be able to ‘dwell in the object’. (ibid.: 201)

The above is an example of distributed expertise, but problems (or frictions) arise when practitioners do not align their different perspectives of the same child, who is the object motive for all of them.

The experts all categorise the child in ways that are specific to each of their professions, and they thus remain located within their familiar activity settings, or in Edwards’ words: ‘[T]hey rarely travel beyond organizational boundaries’ and ‘the affective demands of this kind of work are considerable’ (Edwards 2009: 201).

These practitioners may, however, learn to develop a capacity to overcome these shortcomings because they learn how to engage with the knowledge and expertise offered by others (Edwards 2010).

Where Engeström discusses *collective intentionality* and *distributed agency*, Edwards suggests the notion of *relational agency*, which implies a shift from the systemic perspective on social activities to a focus on joint actions within and across activity systems. Edwards’ position can be summarised as thus:

Relational agency is offered as an enhanced form of personal agency and is defined as a capacity to recognize, examine, and work with the resources offered by other practitioners in collaborative action on an object of professional activity. (Sannino et al. 2009: xviii)

Edwards suggests that systemic theories are not concerned with how the individual learner ascribes *personal significance* to artefacts and the consequences it may have for participation in collective communities. To understand how people develop a capacity for collaboration across boundaries of activity settings, we ‘need to delve into the miasma of the collective and follow Vygotsky’s lead by trying to understand how important cultural concepts, in this case the capacity for being in and part of the collaborative, are incorporated into the individual’ (Edwards 2009: 201).

Making use of Barad’s in this unfamiliar context, we may say that practitioners learn to align their agential cuts, and returning to Vygotsky, we may argue that the

engagements lead to an alignment of fields of attention through an alignment of word meaning. Hypotheses change all the time as newcomers, like in the China game, explore what matters and new distinctions, boundaries and differences emerge. These differences *matter* to the local practitioners but are often only expressed as abbreviated speech (see Chap. 3), where a single syllable can contain a host of meanings (Vygotsky 1987: 275). In these situations it takes a long (and frustrating) process to learn what differences that make a difference (Bateson 1972: 276) in cultural contexts.

Relational agency makes it possible for people to work together though they cannot perform each other's work. Relational agency involves a capacity to offer support and to ask for support from others (Edwards 2005b: 168). This capacity involves the already unfolded notion of word meaning, including the relational capacity to work with others so we learn to understand their moral purpose of working together.

Of most importance in the discussion of engaged researchers is the capacity to align: 'Relational agency is a capacity to align one's thought and actions with those of others in order to interpret problems of practice and to respond to those interpretations' (Edwards 2009: 203).

That fields of attention are distributed either within activities or among expert practitioners could pose a problem for the positioned researcher equivalent to the one posed by Vygotsky's 'collective consciousness' (see Chap. 1). Indeed we learn by doing, but we do not become collective beings by making exactly the same movements. What makes us collective beings is that our actions are aligned in thinking nested in cultural markers as material phenomena. Cultural markers could be argued to be tied to both societal demands, institutionalised practices and expected actions in activity settings as well as tied to an overall object motive. Consequently, researchers cannot rely only on practice-based learning, or social designation, as the only way of understanding the practitioners' engagements. Not even engaging in practices is enough to understand the engagements of practitioners. Researchers must somehow learn to align their thinking and motives from the analytical field with those in the empirical field in order to achieve the required depth in their analysis of cultural activities. They must learn to predict futures. Yet some practitioners are excluded from perceiving the future that is so clearly demarcated for others. Learning through social designation, through practice based and through culture contrasts (making the implicit comparisons explicit) are all useful tools for an ethnographer. However, a 'wholeness' theory that explains scalar learning as nested in activities can open up for understandings of how frictions not only transform activities but also lead to exclusions from activities – often in subtle ways.

7.8 Word Meaning in Activity

Practices may be *institutionalised*, but they are also embodied in persons. Detectable frictions may arise both within and across institutional practices. An example of the latter is Ali, a child who moves between institutionalised practices of a Pakistani family and a Danish kindergarten. Ali's family does not come from Denmark, but Ali speaks fluent Danish. A student at the Danish School of Education noted the following during a visit in Ali's kindergarten:

At lunch in the kindergarten, Ali behaves in a way which the pedagogue Louiza finds to be wrong. Ali disrupts the harmony of the activity setting, i.e. having lunch, by pushing lunch boxes from the table to the floor. Louiza gets angry. After having asked Ali to stop several times, she asks him to stand up and look her in the eyes. In a Danish context, this signifies a good scolding. But Ali, although he stands up, refuses to look her in the eyes. This makes Louiza even angrier: 'Look me in the eyes, when I speak to you', she says. But Ali refuses. Later she brings up the episode in a conversation with Ali's father and uses it as an example of how Ali is a naughty boy. Ali's father is surprised. 'Where I come from it is disrespectful to look elder people in the eyes – especially when if you are being scolded', he explains.

This is an example of an embodied practice, defined as *body hexis* by Bourdieu (1977). Crossing institutional practices (Hedegaard 2009), Ali and Louiza do not understand each other's *cultural codes* (Bernstein 1971) or rather *agential cuts* (Barad 2007); yet, this example of frictions does not lead to the expulsion of Ali. The institutional practice of kindergarten has changed enormously in Denmark over the past years, and today it is a common expectation of pedagogues that they know about and accept different cultures. Yet, the staff does not account for the cultural literacy and relational agency needed in everyday activities to acknowledge oneself as a cultural being. Louiza come to see Ali's culture, but not her own.

In this case the organisational culture allows various understandings to be included in its cultural dust bunny of connections. An aspect of the educational self-understanding in this culture is that there must be room for subcultures. When Ali does not respond to the same cultural markers as the ethnic Danish children, Louiza perceives Ali as being different from the other children because he does not react as she expected based on her cultural models for how children should behave when they are being scolded. Nevertheless, she expects Ali to be aware of her agential knowing of how one should sit and eat at the table and how to react when being scolded, although she has already placed him as belonging to a different subgroup. Louiza becomes puzzled and angry when Ali does not respond as expected. Yet, his behaviour is accepted when Louiza stops seeing Ali as a naughty child who must be educated to become like the others and instead sees him as a child who belongs to another culture. Ali interprets Louiza's reaction into a pattern, which confirms that he is treated unfairly because he belongs to a subgroup. Both Louiza and Ali are frustrated. The tension does not result in a collective learning process (no systemic expansive learning in Engeström's sense), nor does it lead to frictioned expulsion. The tension is maintained internally and defined as a clash of

subcultures. There is room for differences within the organisation, but there is also a retained power relation: it is Ali, not Louiza, who has a different culture. Louiza's culture forms the implicit comparative basis, as Ali's culture comes into the foreground. When Ali has been identified as belonging to another culture, the organisation only has to be tolerant, but does not need to negotiate its own cultural norms. Frictions are settled as the existing cultural norms are sedimented. The next time Ali refuses to look into Louiza's eyes, she will explain to him that it is Danish culture to look into people's eyes when you are being spoken to. She bears with him, but does not change the institutional practice.

Ali's name and skin colour (which is darker than Louiza's) help to position him in a pre-defined grouping of *the other* – generally known as immigrants. Ali's father also belongs to this group. For Louiza integration may be to accept this otherness within the organisational culture so her kindergarten culture can portray itself as an *inclusive* culture. Yet it is not her aim to try to understand the situation by putting herself in Ali's position. Ali and Louiza can learn from the same socially mediating artefacts, but their learning is not collective. The culture does not exclude them because they both hold legitimate positions, which maintain them in their scalar placement in the culture. Another aspect of legitimate subcultures is that we do not have to do the same to learn a collective culture. Scalar learning is a condition, not an obstacle to an *inclusive* organisational culture.

Leont'ev and Engeström argue it is enough to know the other participants' type of work in relation to the overall motive to include them in the collective organisational culture. The presence of subcultures, or more likely fragmented cultural understandings, in scalar learning is linked to the *whereabouts* and agential knowing of the people. Such subcultures of *doings* create their own connections and exclusion mechanisms in the common dust bunny of the organisational culture. Ali's everyday life is connected to both the institution of his family, where it is forbidden to look grown-ups in the eyes, and the kindergarten where it is expected. 'A person's everyday life is not only connected to one institution but is usually lived across different institutions' (Hedegaard 2009: 77).

My conclusion is that frictions play out between institutions as well as within them in dust bunnies of entanglements. In Danish kindergartens *tolerance* is expected to be part of the cultural make-up. Everyone is not necessarily expected to learn the entire collective Danish knowledge about how to behave, sit on chairs or place dairy products in exactly the same way. So when Ali does not *behave Danish*, it is not seen as a lack of agential knowing that will lead to the physical exclusion from the organisation's everyday life. He is not 'frictioned' out of the organisational culture even though he and Louiza do not share cultural markers. Neither is harmony restored. Ali is allowed to stay as *the tolerated other*. He becomes a cultural marker himself of *tolerance* and *inclusion*.

A difference in my approach and the one represented by, e.g. Engeström and Leont'ev in the activity system model is that I assume frustrations are frictions associated with cultural learning processes, and collective motives and motivations are linked to cultural literacy. My focus underscores not only on the collective

processes but also how collective processes are upheld through processes of moral and emotional inclusions and exclusions.

Furthermore, I also see a difference in my approach and the systemic learning theories of Engeström and Bateson; in so far cultural analysis is not systemic but takes account of the importance of embodiment and positioned bodies: both with regard to the power to conceive or alter collective motives and to read the collective culture markers. The activity theoretical approach, as represented by Leont'ev and Engeström, does place bodily operations in the system; but, just as Bateson's theory of a learning system, it does not comprise how people are physically positioned in relation to learning processes, nor how possible frictions and inclusion or exclusion from the culture can be a consequence of different learning positions. Furthermore, although activity theory includes bodily operations tied to mediating artefacts, the focus is not on what happens to contradictions that do not become collective.

In many of the examples Engeström presents, the participants are forced to change the collective object due to external pressure, which creates internal contradictions and changes in the system. All the fragmented uncertainties and exclusion processes of persons, artefacts and word meanings are not in focus, and the frictioned processes, which help to maintain the boundaries of *the system*, are overlooked.

Leont'ev developed the idea of an activity system parallel to the idea of a 'leading activity' (Edwards 2005a: 53). Thus, he acknowledged the possibility of more activities going on in an organisation, though overall there is an object to be found which represents the leading motive behind the many organised acts and bodily operations made every day by the participants. What can separate one activity from another and limit operations are differences in the objects targeted by the activities. The object gives organisations a unique telos (what Leont'ev called 'determined direction'), because 'the object of the activity is its true motive' (Leont'ev 1978: 62).

Anne Edwards has pointed out that a pupil knows what the teacher perceives as 'the leading activity'. In her example from a school, the pupil:

... knows the expected patterns of behaviour and her role in them. The pupil knows that she is in school, expected to demonstrate what the teacher expects and that singing a playful song as she counts would not be appropriate for that leading activity. (Edwards 2005a: 53)

What then, Edwards asks, if the child discovers that it cannot manage to solve the task within the allotted time? In Engeström's model, we find teachers or researchers from the system ready to modify the object (e.g. a math assignment) by giving more time or changing the complexity of the questions asked, but this does not apply to *real* cases found in schools.

Collective activities are usually very complex. It is difficult to know whether we share collective meanings or whether, when we reflect over our actions, the activity we think we are engaged in also makes sense in the same way to everyone involved. Do we really share collective objects – or are we just aligning? No one can foresee

the consequences of his or her own (or any of the other participants') actions in relation to the overall activity: the collective motive. We may construct an *imagined* collective motive, but we cannot be certain what engages people in collective activities. Although activity theory was not developed to make analyses of organisational cultures, I still find it to be a useful approach because it offers an attempt to connect the individual person with the larger collective cultural engagements in, what we may call, an *activity*, *organisation* or *community of practice* with the various theoretical implications tied to these concepts in the analytical field. If we name what we study *an activity*, we become aware that there may be several reasons for similar actions in human organisations. Sometimes the actions of a person are tied to the collective activity, sometimes not. To give an example, the collective activity of a hunting outing is arranged in a company, but the participants may have all kinds of reasons for participating, and they may not be tied to the apparent collective activity defined by the word *hunt*. Likewise, the *clapper's* body action of clapping the game away may not, as assumed by Leont'ev, be because he is interested in hunting down the game and relies on the shooters to kill it. It may rather be justified by the fact that he wants to please his boss, who is one of the hunters. Clapping the game in the direction of the hunters becomes the target of an action that is controlled by a completely different overall activity than the hunt: employees desire to retain or improve their position as a member in the organisation. This engagement cannot be observed from a distance. Engaging in activities as embodied practitioners may provide access to an alignment of fields of attention with our ethnographic subjects.

7.9 Object Motives in Physics Games

It is very difficult to distinguish what is a *collective* and *shared leading motive* among other motives in an organisation. Even though it may seem obvious that a windmill factory has the production of windmills as its leading activity, it may not be the production of windmills that drives people in their everyday activities. It is also difficult to determine why some frictions can lead to an expansive activity, while others cause exclusion.

Based on my agential knowing (which was also based on my aligned learning in the analytical field) of the educational institution at the Niels Bohr Institute, I at some point analysed the educational culture as an activity system, where each (gendered) individual strived for the same object motive: diplomas, which are the official return of educational organisations (Hasse 2002b). Using Engeström system approach, our physics exercises and assignments were the mediating artefacts. The community was students, secretaries and teachers. There was a division of labour in which newcomers students were to learn and the more experienced students, graduate students and teachers taught the newcomers – all directed towards the common object, *the diploma*, and directed by the leading motive, *to pass exams*.

Though expertise was distributed, we would all work together in harmony led by the leading motive.

Engeström's tool for analysis is an excellent starting point to examine collective aspects of an anthropology of learning in the field of study. His model of activity may give the researcher an overview of what drives the practiced place as a whole and, more importantly, what generates a common field of attention.

In my own cultural learning experience as a researcher in the empirical field, unexpected frictions soon began to arise, however. Contrary to the systems of Engeström and Bateson, there were no experienced peers, teachers or researchers, like Engeström's experienced teams, ready to create an expansive learning process when friction appeared at the institute. The teachers and more experienced peers were in fact often the cause of frustration among the new students.

An example of a *non-expansive* friction: when we were doing our physics exercises, we were sometimes disturbed in our endeavours by students who did not focus on passing exams and solving exercises as the group of young women I hung out with.

It was a source of growing frustration that these physics students did not take the assignments seriously and even disturbed our focused work of setting up experiments, by interfering with their playful behaviour. They removed the materials intended for experimental setups from the stand and played with them instead (Hasse 2002b). One day a group of (predominantly male) physics students abandoned doing a measurement job. We were supposed to measure the movements of a bicycle wheel suspended by thin strings from a tripod. Instead, the young men threw the wheel around in the room, played with it, imagined it fell from the Eiffel Tower and finally stole the wheel hung up by my group. These actions were not just puzzling to my group but deeply annoying. Through my participation research, I learned the consequences of being interrupted by students who were not engaged in the stipulated exercises: in the worst case we could not pass the exam.

The most frustrating for my group was, however, the teachers' reactions to the playful physics students. Not only was the playful students allowed to make noise and destroy our (i.e. *the well-behaved students*) experimental setups; they also received praise for it. The teachers did not hide the fact that they preferred the playful students to those who, like us, apparently strove towards the collective object of getting diplomas. The teachers seemed to appreciate the playful behaviour, as they praised them for being more creative than the stated experiments and praised them (*the annoying students*) for their innovative thinking. My group of students expressed frustration with this praise, but there was no redemption, just growing frictions.

According to the theory from the analytical field, an expansive learning process, based on contradictions inherent in the activity, finds its redemption in new insights through a phase of frustration. Thus, mediating artefacts, e.g. used in experimental setups, should help us obtain the object: the diploma. Frustration should lead to the construction of more useful mediating artefacts. Engeström draws on Bateson's theory of 'double bind' and argues that expansion of the activity is triggered by the redeemed double bind situation. Bateson's *5-level learning*, where individual

actions refer to a new context awareness, is here connected to the collective object, and it essentially creates a new context through the collective expansive learning processes. Bateson's concept of double bind comes to define the internal contradictions as:

... a social, societally essential dilemma which cannot be resolved through separate individual actions alone – but in which joint co-operative actions can push a historically new form of activity into emergence. (Engeström 1987: 165, italics in original version)

Bateson's systems theory is illustrated by the trainer who constantly changes the framework of learning, which gradually makes the porpoise, through periods of deep frustration, learn the new options *the hard way* (see Chap. 5). Bateson's learning steps can also theoretically explain that the same actions, in the same physical place, might be experienced differently depending on whether the participants understand the everyday frictions their *trainers* (teachers or bosses) create for them. Our frustration often stems from a realisation that the reactions of our surroundings do not correspond to the context in which we thought we were acting (Bateson 1972/1989: 276–277). Learning steps can be explained in several ways, but they are fundamentally linked to a more abstract systemic theory, where something or somebody (the trainer) has the power to affect the system.

When the *trainer* is to be found in the whole dust bunny of connections, and not in an ordered system, frictions become an indicator of a collective culture that is not shared by all. In this culture, friction may not lead to a change in the system as a whole but can act as a force of exclusion. The physics laboratory has neither a trainer nor a benevolent collective trying to expand our common object. We may constantly ask whether our understandings of how everyday artefacts mediate correspond to the collective expectations. When people express frustration, there is a certain probability that they do not completely understand the context in which their actions are evaluated (Hasse 2002b). Activity theory, which I brought with me from the analytical field, made me direct my attention towards the complexity of the new connections the newcomers had to learn to be able to understand how to be accepted as a physics student and subsequently a physicist. Since I was a not physics student, but ultimately a researcher with a retreat in the analytical field, I was not as frustrated as my fellow students. They, especially the female students, expressed great disappointment with the teacher's reactions. Some eventually left the institute and I have argued elsewhere that they felt excluded because of a number of situations in which their expectations were not met (See Hasse 2002b, c).

In my case, the reaction led me to question whether my model of analysis was right compared to what I learned in the empirical field. I changed my analytical cut. By taking my own learning process serious – and not only focus on the assignments as the *obvious* mediating artefacts – it became clear to me, through the development of my own cultural literacy, that the teachers praised the playful behaviour because they linked it to what they perceived as a deeper purpose of teaching than simply passing exams.

A new analysis model began to take shape, and this time it depicted the activity system in the organisation from my new understanding of what was the real leading

collective object in the organisation. I gradually learned to align my analysis of the object motive to a more complex and expanded version learned in the local activity setting. The local object motive was apparently not just to achieve diplomas through the mediating tool of experimental exercises and exams. Beyond, or underlying, this object was a more profound object, which sometimes contradicted the object of making students pass exams, and I gradually began to learn the contours of this new leading motive: to create students that dared to break the rules in order to generate new creative research which could bring science to the edge of the understandable (Hasse 2002b). This was the real leading motive behind the teachers' praise, I argued, but the learning was scalar. This most powerful leading motive was only shared by some of the practitioners, but as a cultural force it could create a crisis in persons, which may in the end exclude frustrated students.

Although science fiction is not a leading object of the physics activity, I gradually learned that science fiction could also be connected to the leading motive of the activity of physics. To be recognised as a good physics student, you were to behave in a manner that made you recognisable and reacted upon as someone who matched the ideals of physics researchers, as they were defined in this particular frame of learning, and not just as someone who passed exams.

What connected the praise of playful acts and the mediating artefacts of science fiction included in the whole organised culture was an overall pattern of expectations that included new futuristic, creative research. Artefacts that could not be seen as contributing to this basic endeavour were excluded. This *cultural pattern* clarified for me why play and science fiction artefacts were included while ponytails and short dresses were excluded (the argument is more elaborate in my Danish books and includes a counter-positioning of new creative research vs. actions of *vanity* incompatible with the notion of the devoted physics *nerd*, Hasse 2002a).

Similarly, I could now understand the experienced students' interest in the newcomers who had agential knowing of science fiction literature. Science fiction literature often deals with what the students, and many teachers, perceive as tomorrow's big question about life in space and chances of time travel. I later learned that science fiction had been an explicit subject in both popular science and scientific discussions in physics, and using science fiction in the classroom to develop students' physics interests has for long been of interest in the USA (Dubeck et al. 2004; Dubeck et al. 1993). Moreover, by directing my attention in the analytical field towards connections between physics and science fiction, I learned that the material science fiction artefacts (like posters) seemed to have a positive effect on learning for some of the male students, but the opposite effect on most of the female students, just like other researchers have discovered (Cheryan et al. 2009). The feedback loop sessions (Hasse 2000) where I met up with experienced physicists and presented this analysis confirmed my analysis: the experienced physicists were surprised to hear that I had not found it completely natural that students displaying creative behaviour, by playing around and discussing science fiction-related subjects, were preferred over average students (2002b).

We cannot know in advance what is the leading motive for a practice, but we can learn about it through participation in activities. Activity theory helped me immensely in making this analysis. Because I had chosen to follow the newcoming physics students so closely, I gradually became aware, however, that I needed other analytical tools to understand my own learning process as an anthropologist and participant as a *newcomer* in the field.

7.10 Scalar Learning

Activity theory underlines the collective in practice, but also how individual persons, like ethnographers, move between practices. Adjacent theories of practice also emphasise the individual person's learning trajectories (McDermott 1993; Dreier 1999). To follow trajectories of learning is to focus on how learners change, not what institutions set up as goals (Lave 1996).

CHAT theory in general has an acknowledgement of how individual persons come to inhabit a practice, albeit through different analytical cuts. Some, like Mariane Hedegaard and Anne Edwards, also draw on anthropological theories in order to bridge the person perspective with the wholism perspective. With references to 'word meaning', the cultural anthropological theories of *cultural models* seem especially apt for both explaining different agential cuts in phenomena (which may be perceived as 'the same' by practitioners, yet emerge as diverse relata-within-phenomena) and how we anchor thinking in material surroundings as a collective consciousness.

The individual person incorporates, through learning, generalisable human experiences as part of his or her own experience, and he or she also adds a personal sense from his or her own 'personal semantic networks' to the model of expectancy (Strauss 1992). Through this learning process, collective models of expectancy and engagements are shaped and developed with agential knowledge that matters. Engagement grows in this process because the individual internalises the cultural resources and learns to use them (Holland 1992: 63). Engagement grows when we learn, because we learn to understand and act in more informed ways. Vygotsky argues that as we learn:

... we engage over time with the world and come to understand it better than we did, we act on it in more informed ways and in turn change it. It follows that when our engagement is through unreflective following of routines, externalisation is likely to make little difference to practices. But when we act thoughtfully on problems of practice, we bring to bear understandings that may override routines and we may come to recognise unanticipated aspects of the problems. (Edwards 2010: 6)

Contexts may more precisely be defined as nested clusters of cultural models that create primarily unreflected expectations of reactions to actions, words and artefacts. These expectations form cultural directional forces in human organisations. What can be identified as a particular model can, however, never stand alone. The directional force of particular cultural models is always played out in a

dynamic elastic web of frictions, which are reinforced or weakened by connections to different cultural consciousness of shared meanings. Collectively shared clusters of meaning can act as directional forces and, over time, create self-evident expectations of inclusion and exclusion of physical manifestations in the form of material artefacts like words, actions and even humans.

For the inexperienced cultural reader of cultural markers, it may trigger intense emotional reactions when they act but do not get the expected recognition (like the female physics students). They may become uncertain whether their self-evident agential knowing is self-evident after all, or they may have the power to *set things right*.

An emotional reaction of this kind can be explained through the theory of cultural models. Cultural models can have directional force, but we can still choose to reject the directions (as when you chose to cohabit even if the cultural model of romance directs you towards *marriage*). When cultural models become part of our own personal semantic network, it becomes more and more emotional and it may even generate a *desire* for us to follow the direction of the models, partly because we fear exclusion (Holland 1992). The theory of cultural models has, however, the weakness that it does not operate at the organisational level or embrace embodied agential knowing on the scalar level. The theory of cultural models adds to cultural–historical activity theory and Bateson’s systems theories with a differentiated perspective on how people engage in more or less collective activities according to a learned agential knowing about expectations of own and others’ behaviour.

The theory of cultural models makes sense in relation to empirical data of how emotions can be evoked when the connections we have come to think of as self-evident are being *cut* differently, i.e. when reactions to our acts do not correspond with the expected reactions. Our expectations, as well as those of others, can be seen as clusters of relationships between meaning and the material action, words and material artefacts. We are more or less emotionally engaged and motivated by models of agential knowing.

Put differently, materials manifest themselves in intra-actions that align collectively over time and thus become cultural resources. We learn to learn that there might be discrepancies between the official discourse and the agential knowing of everyday life.

My agential knowing of where to sit in the cantina drew on a number of cultural models for how to act in this particular organisation. I could eventually analyse it as a coherent pattern pointing in the direction of the specific collective object motives for the organisation’s activities. Through subtle everyday engagements, I learned to build stratified (sedimented) agential knowing of which some sedimentations were shared collectively. The collectively acknowledged hierarchy of the organisation, its leading motive, could manifest itself in chairs and tables in ways that were much subtler than any official reference to hierarchical *symbols*. Because they were subtle and invisible (as all chairs look alike), they took time to learn. ‘Collectively shared’ thus refers to Ardener’s semantic density (Ardener 1989: 168–169) rather than an evenly distributed cognition (see Chap. 4).

Once learned, it is likely that sedimented frictions add to the cultural stability in an organisation: I would probably begin to avoid sitting at the particular table of management and thereby contribute to sustaining the organisational order.

For an understanding of how cultural models (and the less extensive *schemata*) can explain stability, as well as change, in the collective learning in organisations, I draw on Strauss and Quinn's reference to Bakhtin's concepts of 'centripetal' (fixation) and 'centrifugal' (change) powers (Strauss and Quinn 1994: 289–291).

On the one hand, cultural models can act as a centripetal power that maintains and includes, and on the other hand, the models can also function as a centrifugal (and exclusionary) force (ibid.: 294). Though Claudia Strauss and Naomi Quinn do not discuss cultural models in relation to organisations, the theory of cultural models can help to explain what holds a dust bunny of activities together and how newcomers learn to make patterns of connections, which make them *expect* how others will act and attribute meaning to material artefacts.

Cultural models may be stated as organised expectations (formed by social designation) of how employees should behave at work and thus be connected with a local public discourse that ascribes meaning to actions and physical material artefacts. Cultural models may also be learned through everyday doings, subtle acts and reactions. In our practical everyday life, we internalise and incorporate the new connections differently (according to prior experiences), and cultural models are thus also shaped into our 'personal semantic networks' (Strauss 1992: 1).

Personal semantic networks draw on the same ideal and typical conceptualisations of appearance and ways to behave as all other cultural resources we draw on in the organisation, but they are tied to our personal (sometimes idiosyncratic) experiences. Our idiosyncratic experiences can be said to be social; in so far we, even when most unconventional, draw on what has been made socially available to us. Thus, we always draw on socially learned agential knowing. This does not make social knowledge collectively shared, however. A dust bunny of all possible connections is social, and the connections that are included, as collective learning and resources for moral agency in the organisation, constitute the dust bunny's culture.

Everyone will not *act* the same in the scalar space, but when cultural models are collectively learned, everyone will have learned to *expect* the same connections (e.g. between the chair and a hierarchy).

When the concept of culture refers to collectively internalised, organised cultural connections, it does not imply that everyone who has not learned all of these connections will be excluded from the organisational life. In the scalar space most members will get the impression that other members know more of the important local connections than they do themselves. Although no one shares all possible connections in a cultural model, members who have only learned a few of the locally situated connections can be motivated to leave an organisation when they gradually become aware that they lack cultural literacy and for some reason do not learn to become literate as fast as the others. What we may describe as *affective states* often stem from frictions between the culturally literate and culturally

illiterate members. Though motivation may be given all kinds of explicit explanations, in practice it is tied to such subtle mechanisms.

As described by Quinn, a cultural model is a model against which we measure our own actions; it is a prototypical idealised process that we can assume the environment expects us to live up to and which we can then choose to follow or break away from.

7.11 Centripetal Forces

In the organisational cultural perspective, I have worked with in the analytical field, I have identified five types of mutually related frictions that all point to the identification of differences in the scalar learning, which can be explained with reference to activities as collective practices in a more or less shared understanding of cultural markers in organisational culture:

1. Frictions, within an activity, that trigger expansive collective learning processes and thereby change the common organisational culture
2. Frictions, imposed from outside of the activity, that create an integrated collective culture and activity in relation to the surroundings
3. Frictions, within an activity, that lead to the identification of subcultures in the integrated organisational culture
4. Frictions that remain latent and completely invisible within the activity and the organisational culture
5. Frictions in an activity that do not lead to expansion but create cultural exclusions and thus set the boundaries of an integrative organisational culture

In the first three cases, frictions eventually lead to inclusion and restore basic harmony. Certain kinds of frictioned differences are perfectly acceptable and legitimate within the boundaries of culture and will not cause exclusion (as in the case where Ali himself becomes a cultural marker of ‘non-exclusion’, i.e. tolerance).

Cultural frictions that arise with a dust bunny of institutional practices can contribute to holding a culture together, but they can also lead to exclusions. I have previously argued that the effect of frictions depends on the participants’ degree of cultural literacy. Yet, the outcome also depends on how people learn to align their object motives to each other.

For Ali, the frictions arose in activity settings because children move between institutional practices where they have not yet internalised all the relevant connections, just as ethnographers. The lack of cultural learning processes within institutional practices can also lead to frictions if the result is that the various participants do not interpret artefacts in the same way. Scalar learning in physics culture is an integrated part of a science culture that evolves on both consensus and conflict. Though scientists may strive to share the same object motives (like finding a particular particle through experiments), their perceptions differ when their agential

knowing differs. Their cultural learning processes teach them slightly different perspectives even on the *same* material phenomena.

The implication of scalar learning may reach deep into STS (science and technology studies). In a quasi-experiment, conducted by Danish and Italian physicists assigned to work in the same project at CERN, I found that the physicists' perception of physical material artefacts was closely associated with their embodied agential knowing (Hasse 2008a). This led to slightly different perceptions of photographs and models of the signs of particles following both different fields of attention and learning from embodied being-in-the-world. In activity theory Leont'ev referred to body operations and Engeström discussed these as the most unreflected aspect of an activity. In a postphenomenological perspective (Ihde 2002; Verbeek 2005), and in the even more challenging version of agential cuts found in Barad's work, the living and the cultural body simultaneously create the world through such body operations. When I explored the above theoretical assumptions, I found that the physicists, to some extent, handle the same cultural artefacts they use for their experiments at CERN, but they had different physical relations and embodied knowledge of the material artefacts. As a result of their different embodied positions in the practiced place of the experiment, what Ihde calls their 'material hermeneutics' (Ihde 1998) also differed. Physicists' agential knowing forms the multi-perspectivalism of artefacts as well as a multistability of perception (Ihde 2002).

As part of my experiment, I showed the physicists pictures of a number of particle collisions which they were supposed to be able to interpret in the same way as when they were shown at the physicists' joint conferences (Hasse 2008a). Contrary to laymen, who were also shown the pictures, the physicists all tied the pictures to research in certain particles. Their way of seeing and interpreting the pictures was, however, characterised by their embodied experience of the detector, which had created the images they were asked to reflect on. The physicists did not disagree about how to interpret the results of research (as physicists often do). They were simply not *aware* that they perceived the pictures differently. Their *relata* emerged from their movements in practiced place. To give an example, their understanding of an image, showing a section of the particle detector, depended on whether they had been part of the group that built the detector and had walked around in it, or whether they had only learned to know the detector through visual manifestations. Those who had helped to build the detector saw many details that were *invisible* to the other participants. Yet, it did not prevent them from participating in the same project and working towards the same goal: to find new particles (Hasse 2008a). In practice, these slightly different descriptions of what they perceived in the pictures did not matter as it appeared they also saw the images in ways that was in part collectively shared. Nevertheless, when they met at conferences, strange misunderstandings and disagreements would sometime occur which can be explained from their different agential knowing – but this did not seriously affect the consensus-making practice.

From the perspective of activity theory, distributed cognition could be argued to be tied to the active body nested in a cultural ecology of activity. By performing his

bodily acts, the sailor learns to know the difference between a wet and dry floor and the significance for how to adjust body movements accordingly when running. In another physical position, the deck officer learns, through his embodied body acts, how to handle measuring instruments. Although they do not know each other's embodied agential knowing, all the embodied acts are necessary in order to achieve the overall motive: to make the ship sail. This is how it looks harmoniously in a systemic perspective, where all parts work together driven by the common motive. Yet, as also acknowledged by activity theory, what makes a ship sail or physicists discover a new particle is an activity as a whole, where there is a collective materially anchored direction towards a future activity. In this wholeness perspective, physicists and sailors may not consider state laws (unless they cause frictions within fringes of the dust bunny), and other institutional practices may only matter for some participants when they move between different institutions with other traditions. What matters within the dust bunny is if these movements cause frictions and change the directed future or if the expected whole is transformed and begins moving in new directions. However, for newcomers what matters is how they learn to develop common knowledge and align their thinking with the activity as a whole.

7.12 Summary

Cultural learning is scalar. Through our daily actions, we (with Barad's term) *intra-act* artefacts into existence (2007). Because we learn continuously, artefacts change accordingly. And because our cultural learnings differ from newcomer to experienced, as well as distributed among experienced, researchers, we cannot assume a completely shared understanding of material phenomena.

The difference between the experienced participant and the newcomer who, metaphorically speaking, stands at the fringes of a dust bunny looking at the frictions without being engaged is that the newcomer is about to learn to become engaged by aligning his or her basis for sensing frictions. Here, implicit comparisons constitute a starting point for the creation of frictions, followed by social designations and practice-based learning. Through these cultural learning processes, we never come to align with what matters to others – not completely but more or less.

Newcomers and expert practitioners are heuristic analytical cuts. We are all learning scalar learning. Learning is in this sense a non-scalable process (Tsing 2012) that can never be explored scientifically; in so far we can never document processes of diversity in learning on any scientific scale. We can however acknowledge the scalar learning is a basic driver of friction in human organisation. Here the division line between newcomer and experienced gets blurred. A newcoming char person may know more about coffee spots than an experienced board member, yet what makes a difference is how we learn about powerful shared cultural markers (like science fiction posters or looking into somebody's eyes when scolded), which point to a leading motive (thereby powerful).

I have argued that Barad's theory of iterated agential cuts can be connected to CHAT theory. There is a collective aspect to iterated cuts nested materially in frictioned dust bunnies. This makes *collective* practices, such as those dealt with in cultural–historical activity theory, different from general *social* practices – at least from a newcomer's perspective. Social practices could cover pretty much all of human activities – whereas collective practice constitutes a special case. The example of the China game illustrates the point. For the outsider, the inside of *China* looks like a perfect but impenetrable and thus frustrating harmony. With the game we have created an artificial momentary collective agential cut. This collective line ties the participants together just as much as the material artefacts we use as anchors. We are nested in the collective expectations. If one of the insiders should give the wrong answer (e.g. if an insider with glasses is asked whether there are many schools in China and says *no*), it would cause friction and spoil the game. And everyone in the room, *except the outsiders*, would align in a frictioned reaction. Once we have been allowed inside the dust bunny of *China*, we may, however, find an ongoing struggle to define the leading motive of the activity of being 'Chinese'.

Social practices are institutional practices that go across many dust bunnies – like *schools* or *marriage* or *home* – with activity settings intelligible to the newcomer. All practices and activities take *place* in practiced places. Within these institutional practices, we find activities in local organisational culture. Collective nesting in dust bunnies arises from daily presence (also in virtual space) in practiced places where connections tie perceptions and materials together in agential cuts, which again are tied to the positions that engage people. In this process the artefacts become multi-stable (as when people engage differently with a blue manila folder). The practitioners' attention fields within the same Euclidian space may differ. Yet, the experienced gradually aligns cultural markers in space-time-mattering as intermeshed lines tie people together in frictioned habitats. In this process even people, like Ali, become cultural markers.

Cultural markers are often obvious to experienced practitioners, and once learned they go unnoticed. Yet frictions are created all the time. Some lead to expansive learning, some to expulsion. Cultural learning processes are scalar learning because everyone cannot learn to engage in everything, and when we learn, we do so through our participation in everyday life. Although it is a condition for the whole of the activity that embodied practices and cognitions are distributed, some embodied practices and agential cuts may be excluded by the cultural forces. The most experienced can learn to foresee reactions to newcomers' material appearances, performances and vectors of direction. Yet some, like Vibe with the short dress (see Chap. 3), is no longer in the geometrical space of the physics students, whereas Ali is allowed to stay on the premise of becoming a cultural marker himself. It takes a cultural analysis to comprehend these mysterious movements of cultural forces.

All the various sources of influence could be included in an analysis of an organisation's everyday life (Martin 1992: 113–114), but they often only appear relevant when they emerge within the boundaries of institutional life. Within organisations we have seen a focus on the *floating* sense of culture. Everything

seems to be negotiated as cultures are on the move. My focus on the *collective* in scalar learning is not a return to a concept of culture as a static, essentialist and distinct unit. Yet, cultural forces of shared norms, values, traditions and rituals sound through persons and change their positions in subtle ways. Exclusions have material consequences and cultural learning processes open for an understanding of the force that moves people and artefacts physically out of an organisation; physically I literally mean remove a person from his or her table and the nameplate from the door. My aim is to reach a definition of *learning* that acknowledges the fact that organisational cultures are held as much together by collective friction-based expulsions as collective harmoniously fulfilled expectations.

Even when people are assumed to voluntarily leave an organisation, we can identify the directional force of the organisational culture that lies behind that decision. Thus, it is my argument that rather than personal decisions and matters external to an organisation, the culture of expulsion is what really determines whether a person or an artefact stays or leaves the physical space of an organisation.

Activity theory, in its different shades, can help to understand forces and frictions as not only connected to meanings of material objects and words but also how expulsion is connected to collective object motives. Cultural–historical activity theory offers a depth to the concept of *organisation*, which links the organisation of human activity together with a collective directedness towards common motives.

As mentioned earlier, institutional practices are lines of entanglement in which frictions arise when expectations are not met. Not everyone, and certainly not researchers, learns to read the cultural space so profoundly that he or she can be sure to avoid exclusion and avoid unpleasant consequences. And no one *reads* the material artefacts with exactly the same connections. Even so, in the scalar space of connections, the experienced have learned to read artefacts in ways that enable collective expectations of acts and reactions. As participant observers engaging in other people's practices, ethnographers must try to develop a common knowledge tied to a language in which the practitioners align word meanings and perception of artefacts. Ethnographers can obtain a certain expertise as readers of cultural markers when they use their relational agency to align with the object motive engaging their ethnographic subjects. The scalar degree of the researchers' cultural literacy is partly determined by their analytical objects, partly by their insight into and depth of cultural learning of what engages others in activity settings.

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Chapter 8

Future Zones of Development

From the point of view of the researcher's cultural learning process, we can ask what a participant observer's cultural analysis can offer a world already engaged in its own future. In this last chapter, I focus on how newcoming technologies as well as ethnographers may play a role in 'breaking cultural patterns' (Hasse and Trentemøller 2008), and I discuss how engaged ethnographies may be useful for identifying patterns of foreseeable change and development. This kind of analysis may help practitioners create new conditions for their own lives, which presently tend to be formed by unacknowledged cultural forces. However, the task of breaking established patterns is difficult. Though Vygotsky's theory is one of freedom and liberation, it also makes us aware of the depths of a cultural directionality of how the future is envisioned in organisational cultures. In order to come closer to an understanding of how the future is created, I will focus on the developmental zones of the most powerful collectively shared connections between matter and word meaning.

In general statements following cultural–historical arguments, humans create their own environments which again create the humans in their cultural environment.

This is liberating in relation to the cruelty of nature, which would otherwise determine the destiny of mankind. On the other hand, culture can constrain human creativity and set conditions for the development of humans:

The person, using the power of things or stimuli, controls his own behaviour through them, grouping them, putting them together, and sorting them. In other words the great uniqueness of the will consists of man having no power over his own behaviour other than the power that things have over his behaviour. But man subjects himself to the power of things over behaviour, makes them serve his own purposes and controls that power as he wants. He changes the environment with the external activity and in this way affects his own behaviour, subjecting it to his own authority. (Vygotsky 1997: 212)

The problem with Vygotsky's statement is that it implicitly assumes a continuation between *things* and *persons* developing together in the same context. Using

the power of things, we *may* control our own behaviour, but Vygotsky's theory also opens up for a new understanding of how things may control us.

Jean Lave (1993) noted that CHAT (cultural–historical activity theory) tended to see context as pre-given and social constructionism see context as emergent. CHAT is in Stephen Fox's rendering of Lave's argument 'inclined to see context as pre-given affording macro social actors, such as class and gender, a prior existence within which studies of situated learning can take place. Whereas, social constructionism is more inclined to see a stream of situated action as giving rise to its own emergent context' (Fox 2000: 13). This could also be argued to be the case when some theories in the analytical field assumes societies and institutions to be already formed 'fixed' organised frames wherein actions in equally fixed organised activity settings are performed. Here a diffracted reading with new feminist materialism helps to soften up the notion that we collectively share 'institutions' and 'societies'. Frames of learning are constantly changing. Barad's iterative intra-agency does, however, not capture how our institutions and societies create frames of learning which stabilise our future cultural learning processes.

I have argued that organisational cultures have a directive force. Culture, as a force that acts through learned connections tied to materials, emerges as we (re)act and creates new cultural connections. Practitioners become entangled in more or less collectively shared dust bunnies. They become nested in the lines of friction connected to various phenomena emerging as artefacts, and their (re)actions keep dust bunnies together.

Culture becomes the context that weaves together. It makes no sense to talk of micro-, meso- and macro-levels of cultural ecologies – the levels separated by Bronfenbrenner (1979). This new theoretical view of cultural ecologies connects the pre-given with the emergent context. The cultural analysis can draw on the same basic understanding of what culture is whether the analysis is focussing on Arapesh Mountain people in New Guinea, Mfon's in Cameroon, physicists at CERN or villagers in Sardinia. Cultural contexts are for all newcomers, including ethnographers, pre-given and emergent through cultural learning processes – but in a globalised world, the connections between materials and connection lines differ from those found in *classical* ethnographies. The theory of cultural learning processes is an anthropology of learning which underlines the changing aspects of culture.

In the following I will explore how technological artefacts contribute to change either because they grow out of a local culture of physics at CERN or are imposed as the case of a Japanese robot harp seal, Paro, used to calm the elderly in Danish nursing homes or invited as in the case of a home for disabled people in USA. Physicists create, through their technologies, cultural forces that change the world – and they do so with instruments they desire, develop and build themselves. Staff in nursing homes, on the other hand, encounters many new technologies which they have not desired and have to adjust to their local practices. I shall also discuss the

special case of a home for disabled people where an outsider, a drawing teacher and his coloured pencils, had unexpected effects on the staff as well as the inhabitants.

In the cultures anthropologists used to study, newcomers developed alongside established connection lines in material landscapes where practitioners created the new tools to fit the object motives in established cultures of organisation. These cultures were not isolated but different from most cultures today. Materials were developed and connected with meaning in the same practiced places that found them useful. Baskets, axes and spice may have been traded, but many things were also created in the place they were put to use. New creations grew out of the established practices and entangled people and materials in self-evident ways. In traditional ethnographies, local ecologies could be described as cultures of ethnicity or nationality tied to certain places because place, material artefacts and newcomers evolved together. Any new potential for becoming is (re)created on former sedimented transformations of the already existing connections.

In a globalised world, new possible connection lines are constantly created because technologies make it possible for artefacts, words and actions to travel more freely than ever before. Thus newcomers and artefacts continuously find their way into collectively established entanglements of meaning. Disruption of collective consciousness is the order of the day. Dust bunnies can grow or diminish in this process but remain entangled seen from the human learners' point of view. When new connections emerge, existing connections align. Newcoming humans, words, actions and material artefacts are either attracted or expelled from the practiced place (see Chap. 7). This is increasingly the case in a globalised world. Some cultures are more vulnerable in this process than others, and ethnographers have rightfully been engaged in their protection (Low and Merry 2010). Organisational cultures are transformed as new and sometimes undesired artefacts are imposed. In this case whole communities are forced to change by the frictions, as in Anna Tsing's description where new roads into the Meratus Mountains in South Kalimantan gave way for labour migrants, tree harvesting machines and speculators in forest and timber operations (Tsing 2005). Yet, the Meratus Dayak also exercise their own cultural expulsions. Transformation is never a one-way process. The cultural-material environment of social and collective human beings is forever developing as entangled dust bunnies meet and separate in frictioned encounters. Transformations of dust bunnies seem self-referential and even predetermined. Cultures are not easily dissolved neither when they attract new lines and material artefacts nor send out new lines and material artefacts that connect to and transform cultures in other corners of a given geometrical space.

Predetermination could be seen as running counter to the argument of the liberating forces found in Vygotsky's thinking. This tendency towards predetermined contexts has always worried the analytical field of CHAT. Like Anne Edwards, who underlines that:

One danger with the account of practices that I have just outlined is that it can be read to mean that practices are always pre-determined and that actors merely inhabit them. That would not do justice to Vygotsky's work on learning. There are two important points here. Firstly, he intended to offer an alternative to the behaviourism that dominated Russian

psychology in the early 1920s by offering a cognitive account of learning. Secondly, he argued that learning involves both internalisation and externalization. (Edwards 2010: 6)

Moreover, Eduardo Vianna and Anna Stetsenko have also underlined that Vygotsky's theory is one of freedom and liberation, rather than cultural determinism (2006).

Vygotsky's theory could first of all be read as one of liberation and externalisation, rather than determinism and internalisation. The notion of culture as a liberating force was important when, and where, the theory was created in the 1920 Soviet Union, and it has continued to be of uttermost importance to prominent researchers in the field of cultural–historical activity theory. Today, however, we have to pay close attention to the way the notion of culture has moved from being reiterated in stabilised practiced places to become a force running through people's lives across time and space, thanks to globalised and globalising technologies. Following my distinction between the social and the collective in today's global world, where materials produced in one place increasingly influence people's lives in another, we have to see this force of cultural liberation and cultural direction in a new light. People externalise what matters to them; but, what matters for them may become the conditions of living and cultural resources for other people, when externalisations move through practiced places.

For instance, the engaged externalisation of physicists may both enhance and diminish health care or climate changes on remote places of the globe. An anthropology of learning is needed to make humans understand how they create the force of culture that forms people's material lives to a greater extent than the force of nature does.

In *Anthropocene*, as our époque has been named by geologists (Zalasiewicz et al. 2010), the feeling of human powerlessness has shifted from being 'overwhelmed, and totally dominated by the spectacle of 'nature'' (Latour 2011: 2) to become equally dominated by the power of the *Anthropos*. Through cultural constructions we can make icebergs melt and build a new second nature, a 'techno-nature' referred to by Escobar (Escobar 1999: 7). And yet, as Latour points out, though we in many respects believe we master nature today, we have very little grasp 'of the collective character — the *Anthropos* of the Anthropocene, the "human" of the "human made" catastrophe' (Latour 2011: 2).

8.1 Technology as Cultural Force

From the 1990s till the today, the field of cultural studies has acknowledged the multiple realities of contemporary societies and that cultures are malleable. However, the focus has been on understanding culture as representation rather than a deeper understanding of the processes creating diversity. Cultural studies often end acknowledging cultural diversity and frictions between cultures (defined in a multitude of ways) without being able to define the processes creating this cultural

diversity. Thus, we are left with ‘the problem of culture’ in a global and ever more entangled world (Gonzalez 2008).

Cultural learning theory provides a grasp on this problem. In the perspective of activity – or even better *cultural–historical* activity – we have tools to understand the enormous amount of separate yet connected institutional practices, activities and activity settings, which build up a shared world. It is, however, necessary to expand Vygotsky’s approach which was developed in a world of more stable collectives. Today our world is not just determined and unfolded through artefacts developed in relation to a common collective activity but through many, and often contradictory, activities in a globalised world that cause frictions between different groups, as they each have their own scheme of future development in mind (Tsing 2005). Humans are controlled because the single person is often not in power over how to group, connect and sort the technological things which surround us. Because the globalised world creates new conditions for human–machine relations (Suchman 2007), things exert new and disruptive powers on local cultures. This creates a difference between local cultures where humans themselves create the things that serve their purposes and local cultures where imposed things affect local authority.

There are many precise definitions, e.g. of technologies as: ‘[T]ools, machines, utensils, weapons, instruments, housing, clothing, communicating and transporting devices and the skills by which we produce and use them’ (Bain 1937: 860). The meaning of technology is often applied to practices rather than artefacts, as in Foucault’s work on technologies of the self (‘Les techniques de soi’) (e.g. MacMillan 2011). I prefer the definition proposed by the philosopher Albert Borgmann, who defines technology as a cultural force (2006). This force, which I have explained as cultural learning processes in organisations, has the ability to make new cultural differences emerge. Just as we (in anthropology at least) thought we were done with culture as a concept (Gonzalez 2008), it re-emerges as our need to explain cultural variations grow in a globalised world. These new differences are:

... connected with e.g. migration, and the global distribution of goods like technologies. These new cultural forms that now dominate constructs of culture cannot possibly explain or even acknowledge these complex diversities. (Gonzalez 2008: 104)

In this globalised world, some create the tools, and others use them – but not without consequences. This problem has also been noted in studies of the philosophy of technology by, e.g. Albert Borgmann, who presents two ways of understating technological artefacts – either as an *engineering* sense or as a cultural force:

My suggestion is that for a proper understanding of our cultural malaise we have to get a grip on technology as a cultural force. But what is technology? In its narrow sense it is an ensemble of machineries and procedures. Take its most recent instance — information technology. It is hardware and software, broadly conceived. On the hardware side there are chips, disks, screens, keyboards, and fibre optic cables. All this extends into the production machinery and farther back into power generating plants and silicate mines. The software is lines of code and extends on one side to the procedures of designers and programmers and on the other side to the procedures you follow to compose and send e-mail, to check on the

New York Times on the Web, or to design a web page. We can call this the engineering sense of technology. What interest's social theorists is the effect that these machineries and procedures have had on our way of life. Social theorists are interested in technology as a cultural force. Technology in this sense is widely used in philosophy, the social sciences, and in the media to capture what is distinctive of contemporary culture. But there is no consensus on just what the cultural effect of technology is. (Borgmann 2006: 352–353)

Those who work with engineering in science (many physicists and chemists are also engaged in engineering work) are seen as making sense of university-based 'high science' (Traweek 1988). Physicists usually first explore how things *are*, whereas engineers are concerned with how a thing 'is to be' or 'ought to be' (Skolimowski 1966; Simon 1969). Science Studies (STS) have for a long time questioned whether engineers and scientists working on what 'is' and 'what ought to be' (Simon 1969: 5) really are the best to decide how human material cultures, let alone human thinking, should change, not least because people with technological insight may not be the best to reflect on the workings of the technologies in situ. Though designers invite users to test their work, they rarely engage in the complex ethnographic work of finding out what the impact of technology is on humans, once it has been implemented.

In the following, I suggest that technological artefacts based on physics and engineering sciences form the directions of the future for learners in local cultures. Inherent in the learning theory of cultural–historical activity, theory is the notion of future directions. When we put cultural learning in the middle, learning via mediating artefacts, e.g. the physicists' particle detectors, is not only expected to make us learn to see the geometrical space differently but also see future spaces – also called 'time fields' by Vygotsky:

... a time field that is just as perceptible and real to him as the visual one. The speaking child has the ability to direct his attention in a dynamic way. He can view changes in his immediate situation from the point of view of past activities, and can act in the present from the viewpoint of the future. (Vygotsky 1978: 36)

Though Vygotsky spoke about children and their agency, we may understand *time fields* as adults' fields of learned attentions, which make it possible for them to act 'in the present from the viewpoint of the future' (Vygotsky 1978: 36). Expanding Vygotsky, we can ask how time fields are mediated by technologies and how future time fields of, e.g. physicists or nursing staffs are tied to connections between materials and word meanings that form a time field, which becomes a resource for thinking about past, present and future plans in a constant process of transformation. Our 'fields of attention' are not one but a series of potentially perceptual fields that form successive dynamic structures over time (*ibid.*: 36).

These perspectives are also implicit in Vygotsky's arguments of learning and zones of development, and they have been expanded by subsequent theories. The basis for activity theory is the understanding of the collectively shared motive to be striven for and thus a (to some extent) collectively shared future direction of activities. In cultural models theory, we find a similar directional force because the simplified models (D'Andrade 1995), or even figured worlds (Holland

et al. 1998), make us *expect* what happens next (see Chap. 7). The future is thus tied to present expectations connecting materials and meanings.

Our surrounding materials, like technologies, play a huge part in how we expect each other to act motivated and emotionally. The cognitive aspect of Vygotsky's theory is often emphasised in cultural–historical theory, which underlines the discursive dynamics of learning:

Minds are shaped by the ways of thinking and concepts that are available in particular social worlds and these ways of thinking are externalized and revealed in actions in and on those worlds: we are both shaped by our cultures and we shape them. As we learn, we therefore find ourselves in new relationships with our worlds; and in doing so we act on them differently and change them. Human agency is therefore central to a version of learning that sees externalisation to be as important as internalization. (Edwards 2010: 67)

Minds are not just shaped by ways of thinking, concepts and actions. Materials also form our agency. This is implicit in the Vygotskian theory yet somewhat overlooked. The lived experience does not take place *in* a material world; materials are part of our intra-active becoming. Consequently, the below distinction between tables as concepts and tables as materials only tells us part of the story:

What differentiates a word such as table or a social routine such as “setting the table” from, say, a table, is the relative prominence of their material and ideal aspects. The word table has no existence apart from its material instantiation (as a configuration of sound waves, hand movements, or writing), whereas every table, in addition to its duration as a physical object, has a past embedded in it and so embodies an order imposed by thinking human beings. (Holland and Cole 1995: 476)

Words such as *table* and social routines such as *setting the table* as well as the material *table* are simultaneously material instantiations that may be useful resources for and constraints on cultural change. All material instantiations come with a past, which is learned in scalar learning processes. The order imposed on how to set a table and the very concept of table are cultural manifestations nested in cultural models of expectations as well as materials such as sound waves and wood. When material artefacts move around in a globalised world, the past of the ‘table’ can get lost along the way. When the artefact arrives in a new context, its meaning has to be reinvented. The question from the perspective of cultural learning processes is which cultural force develops the present to become a past on its way to a future?

8.2 Proximal Zones

The power of Vygotsky's ideas lies not only in his explanation of the dialectic and dynamic interdependence of social and personal processes of development and creativity but also in how these processes are entangled with new externalised materiality.

Many researchers in organisational studies define creative development ‘as the production of novel and useful ideas in any domain’ and ‘innovation as the

successful implementation of creative ideas within an organization' (Amabile et al. 1996: 2). I wish to add that this distinction points to the difference between human beings as inherently *creative* externalising persons and how this creativity is collectively internalised and recognised as intelligible in cultural organisations.

I will further develop this distinction between creativity and innovation through a connection with a Vygotskian concept less known in anthropological organisational and management studies: the zone of proximal development. The concept was originally coined by Vygotsky and used to conceptualise differences in children's development, for instance, in two pupils who performed equally bad in a test but, under adult guidance, developed two very different performances. Vygotsky defines the concept as follows:

[T]he zone of proximal development is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. (Vygotsky 1978: 86)

The main point made by Vygotsky is that learning is not identical to development. Learning creates a zone of development in the sense that learning 'awakens' processes of development, when a child is with people in its environment (Vygotsky 1978: 90). Though Vygotsky does not specifically mention the importance of engaging with the materials in one's environment, this aspect could be added to the processes of development following learning processes. First, we learn from engaging with cultural resources, and what we have learned is then internalised as new development. What is internalised is connected to the zone of proximal development, and this process of internalised development creates new potential for learning and thus for new zones of proximal development (Vygotsky 1978: 91). Although all children (and adults) have different developmental zones (because no two learning processes are the same, see Chap. 7), one could argue we go through *cultural* developments (Cole 1996) which align our relational zones of development. Even when learning is explicitly organised (as, e.g. in schools), our personal proximal developmental zones may differ so that the developmental zones of the experienced are more aligned than that of newcomers. This alignment can again be said to create certain directions for the cultural resources already learned by the experienced. These zones can, as sedimented connections, hold dust bunnies together by directing their developments.

Though the main importance of Vygotsky's original concept may be its use for explaining child development (e.g. Chaiklin 2003), and though my current use of the concept is not fully in line with Vygotsky's original intentions, the concept has proven useful as a heuristic device explaining the development of learning in organisations. Engeström has, e.g. described it as '[t]he distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions' (Engeström 1987: 174). The distance, or area, between the present and foreseeable future of an activity system may be *expanded* or *contracted* in relation to a zone of development for activity systems.

Objects of activities constantly change as the energy ‘stemming from the tension-laden objects’ (Engeström 1999b: 66) are turned into change efforts. When organisations are changed, the objects are also changed and vice versa. Engeström distinguishes between working towards a goal and changing the zone of development:

The notion of zone is crucially different from the notion of goal. While a goal is a fixed end point or end state, a zone is the distance or the area between the present and foreseeable future. (ibid.: 66)

Engeström advocates that activity systems are changed in very explicit ways by analysing the inherent contradictions and projecting new historical forms of the object ‘as an expansive solution to the present tensions’ and warns us that ‘[i]f such a zone is not worked out, specific goals are built on sand, or pinned onto thin air’ (ibid.: 66). If the inherent contradictions are not worked out, the result may be a deeper contraction and a destruction of possibilities:

The zone of proximal development may be depicted as a grey area between actions embedded in the current activity with its historical roots and contradictions, the foreseeable activity in which the contradictions are expansively resolved, and the foreseeable activity in which the contradictions have led to contraction and destruction of opportunities. (ibid.: 67)

This definition of the developmental zone of organisations points to how some organisations develop and change without any resolution of contradictions. They develop through processes of attraction and expulsion following narrowly directed paths of development, without resolving the contradictions. In other organisations the foreseeable future is changed as contradictions are resolved and new artefacts emerge. The grey area is relational to the cultural forces at play (Hasse 2001).

Changes in organisational cultures are being constructed and reconstructed by the *experienced* and *powerful* people either within or without the organisations. These processes are difficult to decide and work upon in Engeström’s Change Laboratories. Yet, they are driven ahead by actively engaged persons’ externalisations, through which the forces of culture energise objects and create historical changes. The choices are to some extent already made in the zones of proximal development.

Practitioners’ creativity may be recognised as innovation when it draws on already existing resources. Radical innovation, however, often risks being excluded in strong organisational cultures because it is not recognised as belonging to the foreseeable future. In some organisational cultures, enunciated (declared) innovations may be imposed on employees and thereby change the activities. Whatever is imposed will never be a mere *transfer* seen from a cultural–historical perspective, but it will entail a transformation as reconfigurations take place. Technologies are often said to be translated in meeting a new context (Czarniawska and Sevón 1996). The process is, however, not so much one of translation as one of transformation. Technologies may be seen as an innovation or they may be seen as a problem. What is *recognised* as innovation is what matters – and this may often be tied to a learning process where only the immediately intelligible (incremental) new is recognised. The zone of proximal development is *relational* as it sorts out all aspects of an

already envisioned future and deselected words, actions and people who do not seem to *fit* the identified future (Hasse 2001). Here, practitioners adhere to a template and every new enunciated and declared innovation fills a slot in an already established scheme for future developments. The zones of development are inherent in the culture, and new discoveries are seen as fulfilment of prefigured expectancies. With Bateson we can say that ‘the next transformation is already in the system’ (Bateson 1972: 255). However, from the point of view of cultural learning processes, the system does not determine the developments: development is determined by the forces of culture, as they consistently make certain new cultural resources available and solutions intelligible but exclude others.

I will use the development of particle physics in relation to the Standard Model as an example of these processes of grey zones in a development zone leading to a foreseeable future. This future is nested in the already existing artefacts developed by the physicists for their ongoing experiments. The physicists themselves sometimes see this development as a slightly boring incremental fulfilment of suggested future scenarios.

8.3 The Standard Model

In the following I shall make a probably controversial argument – namely, that the thinking of particle physicists is as nested in material cultural ecologies of learning as anyone else is. I do not make this claim based on an interactional expertise but on an analysis of how materials seem to be reiterated in physics science.

The relation between model and experiment in the physicists’ work with nuclear and particle physics has however changed significantly since speculations of the atom began. As the physicists have learned from frictions within their dust bunny of physics culture – practiced in places like physics labs in Switzerland, Italy, Denmark and the USA – they have moved towards a future of technologies. As an ethnographer I followed particle physicists at work at many different sites as a multi-sited ethnography (Marcus 1995), yet what I discovered was that they all more or less shared a common knowledge, tied to a common language and history across national cultures. I also found patterns between particle physics of the past and in the present. From there I, in a co-creation with my ethnographic subjects, could expect a foreseeable future. The proximal developments and their realisations as new particles in particle physics have followed a steady path with a recognisable pattern of moving along the line into the future.

As the physicists learn more about the complexity of what the models embrace, a new function of models, a new complexity and new *agential cuts* in the experiments emerge. When analysed within the framework of cultural learning, models for nuclear and particle physics act not only as externalised mediating devices but also as objects with motivating force that not only gives shape and direction to activity but also forms its future expectations.

The *plum pudding model* and the *Standard Model* in atom/particle physics can be used as examples of how models, theory and practice affect each other in a dialectical process; theory and model alternate in changing the physicists' cultural-historically mediated practice. Models have functioned as a *model of* (build on theory) and as a *model for* (hypotheses on which you build experiments) in particle physics and finally as *transgressing models*. The latter aspect points to the psychology of learning, which I will illustrate with empirical material drawn from an ongoing study where I followed and interviewed physicists working at an international particle physics experiment called ATLAS at the physics laboratory CERN in Switzerland.

For many physicists the phrase *the theory of* . . . signals a particularly well-tested idea. A hypothesis is an idea or suggestion that has been put forward to explain a set of observations, and this hypothesis can be termed a model. Such models come in many shapes from mathematical, visual charts and, as argued by Nancy Nersessian, may begin as mental models (Nersessian 1995).¹ The model as a hypothesis contains some predictions or creates some expectations, which are to be tested in experiments. Models can be understood as a sort of map providing an overview and thereby a simplified reduction of a (hypothesised) reality.

Taken together, the models in science can be thought of as comprising both of the anthropologist Clifford Geertz's definitions of models:

In [the models of], what is stressed is the manipulation of symbols structures so as to bring them . . . into parallel with the pre-established nonsymbolic systems, as when we grasp how dams work by developing a theory of hydraulics or constructing a flow chart . . . it is a model of reality. In [the model for], what is stressed is the manipulation of the nonsymbolic system in terms of the relationship expressed in the symbolic, as when we construct a dam according to the specifications implied in a hydraulic theory or the conclusions drawn from a flow chart . . . it is a model for reality. (Geertz 1973: 93)

I regard models in particle physics as *models of* in the sense that they illustrate – even visually – a particularly well-tested idea: i.e. *the theory of* . . . They can also act as *models for* building experiments, which, in terms of the symbolic relation, are set up to falsify or confirm a *hypothesis*.

Externalised models have had an impact on physicists' activity many times in the history of physics. Many examples could have been chosen. I concentrate on some of the early conceptual models on atoms, which worked as models of, as well as models for, building the experiments that eventually led to particle physics. Then I will jump to the much more complex model-making and model-driven activity as it has developed since the 1970s:

¹ Simple representations acting as mental models help the individual physicists to understand (Nersessian 1995). In natural science some scientists would argue that theories, in the form of mathematical formulas, act as a mathematical model, as do graphs used to illustrate them. Some definitions stress that models expressed in words are theories and all theories can be conceived of as models – contrary to models, which are not always theories. One example is mechanical, hydraulic or electrical models.

- 1874: George Stoney develops a theory of the electron and estimates its mass.
- 1898: Joseph Thompson measures the electron and puts forth his *plum pudding model* of the atom (i.e. the atom is a positive sphere with small negative electrons inside), which is visualised as a thin cloud of positive charges, with electrons dotted among it, like raisins in a plum pudding.
- 1907: Ernest Rutherford suggests to two of his students (Hans Geiger and Ernest Marsden) to build an experiment to test this model. Using alpha particles known to be many times heavier than electrons, they fired them in huge numbers at a strip of very thin gold foil and expected they would pass straight through. However, a surprisingly high number were deflected.
- In 1911, Rutherford explains the Geiger–Marsden results by claiming Thomson’s plum pudding model is wrong and replaces it with the orbiting model – visualised as a solar system model. An incredibly dense positively charged nucleus lays at the centre, which was tiny compared to the whole atom.

These early examples show that some hypotheses often initiate a model building, which then becomes the externalised *model for* building experiments. The results of these experiments form the basis on which new *models of* reality are built and in this case illustrated as the orbiting model. This model was discarded eventually, as physicists gradually probed into the nucleus of the atom.

By the 1930s, physicists believed to have discovered the elementary particles defined as the smallest objects into which matter could be divided: protons, neutrons and electrons. This was considered the final model of the atom.

In the process up until the development of the final model, the other models were used as a sort of *trail-and-error*. Experiments built on the existing models literally bounced back theories of the world, and new theories and models were formed on the basis of results from the new scientific experiments. Interestingly, even when the so-called *bouncing* stopped, and the internalised *models of* began to conflate with the externalised *models for*, it did not satisfy the physicists. Instead of being content with now knowing how the atom was build, they kept on asking question that went beyond the successful model. This process, spanning many decades and many new discoveries inside the nucleus, leads to the formulation of a new grand Standard Model in what had now gone from atom over nuclear to particle physics.

In 1974, the Greek physicist J. Iliopoulos presents a summary of known particle physics, which he calls the Standard Model. It comprises many years of research in the atomic structure and many new discoveries of hundreds of new particles. It can be discussed whether the Standard Model, in fact, is a *model of* or a *model for*. The Standard Model is a special version of the many forms of possible models in physics work. Today it is *the* model in particle physics covering 100 years of particle physics research in one simple and well-ordered framework. As such, it functions as a conceptual model of the total particle system. The Standard Model is often thought of as a *model of* reality – a comprehensive framework of well-tested and confirmed theories – that identifies the basic particles and specifies how they interact. Nevertheless, the Standard Model was still only a model, which fundamentally builds on a hypothesis, and that made it a hypothetical model for the

world's so far largest and most costly particle physics experiment and tool: ATLAS at CERN in Switzerland.

Though the theories behind the Standard Model have been confirmed again and again experimentally,² one part of the Standard Model was not yet well established, when I did my fieldwork at Atlas in Italy, CERN and Denmark in the mid-2000s. The physicists did not know what caused the fundamental particles to have masses. Behind all theories of the Standard Model, there was a hypothesis of a 'Higgs mechanism', which involves the Higgs boson, and a type of force mediated by exchanges of this boson. I followed a group of Danish and Italian physicists in what many of them termed 'the final experiment' building on and aiming at fulfilling the model with the discovery of this Higgs particle at CERN. Almost half of the world's particle physicists were in one way or another involved in the Higgs-boson experiments (though not in Atlas alone, where we only find 1,850 physicists).

In practice, the experiment functions as an organisation of agential cuts. The Italian physicists, whom I have followed most closely in their laboratory work, created a working model of how a particular type of particles, the muons, behave in the creation of an artificial structure of what could be considered computer-animated representational symbols. Here, symbols acted as the muons were supposed to when they were released after a meeting with the hypothetic Higgs boson (to put it very plainly). At the same time, the non-symbolic, and equally meaningful, technological apparatus, i.e. the experiment, was built up in order to also catch this hypothetical interchange between the particles. When the experiment eventually started, the dialectics between the *models of* and *models for* was expected to conflate when the non-symbolic system (the actual collision of particles) was *read* and compared with the symbol-system that simulated how particles would behave if the hypothesised Higgs exists. The externalised theories stored in the Standard Model delivers all the background material for both building the actual technological experiment and its simulations.

This genetic–historical account of the past was known by all physicists involved in the experiment. What came as a surprise to me, once I had learned to understand what engaged them about the Standard Model, was that I discovered they did not seem engaged in finding the Higgs boson – quite the contrary, as a matter of fact.

²The Standard Model has been called the triumph of particle physics in the 1970s. It incorporated all that was known at that time and has since then successfully predicted the outcome of a large variety of experiments. Today, the Standard Model is a well-established theory applicable to a wide range of conditions, but it is a model in the sense that it builds on the assumption of the Higgs boson. (<http://www2.slac.stanford.edu/vvc/theory/model.html> retrieved 5 January 2005).

8.4 A Short Historical Account of the Search for Higgs

This is the story I found was shared by physicists in the Danish and Italian project – albeit in my ‘ignorant’ rendering. The initial search for Higgs began already in 1964. In a theory put forward in 1964 by Murray Gell-Mann and George Zweig, it was proposed that many of the new particles discovered are composed of smaller particles called ‘quarks’, which have a fraction of a charge. The theory predicted three quarks (and antiquarks) called up, down and strange.

In 1967, the unification of electromagnetic and the weak interaction was discovered and named the ‘electroweak interaction’ by Steven Weinberg and Abdus Salam. This theory included a new weakly interacting boson, called the Z^0 , as well as the hypothesised Higgs boson. In 1968 an experiment at the Stanford linear particle accelerator provides the first experimental evidence for the existence of quarks. In a theory put forward in 1970 by Sheldon Glashow, John Iliopoulos and Luciano Maiani, it was suggested that there must be symmetry in the model, and they proposed that a fourth quark (called charm) was needed to allow for the neutral weak interaction of the force carrier called Z^0 . In 1977, Leon Lederman and his collaborators at Fermilab discover yet another quark (and its antiquark). This quark was called the ‘bottom’ quark. Since physicists, based on the new model of quarks, figured that quarks came in pairs, this discovery added impetus to search for the sixth quark: ‘top’. In 1983, the W^\pm and Z^0 intermediate bosons, demanded by the electroweak theory, are observed in two experiments using the CERN synchrotron applying techniques that collide protons and antiprotons, developed by Carlo Rubbia and Simon van der Meer. In 1995, after 18 years of searching at many accelerators to complete the picture of the Standard Model, experiments at Fermilab discover the top quark at the unexpected mass of 175 GeV. No one understands why the mass is so different from the other five quarks. In 2000, the tau neutrino, i.e. the last piece of the Standard Model (with the exception of the Higgs particle), is observed at Fermilab.³

Since the introduction of the Higgs boson in 1967, the Standard Model has not been fundamentally challenged, partly because *dark spots* in the theoretical framework have been covered by the much-suggested ability of the Higgs boson, namely, the ability to *borrow* mass to create particles. This particle was observed in 2012 when physicists were allowed to take the machinery to higher levels of energy than ever before as a means to find and finally confirm the model. The Standard Model is therefore confirmed as a full theory, though it remains in the realm of hypothesis or model, as it is put by the SLAC-lab at Stanford (<http://www2.slac.stanford.edu/vvc/theory/model.html>).

³The information and even many of the formulations such as “the last piece to Standard Model (with the exception of the Higgs particle)” are taken from the particle physicists’ own formulations (http://www-donut.fnal.gov/web_pages/standardmodelpg/TheStandardModel.html, <http://teachers.web.cern.ch/teachers/> Retrieved 3 June 2004).

As said in postmodern discourse, the big story might be dead, but several smaller big stories still belong to local communities. For most people the cultural words above have very little meaning. For particle physicists the discovery of the Higgs boson on July 4, 2012, was the culmination of many years of collective efforts involving more than 5,000 physicists all around the globe.

The history of the Standard Model is *the* big story for particle physicists. Everything that happens in our world (except for the effects of gravity) results from Standard Model particles interacting according to its rules and equations. The model constitutes the world map, which in particle physics constitutes a theoretical, conceptual construction of a temporary value and visualises a hypothesis that acts as a mechanism of explanation and prediction to be tested. The model mediates the physicist's activity but it also becomes the take-off for transforming it.

In my fieldwork among physicists, I have been looking at the last link in a long chain of physicists, who, over time, have contributed to build this model. Because of the many tests and confirmations of the individual parts building the model, as in the case of the 1930s model of the atom, the physicists are not satisfied with a conflation between the *models of* and the *models for*. They still seek new ways to transgress the model. This was one of the surprises I detected in my fieldwork in three different places where physicists work on finding the Higgs particle: the Niels Bohr Institute for Physics in Copenhagen, the Institute for Physics at La Sapienza University in Rome and lastly the very site of the experiment the European Organization for Nuclear Research, CERN, in Switzerland. In my project I followed the physicists in their daily work and interviewed 17 Danish and Italian physicists working on the Atlas experiment. I have spent 5 months in Italy where I, among other things, followed the Italians to meetings at CERN: the centre for the experiment. When interviewing the physicists, I followed a semi-structured interview guide based on my previous fieldwork experiences. In the day-to-day experiences, I was surprised to find that the physicists were more interested in expanding the Standard Model and discuss new ways of building a new model than confirming the Standard Model. In fact, expanding the model was the declared goal of the experiment in the official Atlas paper. Therefore I posed (among others) two questions to the Atlas physicists: one about what they considered the main object of the activity and one about what they hoped would be the outcome. The answers did generally not merge.

Cultural-historical activity theory is rooted in the notion of the object-relatedness of human activity. No activity is objectless. Therefore, scientific investigations of activity necessarily require identification of the object. From my interviews it is clear that none of the physicists are in doubt what is the primary object of their activity, and in that respect they share a collective object of the activity: to discover Higgs and thereby fulfil and confirm the Standard Model making it the final theory of fundamental particles and their interactions. This, I learned, is, however, not what engages them. Another clearly stated object is to try to transgress the model; some of them not only hope that new unexpected things will turn up, they hope the Standard Model is not confirmed. The following answers

to my questions were given in 2004 – many years before the Higgs boson was actually found.

8.5 Engaged Questions

In the Atlas project a young physicist, I call him Albert, works on how to make simulations that can predict what should be found in the experiments based on the Standard Model. This is the theoretical groundwork on which he builds his simulations. If his simulations are confirmed, he becomes disillusioned. His hope is that the experiment will generate new puzzles, which he can use to expand or even discard the existing model. This is what matters for his future. Not just in terms of a more secure job position but also for keeping his curiosity alive. The object of his activity is not primarily to discover Higgs and thereby confirm the Standard Model he explains, though this is the stated *collective* object motive:

Cat: What do you see as the most important goal for the Atlas experiment?

Albert: I think the most important goal in the present state of research will be to find the Higgs particle, of course. Without this, the Standard Model is not confirmed and therefore we physicists naturally expect something to turn up. The search for the Higgs particle can open up for different future scenarios of which the worst hypothesis is that there is only one Higgs particle with a mass of approximately 130 GeV [as predicted in the Standard Model]. Once found, then we must say we find ourselves in a dessert until we reach energies at the order of the Planck-mass – an energy level that is technologically outside of our possible range for many centuries.

Cat: So it is finished?

Albert: It will mean the end of this kind of experiments. Not the end of physics, but the end of this type of collider physics, yes, I really think so. If, on the other hand, we see something different, for example, a double of Higgs, which can make you think in terms of super symmetry or particles with a mass which is not the canonical one predicted in the Standard Model, the classical version without the super symmetry, then there is good hope that, apart from this Higgs particle, you also see another set of phenomena. And everybody is confident that this set of phenomena could be the super symmetry, that is, the discovery of new states of mass: the other particles which have the same quantity numbers as the particles already discovered, but are super symmetrical in terms of spin [the super symmetry says that every particle with a half integer spin corresponds to a particle with an integer spin and vice versa].

Cat: What do you hope they find? Higgs?

Albert: One must hope they discover a whole series of new phenomena so you can see and analyse new things. To make a lot of work just to verify some stuff written 30 years ago is not very exciting.

Another physicist, Dimitri, explains:

Cat: What do you hope to find?

Dimitri: I don't know. You know, when they found the top [quark] in 1994, I hoped that they did not find it. You know, this is a problem because everybody expects it, and it was a thing everybody knew was there. At the bottom line it is like this: the really grand discoveries are the unexpected, that nobody thought existed or that maybe was predicted in an obscure place 50 years ago 'look maybe it could be this ...'. And then after

50 years, you find it and find he was right. That is much more exciting. . . When we can make this experiment, and instead of finding Higgs, we find some kind of strange particle, something we cannot explain: that's a great motivation; that is to find the new. If you already know it all, it is not worth it to make the experiment. But in the end, physics must of course also be all the sweaty, tiring work, precisely making all these measures of particles you expected and make them ever more precise. . . Today, the picture is so clear. The discoveries you make are only small variations on what was expected, so we make precise measurements and no real discoveries and that is a boring job because it is so detailed. That is what we have to do today. Even if you then hope to make the grand discovery. In real life, physics moves on because we make these very precise measures, very detailed.

Apart from one, all the interviewed physicists say more or less the same thing as Albert and Dimitri: the most important goal of the experiment is to discover the Higgs particle and thereby decisively confirm the Standard Model, though they really hope something else will be found, something that will destabilise, change or transform the Standard Model.

In a speech in June 2001, the former director of CERN, Luciano Maiani, named the primary targets of LHC to be finding: (1) Higgs boson(s), (2) supersymmetric particles and (3) he went on to speculate a 'high-energy frontier', beyond the capacity of the existing collider.

The very designer behind the Standard Model, Iliopoulos, gave a speech at the 2002 European School of High-Energy Physics in Pylos, Greece (25 August–7 September 2002), which he called 'Introduction to Physics Beyond the Standard Model'.

Physicists are (as underlined at the teachers' homepage at CERN) not perfect goal-driven machines but human beings with dreams for the future. During field-work day-to-day talks and in their interviews with me, the scientists expressed hopes and dreams for the future research and a drive for making new discoveries, which could change known models in particle physics.

The contradiction is apparently that on the one hand the physicists build their own instruments to serve the purpose of finding Higgs and on the other the finding of Higgs will disappoint them. What engages them is the possibility that all their theories have to be rejected because of new empirical findings.

They were not making a difference between the symbolic representation and the 'real' world – but were directly affected by the materials in their surroundings and the expected outcome of a conflation of models of and models for the system of particles. They were afraid for their expected future as physicists if the collective object motive of physics science disappeared.

8.6 Making Sense and Being Ignorant

In activity theory it has been argued that the core of an activity lies in the object motive of the activity, which emphasises the idea of mediation and distributed cognition. Instead of concentrating on analysis of documented change in a culture

or on individual minds learning something in a purely individual cognitive constructive process, we can – through the Vygotskian idea of mediation by tools or signs – dissolve the Cartesian divide between individual minds and culture. In this new psychology of learning, focus is on the activity and its word meanings as a unit of analysis bridging the individual experience and the cultural–historical development. Yet, the relation is a complex one.

In Vygotsky’s understanding of how development takes place, it is important to underline externalisation as the counterpart of internalisation. Externalisation is tied to the notion of *perezhivanie* – the Russian word for *lived experience* (some use other translations, but this translation is the most common). It is used in connection with Vygotsky’s understanding of the social situation of development (Vygotsky 1998), and it is often connected with word meaning (e.g. Langemeyer and Roth 2006). Internalisation is making emotions and values personal in a social situation, whereas externalisations act on the social situations.

To understand the relation between thinking and speech in social situation is the key to understand the nature of human consciousness:

Consciousness is reflected in the word like the sun is reflected in a droplet of water. The word is a microcosm of consciousness, related to consciousness like a living cell is related to an organism, like an atom is related to the cosmos. The meaningful word is a microcosm of human consciousness. (Vygotsky 1987: 285)

It is, however, not the word in itself that can convey the microcosms in a local situation, but the sense we have learned to make of it. Methodologically we can separate word meaning from *sense*, though sense and meaning are closely connected. Leont’ev tried to make Vygotsky’s notion of sense clearer by underlining that meaning was a ‘general reflection of reality developed by humanity (...) crystallized and fixed’ in a word (Leont’ev 1981: 226–227). Meaning is *social*, but it does not follow X; it is personally engaging. According to Leont’ev, however, *sense* ‘expresses the relation of motive to goal’ (ibid.: 229). *Sense* is to make sense of what is meaningful in practice. Thinking about the practice of particle physics is tied to a perception which is personally embodied and sensual and only partly cognitive. Yet, it is also both *social and collective* (in so far as the concept of Higgs boson is intelligible to all the physicists I spoke to) as well as imbued with what appears to be a *collectively ‘emotionally freighted’* (Edwards 2010: 110) shared motive.

Higgs is as much an emotion as a meaningful word and the word meaning that makes sense to Albert and Dimitri is highly complex – yet somehow a collective consciousness emerges.

From the point of view of the engaged researcher, the most interesting sentence in the above interview excerpts is my question: *So it is finished?* Behind this question lies an iceberg of what makes these words meaningful, an iceberg that has developed over time as I learned to engage in a, for me, completely unknown cultural world of physics. My interviews and my analytical cuts cannot be separated from the learning processes which have aligned me with my ethnographic subjects. The question is an externalisation of my engaged internalisation of what matters

and makes sense at least to these Italian physicists. I learn to understand how they strive to understand what matter *really* is, not in order to be able to manipulate it (the engineers will take care of that), but to strive for a foreseeable future. Fulfilling the Standard Model could have been their contribution equivalent to the periodic system in chemistry, which has so fundamentally changed our being-in-the-world with a plethora on new materials with which to intra-act. Yet, finding Higgs and nothing else will end the dream of future striving. I do, of course, *not* understand much of the practice of physics and may thus also have rendered the story of the search for Higgs in imprecise ways, seen from a physicist's point of view. The exchange between Dimitri, Albert and me, however, reveals that I, to some extent, touch upon a collective consciousness of one of the most nested cultures in the world: that of particle physicists.

I can ask this question because I have learned to tap into the emotions and motives behind the physicists' statements. The interviews are just the tip of the iceberg in this long process of learning a collective consciousness. My object motive, as an ethnographer, was to understand their object motive. Through a process of transformation, I have learned what Anne Edwards calls the process of preparation prior to relational agency – building common knowledge (Edwards 2010: 44). I have learned to recognise long-term open goals of physicists like Albert and Dimitri, such as not just finding the Higgs particle but discovering *new physics*. In a very limited way but in a broad sense, it has given me coherence and alignment of my object motive to the object motive of the practitioners' specialist activities. My questions reveal the externalised categories, values and motives I have learned to use to enquire and talk about their problems of practice. I have like the physicists learned to be a capable conversation partner 'recognising and engaging with the categories, values and motives of others in the processes of negotiating action on a complex object' (Edwards 2010: 53).

I am still ignorant of physics in general and of particle physics in particular. I have, however, interactional expertise not just because I, to a limited extent, can use the discourse of physicists (Collins 2004), but because my scalar learning brings me, as a participant observer, a little closer to their frictioned and emotional perception of the artefacts in their cultural ecology. The little common knowledge I have learned is more about emotions and motives than the actual facts of physics. I have learned *matters of concern* rather than *matters of fact* (Latour 2004). I am not an expert on physics or Standard Models or experimental technologies nor do I pretend to be one. What I learn is at another level: not about matter, but about what matters now and for future expectations.

Being ignorant is a basic condition for ethnographers. Mark Hobart has argued for the value of respecting local knowledge. By *local knowledge*, he, like many other anthropologists, naturally refers to the knowledge of indigenous and not the knowledge of physicists. When 'we examine local knowledge we should treat it like a cultural resource and study its potential contribution to peoples' welfare (material, intellectual and general)' (Hobart 1993: 5). Hobart further notes that being ignorant of knowledge is not a simple antithesis of knowledge. 'It is a state which people attribute to others and is laden with moral judgment. So being underdeveloped often

implies, if not actual iniquity, at least stupidity, failure and sloth' (Hobart 1993: 1). This also goes for the ignorance of the ethnographer studying physicists.

Ignorance is a professional value for the ethnographer. We find a hierarchy in anthropology when we are studying up (Nader 1994). When working with *remote areas*, anthropologists have to counter the ignorance Western societies attribute to their informants. Their engagement in *engaged anthropology* (Low and Merry 2010) has been to show that anthropologists – and not their ethnographic subjects – are often ignorant. In fact, ethnographic subjects have practical knowledge which is both sophisticated and extensive in a different way than academic knowledge (High et al. 2012: 2). Following the editors of *The Anthropology of Ignorance: An Ethnographic Approach*:

Making ignorance an ethnographic object is an important move because of the questions it leads us to ask. It means asking not: There are the things we don't know; why is it we don't know them? But rather, given that the set of things we do not know is necessarily without limit, how and why do we become aware of particular areas of ignorance? How are various forms of the condition of being ignorant (the equivalent of expertise) recognized? (ibid.: 23)

In my learning process among the physicists, they rarely corrected my views on physics or my renderings of their work. I assume it is because the hierarchy in studying up makes it obvious that *I* am the ignorant. Far from taking a position as a defender of my ethnographic subjects, I am the one who can be pitied for my *primitive views* compared to their much more sophisticated world of physics. Yet, it is from this marginal position as the *inappropriate other* (Haraway 1992) that I can ask how their object motive is expanded in ways that seem to follow a zone of development, which makes each new innovative finding lead to the foreseeable externalised creation of new tools following these findings.

8.7 Ada Adone

I learned that in this secluded community the material cultural resources shape the horizon of future development; they do not determine developments but direct developments. Gregory Bateson has discussed how nature displays what he calls stochastic processes or meta-patterns, e.g. displayed in a variety of crab and lobster shells. Though there are many variations, they are confined to certain patterns. Developmental processes in nature are not determined but follow certain patterns (Bateson 1972). The same meta-pattern could be detected in human cultures. Just as crabs and lobsters we respond to our environments as we externalise. The cultural resources of our environment are, however, increasingly not created by our engaged participation in intra-action with the world. In physics culture, we are however still very close to the CHAT notion of the development of tools, where an artefact is created and used in the same material world:

that has been modified over the history of its incorporation into goal-directed human action. By virtue of the changes wrought in the process of their creation and use, artefacts are simultaneously ideal (conceptual) and material. They are ideal in that their material form has been shaped by their participation in the interactions of which they were previously a part and which they mediate in the present. (Cole 1996: 117)

The physicists' tools are, contrary to, as we shall see, the imposed Paro seal, created by themselves as a means to reach future horizons: they build their tools, e.g. the Large Hadron Collider, so they can not just discover, e.g. the Higgs particle but also have the potential to go beyond that.

Over the years, the tools have been formed by the same pattern: more energy in larger rings of magnets has nested the organised community of Higgs-seeking particle physicists across the globe, across societies and institutions.

The first particle accelerator from 1931 was no bigger than a pack of cigarettes. In Italy they count their history of particle accelerators back to the 7 March 1960, when the Austrian physicist Bruno Touschek demonstrated, at a seminar at Laboratori Nazionali di Frascati, that particles could be studied through electron–positron collisions (e^+e^-) in a magnetic ring, which at that time was the size of a billiard table. A year later, a group of physicists (Carlo Bernardini, Gianfranco Corazza, Giorgio Ghigo and Touschek) inaugurated AdA (*Anello di Accumulazione di particelle di materia e antimateria*). Ada was furthermore also the name of Touschek's aunt who lived near Rome. The next change came in 1969 when the ring was replaced by a larger ring (and the group of physicists grew to more than 20 men led by Fernando Amman). The name of the new machine indicated the direction of tool development in the years to come: ADONE – the big ADA (<http://scienzapertutti.lnf.infn.it/concorso/anti/page28.html> – retrieved 6 May 2002). ADONE was later replaced by an even bigger ring and so forth. Today, most Italian physicists work at the European Organization for Nuclear Research, CERN. Here they can work on both linear and circular colliders and study particles identified in *detectors*. The methods have become much more refined than in the beginning, but apart from finding different methods to increase the luminosity, the tools have not been radically innovated. They have grown much bigger and the electronic equipment used for detection has improved immensely, but the basic idea of how to detect particles remains the same. The first really big ring was dug in subterranean tunnels under the Jura Mountains and inaugurated in 1957. It was followed by an even bigger one: the PS-Proton Synchrotron at 630 m. In 1976, CERN inaugurated the SPS-Super-Proton Synchrotron, which is 7 km long and situated 40 m below ground level. In 1989, the large electron–positron collider (LEP) was inaugurated, and around 2000, when I began my fieldwork in physics science, this tunnel was changed in order to give room to what is to date the world's largest particle collider: the Large Hadron Collider (LHC). LHC was decided upon in 1994 and tests began in 2009. It is 27 km long.

Analysed from a cultural–historical perspective, the community of particle physicists in the Atlas project can be seen as involved in an ever-expanding activity, where models act as mediators when it comes to building experiments and understanding the nature of particle physics. Yet, the models also act as objects where the

motivation and the object of the activity are to transgress the existing well-functioning models and what they explain about the world.

The motivation leading to an outcome lies in the object. Indeed, the object motive, mediated by the artefacts, seems to not only guide the subject's perception of the object but the collective whole of the community, its rules, its division of labour and more. The traditions and values are inherent in institutional practices, and material artefacts have indeed been shaped by their participation in the interactions of which they were previously a part. The technological artefacts used by the physicists support the motive of the object of activity, which is not just finding Higgs with all the hard core mathematics and physics I admit to be ignorant of. It is something I learned to understand from my position as an engaged ethnographer: it is the future of physics. The physicists' object motive always lies in the future frontiers, not in the scientific answers. Externalised technological tools are only mediational means to new future developmental zones. The true motive of activity, its object, is the future of physics. This object can be materialised in mediating artefacts like the Large Hadron Collider, schemes and plans. Moreover, it has become part of my field of perception; when I look at these artefacts, I can now see what was invisible before, namely, the emotions, imagination and thoughts invested in future physics.

8.8 Expansive Learning

In Engeström's version of activity theory, human activities differ not only because they have different object motives but because different object motives give the activity a directed development, a horizon which the participants have within their field of attention when they work on the object:

An activity system constantly generates actions through which the object of the activity is enacted and reconstructed in specific forms and contents – but being a horizon, the object is never fully reached or conquered. The creative potential of the activity is closely related to the search actions of object construction and redefinition. (Engeström 1999a: 380–381)

In the case of the physics activity I have studied, a collective consciousness has been developed from years of working with the Standard Model. It has created institutionalised traditions in practiced places which, although they are scattered all over the globe, are driven by the same engagements. A global collective culture has emerged regardless of geometrical space, but not of people and materials in practiced places. How do cultural–historical developments occur in such an organisation? The scientists' expertise can be understood as a system of cognition, distributed as an activity system (Cole and Engeström 1993: 42). The distributed cognition, which connects the subjects, the mediating artefacts and the object are never static but always on the move as the learning and development change. It is in this respect culture become not what we see but what we see with.

Engeström has suggested that complex developments are inherent in the systems as contradictions that lead to double binds and subsequently to development (Engeström 1987). Development thus takes place through a collective expansive learning process eventually involving all parts of the system in which the object of the activity is gradually transformed.

From being a circular structure closing in on itself (for instance, *models for* are confirmed as *models of*), an expansive cycle between internalisation and externalisation takes place. An expansive cycle is a developmental process that involves both the internalisation of a given culture of practice and the creation of novel artefacts and patterns of interaction (Engeström 2001). The expansive cycle of an activity begins with an almost exclusive emphasis on internalisation, on socialising and on training members. Creative externalisation first occurs in the form of discrete individual violations and innovations (for instance, a new proposal of expanding the Standard Models with supersymmetry or new physics born of the frustration that physics has become *boring*). As the disruptions and contradictions in the activity become more demanding, internalisation will increasingly take the form of critical self-reflection, and externalisation, i.e. the search for novel solutions, increases. Externalisation reaches its peak when a new model for the activity is designed and implemented. In particle physics this could be a new model of supersymmetry.

When a new model emerges, the internalisation of its inherent ways and means becomes the dominant form of learning and development. At the level of the collective activity system, an expansive cycle can be seen as the equivalent of learning through the zone of proximal development, as discussed by Vygotsky (1978).

A key feature of expansive cycles is that they are definitely not predetermined courses of one-dimensional development. Yet, decisions made in the activity system are also not arbitrary. The internal contradictions of the activity system, in a given phase of evolution, can be more or less adequately identified, and a model for the future that does not address and solve those contradictions will eventually turn out to be non-expansive.

In this sense, the physicists' community forms a kind of culture of social practice learning from and developing new models. In their activity they transform the models that go through different subsequent and alternating phases: *models for* and *models of* as mediating artefacts and *transgressing models* as an object of the activity is transgressed. As *models for*, the models in particle physics are distributed as mediating artefacts indicating how to form experiments so the community can move from hypothesis to well-established theory. As *models of*, the models act as a model of the well-established theory. After a while the two types of models conflate the activity. New collectively shared and engaging *relata-within-phenomena* come into being. This happened in the 1930s, when the model of the atom was finally confirmed, and it is happening now as the physicists are convinced that what became known as the Standard Model has been confirmed by the discovery of Higgs. In 2004, a number of years before the final confirmation took place (the experiment started running in 2007), the physicists saw a contradiction between

their need to confirm the Standard Model and their need for new models to work on in *future physics*. For many years, the object of the activity in particle physics was to confirm the Standard Model; yet, as this confirmation becomes more and more likely, the object of the activity changes from being confirmation to building transgressing models for future zones of development.

A new model is externalised as gradually as the Standard Model was developed. In that process, the Standard Model is not discarded: it is expanded. One of the new models was the model of supersymmetry (SUSY).

This change in activity is mirrored in the contradictions described by the particle physicists in the interviews. On the one hand, the physicists want to confirm the model; on the other hand, they do not wish to stop the expansive cycle and thereby kill the progress of the activity. Therefore they hope for *new SUSY physics* to appear. This contradiction is solved by making the very expansion of the Standard Model the object of the new activity. Some go even further and hope for something completely unexpected, which does not fit either the *old* Standard Model or the new model of supersymmetry. This is what they perceive when they reflect on the particle collider. It becomes a time field of future expectations.

We see a change over time in the way models are used as models and communities grow more encompassing, bigger and complex. In the beginning, the theory precedes the experiment as *models of* to be tested and maybe discarded (as the plum pudding theory). Small groups of physicists work directly with experiments confirming or discarding a model (as Rutherford and his students). Since the 1970s many small theories tested in experiments have again and again confirmed the Standard Model, and to my knowledge no part of it has been discarded so far. The particle physicists begin their experiments from the same basis modelling and do not test and discard new models. This is partly due to the very costly enterprise of making experiments today (in addition to all the very costly experimental equipment in Atlas, it is estimated to require 5,322 man years). Today, it is impossible for a single small group of physicists to discard the Standard Model; only an experiment the size of Atlas can do that. The collective relata of particle physics are stabilised.

In this cultural–historical developmental process, the Standard Model, as a *model for*, is vastly distributed as a shared mediating artefact in the new type of model in particle physics. Many of the physicists I interviewed even lamented that the Standard Model was confirmed again and again. This dissatisfaction does not lead to the formation of completely new models but to a motivation to find ways of expanding it. As these ways of expansion demand larger experiments and higher-energy levels, it could be an endless story, which only the lack of money for new experiments can put an end to. The transformation of the object is basically a transformation of the distributed cognition in the system, where still larger groups of people form a more and more coherent community of particle physics.

In its capacity of a *model of* the future, the Standard Model mediates as a developmental zone between a world of invisible but mediated particles, tools (developed historically from ADA to ADONE to LCH), theories, properties and forces between the particles and a scientist trying to understand the relation. In its

capacity of object for the activity, the same model becomes a *model for* future development, the very driving force behind the scientist's actions trying to confirm hypotheses. When confirmation takes place, the driving force becomes building new models. In this cultural–historical transformation, the shared object of the activity comprises more and more physicists with different national backgrounds in a culturally shared future proximal zone of development.

8.9 The Nearest Development Zones

Subsequently, I will present a more radical type of development, initiated in an outside intervention bringing in new technologies to an established practice, which resulted in a complete change of situation. This changed the future developmental zone not just for a young girl but for the whole organisational culture of a mental asylum.

Vygotsky's zone of proximal development was connected to children's development (Hedegaard 2009; Chaiklin 2003), not full-grown physicists or organisations. In Engeström's version it is expanded to include the distance between the presence of an activity system in relation to a potential future. Here the zone of proximal development becomes an 'area between actions embedded in the current activity with its historical roots and contradictions, the foreseeable activity in which the contradictions are expansively resolved, and the foreseeable activity in which the contradictions have led to contraction and destruction of opportunities' (Engeström 1999b: 67).

Vygotsky showed how humans used a creative method of double stimulation which elicits material externalisations of inner processes:

Tying a knot as a reminder, in both children and adults, is but one example of a pervasive regulatory principle of human behaviour, that of *signification*, wherein people create temporary links and give significance to previously neutral stimuli in the context of their problem-solving efforts. We regard our method as important because it helps to *objectify* inner psychological processes. (Vygotsky 1978: 74–75)

Engeström has developed Vygotsky's original idea of double stimulus into a method for how to intervene and help expand other people's activities by helping people resolve the contradictions they encounter by making them develop new tools for development in the so-called Change Laboratories (Engeström et al. 1996).

Newcomers, like Engeström's researchers, can make a difference in breaking the established patterns of culture. In his own systematised work on interventions, the Change Laboratories aim at doing just that: change the zones of development by working on the different nodes in the activity system and on the object motive in particular. My attempt to break patterns in the physics culture was less successful. Though they listened with interest to my analysis (and maybe somewhat condescending) (Hasse 2000), no changes occurred. Relata can be reiterated in ways which exclude any new lines of thinking.

Yet, we know that a single person, an outsider, may change long-established routines by bringing in new technologies which create new zones of development. This has been recounted in the story of the art teacher, who changed a home for the mentally retarded (Hasse 2001).

However, the story of the art teacher is special because it is basically an idyllic story of an almost perfect fit between humans, materials and development. The story goes like this:

In the early twentieth century, a young girl, Selma, came to a home for disabled people, brought by her aunt. The girl was initially seen as a hopeless case. The staff learned to deal with her through daily routines, which meant she was washed, got dressed, was placed in a chair, got food in a new chair, was fed, washed, got her pyjamas on and was put to bed. The routines were a matter of course for the experienced staff that because Selma was unable to evolve she did not need to be stimulated. The experienced practitioners in the organisation trained newcoming staff in how to deal with the disabled people: how to wash them, clothe them, feed them, etc. One day, the management decided an art teacher could visit the institution to teach the disabled how to draw. This art teacher, Henry Schaefer-Simmern, tells the story of what happened to Selma in the meeting with the new task: to draw with the materials brought by the art teacher (Schaefer-Simmern 1961).

At first the staff did not think Selma should be included in the drawing lessons as she would not benefit from it. She can do nothing but sit all day long and stare. She is not expected to be able to handle drawing technologies. She does not react as if she perceives her environment. It is not a problem though because she does not make a fuss. At the time Schaefer-Simmern meets Selma, the staff has for many years seen her as a kind of living vegetable. She is described as 'lazy and indifferent, unresponsive and Phlegmatic, and had a vague empty stare. She would obey commands, but showed absolutely no independent initiative' (ibid.: 33–34). Schaefer-Simmern challenged the staff's description of Selma and demands that she participates in the drawing lessons. When she is finally brought to the class, he even forces a pencil into her hand. The staff and management accept the outsider's interference (like many organisations have accepted Engeström's Change Laboratories), but they are shaken in their routines as a gradual development of Selma's character and capabilities begins to take form, when she learns to move the pencil. Her ability to communicate and her personality changes, but the personal development, it turns out, is also a developmental process through which the entire organisation changes.

Selma gradually appears to have a talent to express herself through drawings, and although she never has drawn a picture before, she quickly learns to communicate very competently through her drawings under the guidance of the teacher. Her drawings get better and better. The psychologist at the institution believes that Selma is changing because she is being praised for her actions for the first time ever, and that in itself promotes several new actions (ibid.: 57). Following Engeström, a deeper explanation could be that Schaefer-Simmern, through his intervention, solves unrecognised contradictions and projects the organisation into a developmental zone. Management had, before the art teacher arrived, a problem because

the institution did not evolve. What we might call the organisational culture of this institution was open to include innovation in the form of an art teacher, but although ‘the next transformation is already in the system’ as Bateson expressed it (Bateson 1972: 255), the invitation to change can have unpredictable effects.

The art teacher was not invited into the organisational culture to develop Selma, and discover her abilities to draw or her vital personality, but it became a consequence of the way the *culture* attracted him and his drawing technologies. The art teacher looked at Selma with new eyes and found it problematic that everyone could not attend his teaching. He took this as a challenge in itself, and he had to make the staff see it as a problem too. Consequently, they experienced it as a success (and something the whole organisation could promote itself on) when Selma began to draw. An additional consequence of Selma’s emerging drawing skills was that the entire organisation could brand itself on her success as an artist. The staff and other people in the home joined up to make new material externalisations: tablecloths and napkins with imprints of her drawings. She and her externalised drawings became the symbol of an innovative and inclusive organisation. This effect was not intentional from the start. Creative paths to innovation are unpredictable, but the story shows that innovation requires the practiced place to be open for acknowledging existing problems and relations that have not been acknowledged before.

Selma’s personal creative development zone became an innovative development for the entire organisation, but only because the materials brought by the art teacher, Schaefer-Simmern, was recognised and included as a cultural resource – also for Selma. In that sense development zones are relational (Hasse 2001).

Employees’ learning and development are, as noted by Edwards, revealed in how they externalise understandings in their actions. In the above-mentioned case, the newcomer was welcomed and invited into the culture, much like Engeström’s researchers who engage in Change Laboratories. In other cases, new artefacts or newcomers are not welcome but seen as intrusions, which results in resilience to change. The attention in cultural–historical activity theory to:

... externalisation alongside internalisation means that we should find evidence of growing resilience in a person’s ability to act on and shape what Vygotsky called the social situations of their development. [...] [This] view of development can help to counteract concerns that attention to resilience in welfare policies places too much emphasis on individual responsibility and personal adaptation and not enough on the affordances of the environments in which they are developing. (Edwards 2010: 84)

New technologies can break and transform cultural learning processes in organisations in more or less radical ways, and cultures can be more or less open to the practitioners’ professional needs for stability of change. In today’s globalised world, radical innovation is increasingly connected with externally imposed new machinery and other artefacts, like roads into the forest in Indonesia, which impose a change that become a cultural resource to be dealt with by the local people (Tsing 2005). Creativity with new technologies is linked to the materiality of learning (Sørensen 2009) and to embodied learning (Hasse 2008). Innovation is, however, tied to power relations and the manner in which the organisational culture is open

for learning and change coming from the practitioners: an organisational culture's zone of proximal development is relational to what is recognised as creative in the organisation (Hasse 2001, 2013). Employee-driven innovation implies a renewal of organisational culture (Brandi and Hasse 2012).

Engeström has previously used this example of a girl Selma, who changed with the changing conditions of the institution, to show how persons and organisation develop together. His intervention work on Change Laboratories can have the same effect and change the entire work life for a group of employees. This is an attempt of breaking cultural patterns by interventions, where the researchers actively affect the life of other people. The same goes for the developmental work research done in Great Britain by Anne Edwards and Harry Daniels and for Anna Sfard and Anna Prusak when they see learning as:

[O]ur primary means for making reality in the image of fantasies. The object of learning may be the craft of cooking, the art of appearing in media, or the skill of solving mathematical problems, depending on what counts as critical to one's identity. Whatever the case, learning is often the only hope for those who wish to close a critical gap between their actual and designated identities. (Sfard and Prusak 2005: 19)

Bringing in new technological tool may spur new kinds of learning. But they may also hamper creativity. In my use of Vygotsky in my analysis of the physics culture, I do not underline the revolutionary and liberating aspects of his theory but the inherent directionality of cultural development in nested cultural ecologies. Only by understanding how our world views align can we learn to change their directions.

Though relatum is a continuous process, frictioned encounters make sure that cultural ecologies often deselect (eject) unwanted artefacts as well as employees – and sometime potentially innovative novelties. Employees may also reject certain relata and join forces to do so even against the wishes of a powerful management. Resilience to change may, from the perspective of the employees, be promoted not just as insurance against social exclusion, as argued by Edwards (Edwards and Apostolov 2007), but also by unwanted transformations of work through material artefacts. Some of the artefacts that have found their way to the health-care sector in recent years, like the robot Paro, have been tied more to future-oriented science fiction fantasies found in engineering and physics education than to the needs of the local practitioners.

8.10 Multistable Technologies

Following Stephen Billett (2010), an organisation as a workplace could be seen as a place for learning, and workplaces differ in how they arrange learning possibilities and give room for potential changes. When learning environments change, new learning potentials emerge (ibid.). The cultural expansion of some organisations can be initiated through explicit attempts at development (like Engeström's Change

Laboratories) but also through recognition of the creative capacities of the organisation's practitioners. Some organisational cultures cannot develop the creative capacities of its practitioners, here the grey zone contracts, and destroy possibilities, but the organisation still develops, e.g. by importing new technologies – but it may have negative effects. In CHAT there is often a smooth connection between a person and the surrounding society where the collective consciousness is already established:

Human activity is not a relation between a person and a society that confronts him. . . in a society a person does not simply find external conditions to which he must adapt his activity, but, rather, these very social conditions bear within themselves the motives and goals of his activity, its means and modes. (Leont'ev 1978: 10)

This is true in particle physics where physicists create their own future development through a creation of their own tools. In a globalised world, where technologies travel from one activity to the next, this smooth connection between material artefacts and motives and goals may however be questioned. When technologies are not created by the people who use them, physics and engineering culture matters because their research becomes the materials of tomorrow for people around the globe. The dreamworlds of scientists (Tsing 2005: 85) become real conditions and cultural resources in people's lives. Science fiction fantasies of engineering and physics students entail all sorts of machinery, spaceships, particular kinds of architecture and not least human interactions with robots. Robots are recognised by Danish politicians and leaders as innovations, but less so by the staffs working with them. Robots are placed in the human life worlds and change both the workplace and people engaging in practiced places. The example I will present is the emotional robot Paro (a technology created by engineers but based on physics theory) and its impact on people in a nursing home (e.g. Hasse 2013).

Paro is a so-called emotional or sociable assistive robot that has been included as an innovation in the work life in an old people's home in Denmark. It was introduced as a result of a massive campaign for welfare technology in nursing home care initiated by the Danish Ministry of Science and Ministry of Finance in the mid-2000s. The local government and management saw the emotional socially assistive robot as an innovation useful for their aim of transforming the Danish welfare system so it would become renowned as one of the welfare technological innovation spearheads in the world. Paro is created in Japan by the Japanese engineer Takanori Shibata. Its function is to calm down patients with Alzheimer's disease. It is a type of robot that not only engages with humans on a cognitive level but on an emotional level too. The commercial product is a machine designed to react on cuddling and voices. It has the shape of an infant white harp seal. It can express needs (e.g. for being fed or padded) and respond to touch like a human baby. It is fed through an electric devise formed as a baby's pacifier. The expected effect of this tool is to calm confused, upset and angry older people with Alzheimer's disease.

When artefacts like Paro travel across the globe, they become newcomers in other people's practiced places and tend to affect the local activities much more

than, for instance, any ethnographer can. With the global distribution of socially assistive robots, it becomes clear that tools can become active agents that require us to change our behaviour (Turkle 2011). Whatever emerges as cultural artefacts (relata), the material aspect of learning (Sørensen 2009) cannot be ignored.

By analysing cultural learning processes over time, we may be able to direct attention towards the creative potentials of the ethnographic subjects, rather than the science fiction innovations imposed by externalised dreamworks of science.

Paro did not materialise in the Danish nursing home because of a need or a wish expressed by the staff. The needs and wishes leading to Paro's inclusion in the workplace came from the manager and the local politicians. They saw Paro as a needed innovation. The local manager directly connected her decision to acquire Paro with being recognised as innovative: 'Of course, I know that they see us as being the innovative in the municipality, because we invested in Paro'. In the official statements Paro was said to have a calming effect on old people: 'When conflicts arise the seal elicits 'positive feelings and subdues aggressive behaviour'' (Hasse 2013: 83). In my meeting with the staff, they explained how Paro had not only led to changes in the organisation of work but also challenged their sense of being professional workers in health care.

It turned out Paro could upset the older people in two ways. Some became frightened or even aggressive when they saw it, while others became upset when it was removed. Moreover, the staff had to devise new plans and schedules for the use of Paro since the institution only had two seals. Finally, Paro also seemed to affect the staff's sense of expertise in subtle ways as the *care work* of cuddling and comforting the old people was now, to some extent, delegated to the robot. With Anne Edwards, it could be argued that Paro thereby challenged the core expertise of the staff.

Technological artefacts like Paro are not stable cultural resources that retain their word meaning when they travel through the world. They become what Don Ihde (2002: 106) has called multistable, when they move between cultural spaces. Material objects like Paro come with certain affordances following their design (Wallace 2010). These affordances may be cultural carriers when artefacts like technologies travel in globalised worlds. People learn about the meanings of artefacts when they handle them in their own practice-based learning in local activities. What they learn from handling these materials is, however, not just bound up with what people do (Scribner 1985: 203) (see Chap. 5). Handling technologies, or other artefacts, does not just give a more discrete perception of the multistable meanings of artefacts. In a very basic sense, this handling of new artefacts may also spur a zone of development, which means a change in the perception of them and of how people perceive their work and themselves. These cultural learning processes refer not only to the collective learning processes of, e.g. dairy workers or staff in nursing homes who align and refine their discrete perceptions of the material environment they intra-act with. People working together with the same kinds of artefacts develop similar agential knowing, and they also learn from the artefacts in ways that expand their being-in-the-world.

In the book *‘What Things Do’*, the philosopher Peter-Paul Verbeek (Verbeek 2005) describes how material artefacts like technologies influence human actions because they provide material answers to ethical questions of *how to act*. Engineers, who design artefacts like Paro, do *ethics with other means* in so far as they materialise morality. Mediating artefacts may thus also open up for new moral spaces in their meeting with other people’s practiced places. Yet, the outcome of the meaning of material artefacts, like technologies, is not solely determined by the design of the materials but also in the meeting with a meaningful practice. The zones of development are not released solely by materials. When artefacts, like Paro, travel to new places, the design functions envisioned by engineers meet other visions for the future. Although structures limit variations, ‘all technologies display ambiguous, multistable possibilities’ (Ihde 2002: 106). As noted by Robert Rosenberger, materials become multistable when they cross time, space and bodily positions affecting perceptions (Rosenberger 2011). In the meeting with new practices, the technological artefacts attain a new stability (Ihde 2002).

The relational multistability following the meeting between a design and a local practice will, over time and in the course of learning with and working with the materials in the local practice, gradually stabilise the materials with new meanings. These meanings are tied to the local zones of development. Paro was meant to calm down patients with Alzheimer’s disease, but in the local context of the Danish politicians and managers, it was meant to be a carrier of *innovation* – an intangible zone of proximal development, which elicits new learning in the work of the local staff. In a postphenomenological perspective, technology is often seen from the position of the individual rather than the collective body. If a collective body is in play in the analysis, it is mostly through a reference to a disciplining of cultural bodies, as in Ihde’s analysis of cultural bodily positions in relation to reading positions (Ihde 1993). When adding, to this perspective, the cultural–historical processes of how materials are formed by collective communities of learners, we can pose new questions of what happens to artefacts when they are moved from one community (the design engineers) to another (the politicians) to another (the nursing staff). The multistable character of material artefacts can affect professional agency and expertise in unforeseeable ways and even change professional identities. Bodies relating to material surroundings have local histories tied to local semantic densities and meaning-making practices. Tools become signs in their meeting with these practices, and they also display multistability in relation to the practices they engage with.

In this perspective, the postphenomenologically embodied sense of multistability can be moved out of the embodied positions, beyond alignment of collective learning in practice and into learning leading to new zones of proximal development of human activities. ‘When we humans use technologies, both what the technology “is” or may be, and we, as users, undergo an embodying process – we invent our technologies, but, in use, they re-invent us as well’. (Ihde 1990/2007: 243)

When travelling the world, tools become signs with directional force that form or change human actions, and these directions are connected with new cultural meaning-making processes. Neither the use nor meaning of tools is stable. In this sense, tools are definitely not ‘immutable mobiles’ (Latour 1987: 227); rather they emerge as embodied in new activities, where they act as unpredictable active change agents (Hasse 2013). The design of a tool, seen in relation to embodied being-in-the-world, may elicit new bodily postures and embodied subjectivities. These changes of positioned embodied being may lead to new learning and thus new formations of zones of proximal development, which subsequently change professional identities tied to activities.

To give an example, Paro becomes multistable, not because of *perspectivism* (Mol 2002) in which the focus of an object is limited to certain aspects, but because the object materialises in new local intra-active activities. In practice, material artefacts are tied to local zones of development.

Technologies, like Paro, cannot be reduced to a specific material design with a fixed word meaning connected to its material affordances, eliciting certain actions. It materialises in relation to the motivated future envisioned in local culturally directed processes of development, where it may elicit many (re)actions unforeseen by the original community of designers. Some of these (re)actions will change the material world and some will change the local staff’s field of attention and create new time fields of future visions.

Though the nursing staff may have wanted to reject the presence of Paro, it ends up changing their zone of development. The staff may have had the potential to develop their own acts of creation within care work at their workplace. Now they use their creativity to develop solutions to the changed situation of having to deal with Paro. Traditional anthropology rarely asked questions about participants’ acceptance or rejection of new things and newcomers. The strangers, i.e. the newcomers, were most often considered to be the anthropologists themselves or at least many anthropologists perceived themselves in this way (Powdermaker 1966).

I, and several other researchers – particularly anthropologists conducting long-term fieldwork, have described how researchers often feel in- or excluded from the group of people they study. Nevertheless, I had difficulties finding suitable theories in the analytical field that can explain cultural attraction and expulsion of newcoming things or participants like robots and humans. Sociological theory often refers to the stigmatised person (Goffman 1963) but does not refer to the cultural learning processes behind a pattern of in- and exclusion. The underlying reasons for expulsion are reduced to organisations and people explaining their own discursive constructions of their exclusions.

Ethnographic subjects rarely have access to thinking tools from the analytical field to gain an overall cultural analytical understanding of the deeper pattern behind exclusions. The statements they provide as explanations for why they left an organisation can serve as suitable *complementary* empirical material, if they are analysed in relation to the collective pattern which the cultural analysis has the ability to create. Yet, statements about why people leave an organisation or why

certain types of behaviour, material artefacts or words are expelled cannot be viewed as stand-alone elements; they must be analysed in relation to the locally externalised word meanings that infer exclusions as well as inclusions.

8.11 The Researcher's Development Zone

When ethnographers want to help break cultural patterns, Vygotsky's historical-genetic and dialectical method (see, e.g. Veresov 2010) can supplement what is learned through participant observation with a focus on developmental processes. In order to get a deep sense of what engages other people, we can follow not just what they do now but how material artefacts have changed what they do in order to get at future developments.

I have argued that ethnographers can learn to learn about the future expectations of ethnographic subjects and thereby (possibly) also about the future material artefacts they will produce. When ethnographers tap into other people's collective consciousness, we learn to go beyond mere description of people's behaviour; and we learn to go beyond the tip of the iceberg of word meaning. We learn to expect what makes sense to other people. We learn to learn what drives our ethnographic subjects towards a future practice.

In the early ethnographic descriptions, it was a cultural truism in the analytical field of anthropology that fieldwork took place in distant and exotic places. Anthropologists had an *archetypal* conception of fieldwork as taking place in a field that was defined as a small, local, exotic and isolated area (as seen from the Western point of view). Fieldwork in our so-called *own community* has challenged this archetypal conception, because it made us aware of our own constructions of the concept of *field* (Amit 2000). Today, the traditional perception of the field as a discrete entity is dissolved (Gupta and Ferguson 1997). There is a general recognition that the field is basically designed together with the research. *Field* is thus defined as a place where local subjects are defined and localised (Appadurai 1995: 211) based on the research questions formulated in the analytical field. The new truism in the analytical field is now that anything goes as an empirical field. Today, anthropologists often study people in many different geometrical spaces within the same ethnographic project (multi-sited ethnography), and it has almost made anthropology forget the importance of bodies sharing meaning and sense in a physical space (even when the engaged participant directs his or her attention to a virtual community studied from a computer).

Following Ulf Hannerz in his argument for 'several sites in one' (2003), each geometrical space may emerge as a plethora of practiced places in the analysis. This does not rule out multi-sited ethnography (Marcus 1995); it only makes it more complex.

The empirical field (regardless of how it is constructed) is, however, never *de-territorialised*; it is a very physical space tied to the social space emerging with the practiced places.

Some analytical fields, like the more management-oriented studies of organisational culture, are very sparsely armed with references to the researcher's specific methods and methodologies of how to move about in the empirical field. Alvesson and Berg emphasise that, from the beginning in the 1980s and 1990s, studies of organisational culture were characterised by a lack of 'empirical foundation' (Alvesson and Berg 1992: 49). Most of the studies have either not independently collected empirical data, or they lack explicit references to the cases mentioned, or they only have a few superficially presented cases that often consist of anecdotes.

In the analytical field of anthropology, we find a much more strict demand for clear descriptions of methods and methodologies. The main problem for anthropology has been that it is so difficult to explain the methods and methodologies of participant observation clearly. Margaret Mead made an attempt as early as 1949, when she underlined that anthropologists' approach to their object of study was never tied to the study of single elements but a search for *wholes*. Where other disciplines narrowed themselves to studies of 'the behaviour of infants, or the practices of advertisers, or the details of housing' (Mead 1949: 24), anthropologists have always worked with *the whole society* as their backdrop:

This way of thinking, which refers a whole series of apparently disparate acts – the way a child is fed, a house-post carved, a prayer recited, a poem composed, or a deer stalked – to one whole, which is the way of life of a people, this is a habit of mind that we carry over into work we do in our own cultures too. (ibid.: 24)

I have argued that we should pay more attention to artefacts, like technologies, because they are not just tools operating as assistive tools to reach certain goals; they also affect and change activities and even the practitioners themselves. Such changes often come about as unnoticed as our next zones of proximal development. Tools and other materials in our environment – even when we form them ourselves, like the physicists working on the Standard Model – indicate a direction of the cultural force that in- and exclude the cultural resources the future culture is built with.

The uniqueness of the research position provides an opportunity to move around in organisations and sense the force from different positions, without being obligated to the *lived experience* so engaging for others. Our position as the *radical other* makes it possible to gain insight into friction-causing discrepancies between what powerful and less powerful practitioners say and actually do. Precisely because the researcher's learning process is always implicitly comparative, fieldwork is always multi-sited (Marcus 1995). In a globalised world, we do not need to position ourselves physically in different sites in order to see how humans and their travelling artefacts intervene and set cultural frames of learning for practiced places.

Ethnographers as other newcomers internalise socially based moral ideals through presence in our social and material surroundings. We achieve membership by learning what constitutes an established culture's shared understanding (Dewey 1916: 30), irrespective of whether we learn through social identification in the

organisation or by participating in the work of certain designated groups. The social identification of *bronze star* and *innovative employee* does not necessarily have the same meaning for participants and staff – or researchers. We can learn to tap into material space full of emotions and motivations and local agential cuts, but as the radical other, we can also learn about how to theorise connection lines, cultural models and zones of development as ‘scientific apparatuses’ (Barad 2007: 140). Barad refers to scientific researcher’s use of telescopes and ultrasound scanners, which make *agential cuts* determining how nature is allowed to materialise. Theories in the analytical field of cultural models also co-create the researcher’s perception and agential cuts, but the theoretical field of attention is never an end in itself, and a research apparatus contains more than theories, methods and methodological considerations.

To make relevant analysis, the researcher must, like other participants, not only learn to know, but also learn to care, and that entails an engagement in the local relationship between materiality and significance (Ardener 1985: 57). The researcher’s own nearest development zone must be aligned with that of the other participants through his or her learning process in the empirical field. Sometimes this is a very overt and explicitly interventionist engagement, as in Change Laboratories and the engaged and applied ethnography proposed by anthropologists (Lassiter 2005; Low and Merry 2010; Baba and Hill 2006). In Bateson’s words (1972: 276), the researcher can ‘learn to learn’ in the meeting with the empirical field, making the researcher’s cultural analyses relevant for developing, e.g. the studied company and its employees’ potential for innovation.

In recent years, a host of new and creative tools for making and analysing research have emerged, e.g. Latour-inspired analyses of human and non-human actors (Latour 2005) and new creative method designs, such as the many different approaches to collaborative research (Marcus 2007) using diaries, cameras, new identities on Internet platforms, etc. These new approaches have in many ways broken with the traditional notion that culture is explored best in demarcated sites, where people’s practices unfold in specific locations and through studies of local situations.

By understanding the research process as a basic human learning process, I open up for a more fundamental methodological understanding of the creative culture analysis. Researchers must understand the conditions of their own learning and development zones and thus be open to review in new ways the various creative inventions and interventions in the empirical field. The analysis depends on what the researcher can learn. I have identified the body as anchoring the learning processes shared by researchers and participants in organisations.

Ethnographic subjects may listen to our analysis of how they follow patterns of meaning-making practices, which could be broken. In fact anthropologists get good and vivid discussions out of presenting their data to the empirical field – and these reactions become new data for the ethnographer in a feed-back loop process (e.g. Hasse 2000). However, we should not exaggerate how much we may collaborate or change conditions for our ethnographic subjects. It is first and foremost the ethnographers who change.

The researcher as changing apparatus may be a dangerous metaphor because it signals an instrumental approach to research. A machine cuts up reality: it captures certain attention fields and systematises according to a procedure that can be repeated in the same or new contexts. Implicit comparisons are explicated as cultural comparisons, and though the apparatus changes with the increasing engagements in the empirical field, the instrument will ultimately remain unaffected by the data flowing through it. This is, however, not the metaphor I wish to evoke. The research apparatus is not a detached stand-alone *instrument* capable of collecting connections without changing its own architecture. On the contrary, the apparatus, as the radical other, changes its own zone of proximal development forever. Though I shall never myself work on the Standard Model, the frictions I learned about in physics in connection with my studies of physics education have forever changed my being-in-the-world. Not simply because I now see stars as potential suns, but because any material I encounter is now seen as spun into and entangled with invisible forces: not of nature, not of culture – but natureculture (Haraway 2003:16). Learning is a process of learning a difference that makes a difference (Bateson 1972: 27–32). All of this answers the question of from which parameters anthropologists should delineate their chosen fields of enquiry, namely, where learning takes place and where it stops.

8.12 Summary

Following my diffracted reading of cultural–historical theory, creative humans increasingly externalise materials which partake in cultural ecologies for other human beings in remote practiced places they do not visit themselves. Keeping Euclidian space in mind, humans transform practiced places far from where they themselves are engaged and nested by sending material artefacts like technologies out in the world. This forms new lines of connections, but the people who create and externalise new artefacts may often never become aware of how they affect other people’s lives in space-time-matterings.

Some people, like the physicists, still create their own tools. Their collective consciousness is nested in materials like the Standard Model and particle detectors – indicating the next developments. Others, like the staff in public institutions, have to work with imposed artefacts like the Paro harp seal. It can break cultural patterns as a source of new innovation and an improvement for the whole organisation to receive newcomers in the shape of humans (as in the case of Selma) or artefacts (like pencils or robots). Newcoming humans and artefacts may open otherwise unused zones of proximal development. Yet, what we learn from cultural–historical activity theory is that any development is already prepared like the bud, which may and may not grow to become a flower. Selma *and* her organisation had a collective zone of development for the benefit of all. Yet, this kind of harmonious collective development does not always happen. Ultimately, creative people and artefacts may be excluded because the defining anthropological space aligns to friction them out.

Or incoming technology, like Paro or roads in the Meratus mountains, changes zones of development in ways neither wanted nor expected by local people.

Zones of development are relational in the sense that they evolve from what has already been learned and nested in practiced places. Ethnographers may move in and out of frictioned dust bunnies of connections in practiced place. Though we may learn to understand the meta-patterns of a cultural collective consciousness that motivates and affects a group of other humans, who in their turn may be affecting the lives of other humans, we may not be very successful in breaking cultural patterns, partly because we remain too ignorant of what really engages the ethnographic subjects and partly because our analysis may run counter to established and materialised expectations of future developments.

Our analytical objects do not need to be organisational *wholes* to be studies of cultural frictions. The anthropological field's critique of the structural or structural-functionalist approach rings familiar to the critique of Schein's integration perspective in the analytical field of organisational culture. In this field, the *culture-as-entity* has faced a big problem. The Niels Bohr Institute is no more complicated to study as a whole and harmonious *culture* than global organisations defined by their names (e.g. Ciba-Geigy, Disneyland, General Motors, etc.), materialised in different parts of the globe.

Culture is an analytical concept used to analyse variation in perception and use of material artefacts nested in cultural ecologies. Culture is also referring to a real force that moves people to create sometimes horrible seemingly *natural* conditions or impose unwanted and disruptive artefacts in each other's frictioned fields of attention. Material artefacts are human made sometimes collectively meaningful materiality spanning over words, actions and objects that, over time, nest people to what they expect from each other and their material surroundings. Humans change in the process because their *thinking is anchored in changing material surroundings*. This is the collective of *Anthropocene*. No new technology is innocent in this respect. As yet we know all too little about how cultural forces transform human attention fields, motivations, affects and basic perception of the world. In a cultural learning perspective, the starting point is the ethnographer's ignorance of lines of nesting. Methodologically the focus is on what causes the increasing entanglement. An anthropology of learning (which is a methodology, rather than a method) uses cuts, fibres, lines and string as metaphors (including other contextual metaphors like organisation, institution and system) to insert a diversity that connects and disentangles nested cultures constantly on the move. It is not an easy task to address the founding contradiction with a methodology that places the ethnographer in a world of continuous intra-actions, which seemingly render any attempt to analyse fixed entities superfluous yet keep an attention on how material and human collectives have directional force over people's lives. The theory of cultural learning processes does not solve the deep problems of ontology and epistemology found in the philosophy of the sciences in general. The aim of the presented anthropology of learning is alone to be one among many possible contributions to unfold the ethnographic methodology behind anthropological theory.

Cultural constructions of ethnographic presentations are already superseded by growth, life and movements, as noted by Ingold (2011). By placing learning at the core, however, we may be able to say something about the processes behind the transformation of human condition, wherever we find it. Cultural analysis and anthropological theory based on the ethnographers' in-depth learning of what matters to others may help in breaking the patterns behind the unforeseen and unwanted effects of *Anthropocene*.

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Chapter 9

Epilogue

What does all this mean? Why did it happen? What made those people burn houses and slay their fellow men? What were the causes of these events? What force made men act so? (Lev Tolstoy *War and Peace*. Second epilogue)

If cultural forces evolve and move through persons in organisations, it has implications for the very special task of a particular newcomer: the expert researcher who is professionally engaged in learning the cultural activities of other people.

This book began with an introduction to a particular chair – visually it looked like any other chair, but in that particular space-time-mattering, the chair vibrated with local cultural frictions. I had accidentally chosen to sit on the boss' chair. I was ignorant about this fact and learned to take care of it. It may seem like a trivial fact, but ethnography consist of learning trivial facts like these.

Chairs can be analysed by social scientists in many ways, as already noted by Alfred Norton Whitehead in 1916. We can follow the design of a particular chair, the history of its production, its travels across oceans, its history of mass production, the economy around it and the aesthetic pleasure it gives its customers. Many of these ideas have been explored in cultural studies and in the work of the followers of Bruno Latour in ANT (actor–network theory).

Even though *Anthropos* may be only one of an infinite number of hexagonal galleries in the library of the universe, it is what matters to anthropology. Anthropology must contribute to basic studies of humankind. The proposed anthropology of learning (which I believe to be one among many possible proposals) attempts to open up for a theory of the basic process of cultural forces, which create posthumans, stone piles, scarfs, numbers like 42, science fiction movies, cyborgs, dogs, masks, desserts, short dresses, snowstorms and chairs in the age of the *Anthropocene*. Theories of the posthuman must consider these aspects of human learning processes in order to make clear what is *post* and what is *human* in posthuman theorising. This is of importance for both the more Spinoza-inspired discussions, e.g. Jane Bennett's work on vibrant matter (2010), Katherine Hayle's

discussions of posthuman bodies (1999) and the more speculative ideas about how humankind are being transformed as a species by new technologies (e.g. Kurzweil 2005; More and Vita-More 2013).

In this book, I have proposed a return to participant observation as the basic ethnographic approach following *people* in their cultural learning processes in practiced places. The transformation I find interesting to follow is the transformation of a research apparatus that makes it possible for the ethnographer to write descriptions based on an evolving engagement with an empirical field (Chap. 2). The field I have in mind is the cultural organisation of other engaged human beings sharing a practiced place. This place is simultaneously a material geometrical space, yet also a topologically fluid anthropological space. In this sense, what matters is the process of transformation, not where and what material artefacts *really* are placed in practiced places. I do not follow the chair around the world, but I follow its transformation in my space-time-mattering process of learning. The empirical field ethnographers engage with is of course always a written construct, but anthropology is not a craft of writing but a craft of engaging in cultural-material learning processes.

In order to understand the ethnographer's learning as an intra-active yet collective process of learning nested in anchors of materialisation, I argue that a new methodological vocabulary of cultural learning processes is needed, and it should be based on a diffracted reading of ethnography, anthropological theory, postphenomenology, feminist materialism and cultural-historical activity theory. By means of this new vocabulary, which I have unfolded in the previous chapters, I have discussed ethnographic craftsmanship of learning through a multistability of perception, which in its turn forms the ethnographer's engagement with other people's cultural entanglements in frictioned practiced places. Successive stabilisations do not make practiced places open for any kind of engagement, but form cultural ecologies that nest ethnographers in the meaningful materials of the ethnographic subjects.

I have argued for a twofold methodological openness as part of this craft:

1. In the empirical field, the ethnographer engages with the world shared by the ethnographic subjects through an open-ended cultural learning processes (learning from social designations, practice-based learning, learning from culture contrasts, understanding of scalar learning resulting in an alignment of zones of future expectations).
2. In the analytical field, the anthropologist is open to the analytical world through the method of diffracted readings.

Together, these processes form zones of proximal development for an anthropology of learning.

The empirical fields we engage with come into being for other newcomers than ethnographers. We and the fluid space we share are basically transformed through

the same learning processes, but the anthropologist must, as the radical other, be extra sensitive to the force of culture and be open for new diffracted readings of cultural markers as well as new theoretical theories about how we learn to align engaged frictions between meaning and materials with our ethnographic subjects.

Cultural forces are not just tied to individuals or confined to humans as social and collective beings. They involve our topological fluid engagement with a shifting material world. In order to conduct what I understand as good anthropology, we must contribute to a general anthropology of learning about how man becomes a culturally diverse humankind. It is through the same processes that we learn alignments in space-time-mattering anywhere.

Words have been given a privileged position as anchors for worlds (as in abbreviated speech discussed in Chap. 3). I argue for an expanded understanding of artefacts as material anchors where all materials, not just words, can become anchors for human thinking. Not all frictioned material is learned as connected to words – though they might be *worded* in ethnographic writings. Collectively shared abbreviated speech can be reduced further to a collective perception of space-time-mattering. Material artefacts, including words, are anchors for collective as well as social thoughts. Humans are formed by and form these anchors.

Good anthropology involves entanglement with collectives of humans organising the lives and spaces of other humans (as well as their companion species). Anthropology ought to contribute to a collective responsibility for how we reconfigure our shared anthropological spaces. Yet, for the writing to be anthropological, I argue that we need to know more of the underlying *processes* that make us recognise our shared world as *collective* not just *social*.

Thus, to focus solely on other people's words (e.g. interviews) and cultural products (e.g. technologies, commercials or movies) is not enough to make good anthropology. We must also engage in the collective meaning-making process that involves the same cultural learning processes sounding through ethnographic subjects.

Throughout this book, I have argued that the craftsmanship of participant observation is about building relational expertise through cultural learning processes. This does not concern learning in general, nor individual learning or learning through unmediated direct perception, but only the special case of cultural learning processes, from which cultural analysis emerges as a phenomena created by a transformed research apparatus.

Position matters in the sense that in moving through topologically fluid spaces, artefacts become frictioned through cultural learning processes and expectations are formed in organised ways to be exploited in cultural analysis (see Chap. 4).

Cultural learning is a process of identifying differences in meaning and matter that matter to others. The craft of anthropology is not about what matters to *us*, but how we use our embodied apparatus to engage in what matters to *other people*.

I have in different chapters discussed the ways newcomers, like engaged ethnographers, learn to align with what matters to others:

1. We learn agential cuts from social designation where cultural markers are pointed out either in explicit enunciations by reactions or simply by observing what other people do and do not do (Chap. 5).
2. We learn by engaging in practical activities, where we learn it has consequences doing or not doing what makes sense in the local practice (Chap. 5).
3. We learn through surprising comparisons, which make our agential cuts emerge as a culture contrast (Chap. 6).
4. We learn scarlarly – more or less collectively aligned in our collective expectations (Chap. 7).

This is not a return to the representational or symbolic theory of culture dividing the world into fixed subjects separated from objects. Taken together this is what I mean by ‘cultural learning processes’ that gradually nest newcomers in frictioned and constantly transforming cultural ecologies. We are nested in geometrical space by anchoring our thinking in shared word meaning as well as other material artefacts. We learn to expect the next collective development through a process of aligning zones of proximal development (Chap. 8). Learning always takes place, but cultural learning is moving matter changing our material and conceptual (as well as visible and emotional, tangible and motivational, present and future) fields of attention.

I have defined cultural ecology as a dust bunny of materials held together by lines and frictions. By giving learning, a central position culture becomes a fluid force that marks a difference between the anthropologist being inside and outside of cultural dust bunnies, though with connected sides as in a Mobius band: Sometimes the outside turns inside and vice versa. Inspired by Tim Ingold, I see cultural dust bunnies as a meshwork of lines and frictions. Lines are not only extended minds spilling over into materiality, they are also learned connections that make materiality emerge as cultural attention fields. Here the social, and sometimes collective, consciousness is materialised. The frontiers of culture are, in this perspective, not created by physical boundaries, like water surrounding an island or geometrical places with *idem et idem* natives. Culture is a force floating as waves that sound through people. This force is felt in material surroundings as we learn to align agential cuts. Our agential cuts clear the paths of the lines we follow in a material world.

In the days of Margaret Mead and Gregory Bateson, the task of anthropology was to collect data about *the others* defined as primitive, non-Western people before their cultures disappeared. This was a project of *salvation* and preservation in writing about cultures going extinct. In the 1980s, anthropology began to study other Western groups and discovered that the construction of the culture of *the other* was a construction of Western culture as well (Clifford and Marcus 1986). Today the task facing anthropology, and all who make use of ethnographic approaches, is stupendous, if we perceive the world humans live in as *Anthropocene*: i.e. cultural ecologies nested in practiced places teeming with emotionally freighted materials, which direct future developments for other human beings.

The stance on materiality presented here acknowledges that ‘materials that comprise nature are extrinsic and intrinsic to human beings’ (Gregory et al. 2009: 449). We create techno-natural worlds for each other whether we live in the *nature* of the Meratus Mountains, a village in Sardinia or at a hotel near CERN. Wherever we are in Euclidian space, we are entangled in frictioned engagements. Anthropology must move away from the previously prevalent nature-culture distinction and acknowledge that the spaces inhabited by humans are what Donna Haraway calls ‘natureculture’ (Haraway 2003). The term *natureculture* was my last addition to my diffracted readings creating a new vocabulary of cultural learning processes. Bruno Latour opened the discussion of ‘the seamless fabric of what I shall call “nature-culture”’ as ‘a bit more and a bit less than a culture’ (Latour 1993: 7). I propose this *more and less* is best understood as a learning process and prefer Haraway’s unhyphenated version: natureculture.

Natureculture is, ‘in story and fact’, an implosion of nature and culture in the ‘relentlessly, historically specific joint lives’ of, in Haraway’s case, dogs and people (Haraway 2003: 16). Haraway and many studies of new feminist materialism observance do not study natureculture in *other people’s* dog kennels, but stay in their own. Like Barad and other feminist materialists who have contributed with valuable words to my new vocabulary, these contributions rarely emerge from engagement in long-term fieldworks. Many scholars may not want to engage in the deep learning transforming of a research apparatus once it is placed in the wilderness, the unknown of practiced places, which ethnographers, like other newcomers, share as shaky ground. Neither do postphenomenologists of a more philosophical stand, who have contributed with valuable terms like *multistability* and *material hermeneutics*, necessarily need to invest themselves fully to be transformed in ethnographic fieldwork.

However, the analytical field of anthropology and cultural-historical activity both rely heavily on ethnographic fieldwork and both aim to contribute to a deeper understanding. Yet, both fields can be explored in new ways by means of a diffracted reading of the vocabulary from the analytical fields of new feminist materialism and postphenomenology.

Barad’s theory is not representative for the whole field of new feminist materialism, which also include speculations of skipping humans all together in dealing with nature. Barad’s theory, however, in the way I have chosen to discuss it, assumes embodied humans. Also we need a deeper understanding of what *processes* create discourse instead of taking discourse for granted. I have argued that cultural-historical activity theory helps us understand the processes behind meanings of words and that humans are learners. Natureculture emerges in this process of learning.

Postphenomenology can help us understand the embodied position of the learner and anthropology the cultural diversity emerging in and creating *Anthropocene*. With my diffracted readings of these analytical fields, I argue that a more profound way of understanding human natureculture diversity is in the making.

Anthropology is in need of a new theory of learning in order to grasp the ethnographer’s process of engagement with an empirical field. In my readings of

how ethnographers change in the empirical field, reconfigurations are not given to direct perception but are culturally mediated and therefore learned. While tool and human are perceived as separated entities in cultural-historical activity theory, they are seen as entangled and inseparable with movable boundaries in feminist and postphenomenological theories. These perspectives are compatible with a cultural learning perspective where newcomers become more culturally experienced through transformed entanglements and thus capable of making collective agential cuts with more engaged and sensitive research apparatuses.

This diffraction apparatus also takes the engaged human learning process into consideration. As ethnographers, we do not only learn to gather information about connections between materials and meaning as we move through a field. Somehow we also come to care. Ethnographers need a cultural–historical theory of learning because we need a methodological understanding of how we align and build a *common* language with the ethnographic subjects, who draw on common knowledge that aligns our motives (Edwards 2012).

People not only produce language, they continuously learn language throughout life. As Vygotsky underline, the production of word meaning is a continuous process. In this process of learning, we change ourselves as our thinking become aligned with a collective consciousness, and we begin to see the world around us in culturally uniform ways. We do not only imagine or imitate each other, but tap into a shared reservoir of cultural resources. Tools change nature and signs, as word meanings, change subjects.

Far from cultures being an ‘acted document’ (Geertz 1973: 10), learning processes create real and dynamic links between researchers and participants which outlast the ethnographic subjects’ practiced places and bring their collective cultural movements directly into our texts. No second-order interpretations, no autobiographies, no attempts to ‘give them voices’ (Clifford 1986). Collective voices speak through us because researchers and participants become one, since culture sounds through all who are learning to take cues from one another in the practiced place.

With the ethnographer’s learning as participant observer as our basis, a wider audience can learn about human diversity in cultural ecologies of natureculture. These cultural analyses may be useful in building a common language and relational expertise across many kinds of human organisations. We all need relational agency in order to create a world where materials in cultural ecologies are not just surprising or expected and where cultural analysis helps to constitute *preferred* naturecultural diversity through the emergence of cultural resources.

Newcomers, i.e. ethnographers or other participants, may begin by perceiving naturecultural resources as intelligible, because they bring already formed perceptions to practiced places. When certain artefacts emerge in new learned agential cuts, certain unexpected actions and words tend to emerge. This will cause confusion and surprise, but only from that position can we begin to share the meaningful perception of other ethnographic subjects. Artefacts may materialise as meaningful perceptions, but meaning is not an inherent quality of an object. Neither is the singularity of an object reducible to discursive practices, though this is often

assumed (Suchman 2005: 381). Objects become affiliate when they are involved in meaningful actions and activities, and meaningful actions and activities are tied to meaningful perception, which must be learned and not taken for granted. Thus, when Barad says ‘agency is not an attribute but the on-going reconfigurings of the world’ (Barad 2003: 818), the reconfiguring is, in my discussion of learning, one of transformed thinking anchored in material artefacts.

I focus on processes of frictions as well as processes of alignment in the empirical field. Though ethnographers, like any other participant, can be astonished, they must also develop relational expertise in using their professional, sensual surprises of other people’s nested, mediated practices and the frictions they encounter. By mastering this task, their analysis can draw on local resources nested in the cultural ecology of a cultural collective consciousness.

Just like practitioners need to exercise core expertise and relational expertise when working with others, ethnographers also need both core expertise (as, e.g. anthropologists) and relational expertise (as ethnographers) when engaging in participant observation. Going back and forth in a dialectical process between the analytical and the empirical field evolves as the ethnographer learns. In the empirical field, a learning process may take flight and dialectically transform the intra-agentive momentary subject–object relation imposed by the research apparatus. Agential cuts must be made with due respect to both the analytical and the empirical field: i.e. staying true to both, though always trying to give the empirical field the primacy of perception. This is, however, not as easy as it sounds. Frictions in the analytical field can be just as violent as in the empirical field, and nowhere are frictions as apparent as in the analytical field of organisational culture.

Cultural research in such energised fields is a practical craft or expertise, in which the researcher becomes a constantly self-transforming diffraction apparatus that scoops up dust bunny connections in engagements with fellow humans and material artefacts. The researcher becomes cocreator of the studied practiced places, and she/he is thus compliant in shaping the conditions of others. The researcher is simultaneously reshaped as a malleable collectively sensitive transformer of material and meaningful artefacts.

We all bring personal bodily learning and social resources, tied to our personal semantic networks, to the collectively practiced space. In the meeting with an organisational culture, newcomers learn whether or not the resources they bring with them are culturally intelligible.

The varied connections people learn to make between artefacts and meanings in an organisation are not learned at random. Some connections constitute the fundamental assumptions shared by most in an organisation, because the connections are reinforced daily (e.g. the value of dress code or open doors to offices). Connections that are identified as institutional practices across an organisation are sedimented and rarely challenged by newcomers.

Natureculture may be explored in the empirical field in so far we can argue for concrete cultural connections between material artefacts and their local, collective self-evident and predominantly common-sense meaning.

Natureculture is also an analytical implication created in the analytical field. The presented anthropology of learning offers a new approach to understand ways of theorising about natureculture as cultural ecologies organising space-time-mattering in joint collectives engaging humans and nonhumans. A theory of learning can comprise both the generic ongoing cultural learning of any participant and the special case of the ethnographer's (or any other external researcher) cultural learning process. Lastly, the proposed anthropology of learning attempts simultaneously to place learning in the embodied practices of the expert ethnographer and in the collective consciousness of more experienced practitioners. It thus shakes (if not entirely undermines) the notion of subjective hermeneutic fallacies.

The proposed anthropology of learning is not about any kind of fieldwork, but the kind where natureculture is produced: i.e. in *other people's* everyday activities. No cultural codes, only momentary agential cuts, split the learning subject from the material object. The expertise of the ethnographer is to learn the boundary-making practices that matter to others. We must never believe we can conflate our own thinking with that of others, but we can tap into other people's more or less shared materially spread collective consciousness, where expectations are met with actions and reactions.

The proposed anthropology of learning, understood as cultural learning processes, attempts to explain the process of studying what matters and how matters matter *with* others. How ethnographers enter practiced places as newcomers but leave with a certain kind of engaged local expertise on local, cultural resources and frictions. This anthropology of learning seeks to legitimise the cultural resources around which expert ethnographers construct their analytical objects. It is an attempt to open up for new ways of discussing how discourse in cultural ecologies is not about words but 'abbreviated speech' (Vygotsky 1987). Here newcomers learn a collective consciousness spelt out in the environment, which organises phenomena as material artefacts, humans and lines of collective learning behind (re)actions.

The proposed anthropology of learning could help social sciences understand why we need to recentre the human in a material world and why anthropologists, even in times of *posthumans* and *nonhumans*, still have to make use of the culture concept when dealing with global variation of human intra-actions.

It could be a task for ethnographers to open new zones of proximal development for human culture. This includes acknowledgement of how humans today live in cultural ecologies created by other humans. We could help ease frictions in and between cultural organisations by developing relational expertise not just for ethnographers and expert practitioners, but for politicians, policy makers and world mongers as well. A responsible anthropology may make those in power aware of how they affect other people's lives in space-time-matterings.

Learning processes are fluffy, messy, ongoing and thus very difficult to capture in the making. Nevertheless, I have tried to stay true to my goal of moving beyond the messiness throughout this book. Cultural learning processes, as I define them, have real effects on people's lives.

Anthropologists must therefore take up the challenge and move beyond mere acknowledgement of the messy complex worlds we share with others and try to dive deeper into the cultural processes that transform people's lives. For that reason, this anthropology of learning could also constitute a theory as a real force.

The many diffracted readings and many fieldworks presented have formed my theory of cultural learning processes – or at least a path towards such a theory. I do not consider this work a final and finished theory of learning, but an attempt at opening the notion of an anthropology of learning. I hope other colleagues in the analytical field will help with further developments.

The End.

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