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„Creating Knowledge of Need: A Methodological Framework for its Abductive Inference“

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Human/Need/Desire (Bruce Nauman, 1983)

Neon tubing and wire with glass tubing suspension frames, 239.8 x 179 x 65.4 cm,
Gift of Emily and Jerry Spiegel, Acc. n.: 228.1991.a-g.

“Words relating to human want light up in a pulsing cycle, continually evoking and replacing meaning. By offering words and taking them away, this work disrupts viewers’ habits of perception. Nauman believes that language is ‘a very powerful tool’; he was inspired to use neon tubing because of the convincing messages and hypnotic aura of neon advertisements. Here, with irony, the artist uses this flashing commercial medium with all its wires exposed to address fundamental elements of human experience.”

The Museum of Modern Art, New York, 2007

Contents

1	Introduction	7
1.1	Outline and Motivation	7
1.2	Goal and Research Question	9
1.3	Interdisciplinary Aspects and Structure	9
2	Theoretical Foundations of Human Needs	11
2.1	Philosophy of Need	11
2.1.1	Aristotle on Human Needs, in Soran Reader, 2005	12
2.1.2	Stephen K. McLeod, 2011	12
2.1.3	David Wiggins, 1987, 1998	15
2.1.4	Garrett Thomson, 2005	15
2.1.5	Dennis W. Stampe, 1988	16
2.1.6	Summary	16
2.2	Concepts	17
2.2.1	Abraham H. Maslow: Hierarchy of Needs	17
2.2.2	Manfred Max-Neef: Fundamental Needs	23
2.3	Hierarchy of Needs, Desires, and Satisfiers	26
2.4	Summary	28
3	Methodological Framework	33
3.1	Data Acquisition	34
3.1.1	Imagination and Episodic Future Thought - a Cognitive Science Perspective	35
3.1.2	C. Otto Scharmer: Learning From the Future as it Emerges . . .	37
3.1.3	Interacting with the Envisioned Future	38
3.1.4	Summary	41

3.2	Hypotheses Generation	42
3.2.1	Abduction	43
3.2.2	Generative Listening	45
3.2.3	Aristotle’s Four Causes	48
3.2.4	Summary	51
3.3	Validation of Hypotheses	51
3.3.1	Qualitative Validation: Communicative Validation	51
3.3.2	Quantitative Validation	53
3.3.3	Summary	53
3.4	Summary	54
4	Project “Lernen aus der Zukunft für reife KMU”	55
4.1	Introduction	55
4.1.1	Outline and Aim	55
4.1.2	Project Partner	56
4.2	Realization	57
4.2.1	Step-1: Acquire Data	57
4.2.2	Step-2: Analyse Data and Generate Hypotheses	60
4.2.3	Step-3: Validate Hypotheses	66
4.3	Results and Interpretation	69
4.3.1	Validated Needs in Detail	72
4.3.2	Comparing Two Systems According to their Needs	77
4.3.3	Generalisability	77
4.4	Summary	78
5	Conclusion and Outlook	81
	List of Figures	83
	List of Tables	85
	Bibliography	87
	Zusammenfassung	99
	Curriculum Vitae	101

Chapter 1

Introduction

1.1 Outline and Motivation

The satisfaction of human needs may be viewed as being the broadest and most basic physiological and psychological requirement for a person's well-being. (Thomson, 2005) If our actions are effective, in the sense that they satisfy our needs, we thrive and flourish.

Despite the fact that our needs govern our behaviour in general and actions in particular, people are most of the time hardly aware of the needs they are trying to satisfy. (Mele, 2009) Surprisingly, in previous works with large groups it became obvious that people have hard times to reflect on their (abstract) needs and communicate them. They hardly talk about their needs and desires but rather about certain satisfiers (concrete objects or conditions) when asked about what they need for their well-being. It seems that we are used to think in terms of realization possibilities and solutions (which we will later refer to as the concept of satisfiers). This is in line with the claim of the philosopher Stephen K. McLeod that we cannot be aware of our needs directly but only of their satisfiers. (McLeod, 2011)

As a consequence, knowledge about our needs is valuable in the sense that it enables us to find a variety of different solution strategies. Additionally, it is assumed that changes and developments concerning individuals are more likely to be sustainable if they meet humans' needs. Therefore, it is necessary to know the needs explicitly in order to develop such strategies. This may especially apply to products and services.

Need knowledge helps us to escape binary decisions (yes or no) on certain actions and rather focus on developing alternative strategies. In general, there are many actions

which can be taken in order to satisfy a specific need. Knowing the underlying need opens up a possibility space which otherwise is limited to a yes-or-no decision.

$$\text{Need} : \text{Action} = 1 : n$$

However, if considerations (f.e. in organizations) start on the level of actions and solutions, the possibility space is narrowed, as we are limited to certain solutions we either can implement or reject (binary decision). This can be well illustrated in an example taken from a vision development process:

The auditing department of a leading international company, which operates successfully in terms of economic growth, facing no serious problems on the agenda and having no external reason for a reactive change, tried to develop a strategy (vision) how to adopt for and shape the future. This process was strongly grounded on the individual's wishes, strategies, goals etc. (in further consequence, their needs). They came up with the idea to additionally implement a consulting approach into their job as auditors. They want to advise colleagues and not only examine them, and thereby earn esteem and appreciation. However, due to limitations of the overall system (the cooperation), the auditing department must not offer help in terms of advise, according to their given role they have to be the inspectors checking the requirements for compliance.

The idea of being advisers rather than inspectors can be seen as a concrete realization strategy (satisfier) based on the need of receiving recognition and esteem. However, if considerations and decisions are based on the level of action and solutions, this idea (being advisers) can only be accepted and implemented or rejected. And in this specific case, it has to be rejected. But, if organizations are aware of the underlying need they may develop and implement different approaches meeting the need. In this case, when the need for appreciation and esteem is made explicit, the department could consider for example job rotation models by which auditors become advisers associated with another department, or the like.

So, the hypothesis is that being aware of one's need (e.g. esteem needs), rather than a certain satisfier (e.g. consulting approach), enables us to find different/many solutions

(e.g. job rotation) to satisfy our needs. The question at hand is how researchers can look *behind* a satisfier at the underlying need. This is about making explicit what is implicitly governing our acting. (Mele, 2009)

In a face-to-face setting (e.g. interview, therapy, mediation) researchers are able to check back what needs a interviewee actually has. In such communication loops, researchers can validate their hypotheses on the interviewee's needs. However, when working with a large group of people in a non-instantaneous setting (data acquisition and analysis are sequential rather than iterative) this seems to be uneconomical and nearly impossible.

1.2 Goal and Research Question

The main goal of this master thesis is to develop and propose a consistent methodological framework for generating explicit knowledge of need (especially in group settings). For this enterprise, an abductive and qualitative approach supported by heterogeneous paradigmatic views will be employed to foster the knowledge creation process.

The starting point of this framework are the individuals who express their conscious wishes, dreams, ideas, objects, etc. they demand for. By following the methodological framework, it should be highly likely for researchers to infer the underlying needs abductively from this data and, thus, generate hypotheses. At the end, its again up to the individuals to transform the bunch of proposed hypotheses into verified knowledge about needs.

The main question to be addressed in this thesis is how to make human needs which govern our behaviour explicit and, thus, shareable among a group of people. To boil it down to the essence, the main research question is the following:

*How to infer abductively - in a methodological replicable and consistent way -
human needs from observable satisfiers (by researchers) in
a non-instantaneous setting using qualitative research methods?*

1.3 Interdisciplinary Aspects and Structure

The interdisciplinarity of this master thesis lies in the attractive attempt to connect philosophy (e.g. see chap. 2, 3.2) with the field of organizational development (man-

agement sciences) (e.g. see chap. 2, 3.1). On this way, different fields are influencing the venture. Theories and concepts from psychology and economics (e.g. see chap. 2) are equally included as findings from social cognition, neuropsychological research, cognitive psychology, behavioural and brain sciences (e.g. see chap. 3.1) are. The research enterprise is framed by a qualitative research paradigm (e.g. see chap. 3.3).

The author's personal requirement is to enrich the straight management science view by different other perspectives and thereby to profoundly ground the often fluffy approaches in this field on disciplines like philosophy or brain research. The author is aware that doing so scratches the edge of today's cognitive science.

This master thesis is organized in three parts: First, the necessary theoretical foundations on needs from a philosophical point of view will be reviewed. Additionally, two models on human needs will be presented and discussed. Grounded on the insights of the first part, in the second, the methodological framework will be developed and described in detail. Necessary theories and references to different fields will be given and included into the conceptual work. Lastly, it will be shown how the methodological framework has been tailored and successfully used in a large scale project.

Chapter 2

Theoretical Foundations of Human Needs

2.1 Philosophy of Need

The concept of human need is a fuzzy one and discussed in different contexts. It is used in different realms including normative ethics, political philosophy (Hamilton, 2003), psychology (e.g. Deci and Ryan, 2000; Maslow, 1943), economics and management science (e.g. Homburg et al., 2009; Kleedorfer, 2013; Kleedorfer et al., 2013), medicine and health care (e.g. Asadi-Lari et al., 2003), politics (e.g. McGregor et al., 2009), and, of course, philosophy. It was even tried to define the essential needs of farm animals (Bartussek, 1999). As a consequence, the phenomenon lacks a common definition and, hence, its positioning relative to other concepts (e.g. interests, desires, laws, etc.) is described non-uniformly (e.g. Culyer, 1998, p. 77). However, there are several attempts to classify human needs on different levels and in different realms (e.g. Bradshaw, 1972; Doyal and Gough, 1991; Ryan and Deci, 2000, 2001; for an overview see McGregor et al., 2009)

In this chapter different philosophical contributions dealing mainly with the epistemology of need trying to find some common ground in the usage of the term are introduced. To do so, we are unavoidably starting with philosophical roots and ending with to concrete models from different fields showing how those adopt some (philosophical) theories introduced.

The philosophy of need is dealing with the epistemological foundations of human needs and their abstract qualities. According to those, needs are being categorized on

different dimensions.

2.1.1 Aristotle on Human Needs, in Soran Reader, 2005

Aristotle identifies necessity as being closely related to needs. What we need can be seen as a necessity to us as needing beings. According to him, there are two absolute necessities: eternal cyclical motion and God (in Reader, 2005, p. 113ff; 135): In a cyclical process, an upcoming stage depends on the earlier stage and, thus, the later stage always requires the earlier stage. Aristotle gives the example of the chicken's egg: A chicken's egg is always in its coming to be a chicken. For the egg to be, it depends on the existence of the chicken, and, the chicken depends on having been an egg before. There is one single entity which does not depend on any previous stage: God. Aristotle sees God an absolute necessary being which is the condition of everything else and, as such, complete in itself. All other necessities are "hypothetical" meaning that they must be if something which might not be, is to be.

Aristotle describes two different types of (hypothetical) necessities (needs):

- The first can be seen as absolute needs for life or existence which do not rely on any goal or aim except the human existence itself. Those needs have to be met in order to exist: "No man can live well, or indeed live at all, unless he is provided with necessities" (Aristotle cited in Reader, 2005, p. 118)
- The second sense of necessities Aristotle describes are more dependent meaning they are based on an aim pursued: "[necessities] that which must be if some good is to be achieved or evil avoided" (Aristotle cited in Reader, 2005, p. 118). Those needs depend on one's pursuit and so are more relative compared the needs described first.

As we will see, from Aristotle on, the distinction between absolute and relative needs are quite stable across different sources.

2.1.2 Stephen K. McLeod, 2011

Stephen K. McLeod is dealing with question "How can one know what one needs? How can one know what another needs?" from a philosophical point of view. In his article, he proposes different classifications of human vital needs (McLeod, 2011, p. 213):

- Absolute versus relative needs

Absolute (McLeod, 2011) or fundamental (Thomson, 2005) needs are those being independent of one's own goals (e.g. plant's need of sunlight). Absolute needs have to be satisfied in order to not suffer from serious harm. Thus, those needs involve inescapable necessity and dependency. In contrast, relative (McLeod, 2011) or instrumental (Thomson, 2005) needs depend on (the individual's) goals and aims (e.g. If I want to speak Hungarian, then I need to practice). Without the aim, there would be no necessity to practice.

- Universal versus particular needs

Universal needs are essential to all humans. Any human needs food, water, light etc. and cannot exist without them. In contrast, particular needs do only certain humans have, but are essential for their existence. Those needs are based on characteristics which are not shared by all of the species: e.g. artificial oxygen supply for impaired individuals.

- Existence versus welfare needs

If existence needs are not met, the entity having those needs is going to vanish immediately. In contrast, the non-satisfaction of welfare needs may also lead to harm for the entity having it but does not impair its existence. An example might be nutrition: We have an existential need for nutrition in general (otherwise we would die almost immediately), although the supply with sufficient vitamin D is an welfare needs, as it could harm our bones in the long run only.

The literature offers little on the ontology of needs, especially on the questions if needs are felt, if we are consciously aware of them (knowledge by acquaintance), hence if there is a first-person access to needs, or not. The “phenomenological thesis”, as McLeod (2011) calls it, argues for a first-person access to our needs. By feeling our needs, we know that we have them. Although McLeod follows a non-phenomenological approach, he gives some argument for the phenomenological thesis which he immediately disproves (McLeod, 2011, p. 215f):

- “[...] needs are, like desires, a type of mental state. All mental states can be felt, so needs can be felt.” (McLeod, 2011, p. 215) The argument is unsound because there are needful entities which do not have a mind (at least we don't know of it), e.g. trees require water to flourish.

- In our daily language we talk about feeling our own needs. McLeod refuses the imprecise use of daily language as valid philosophical argument.
- The self-aware agent argument as it might be called says that the affected knows best. By being directly aware of our needs, we highlight the potentiality of the affected who knows best what she or he needs. According to McLeod, this politically desirable statement might be a motive rather than a cause for the phenomenological thesis.

In sum, McLeod discards the idea that we can directly be aware of our needs. However, it seems to be possible that a need manifests itself in a desire which we are aware of. “A need itself, however, cannot be felt even by a higher organism.” (McLeod, 2011, p. 216) He illustrated that with an example:

“When Al says ‘I need a drink’ on sight of a pub during a long walk in the country, what he says may well be true and may well be warranted by the features of his experience at the time. He does not, however, feel that he needs a drink. rather, he feels very thirsty. This feeling of thirst either is or causes an occurrent urge to drink. He may believe, on the basis of this urge, that he needs a drink. The need to drink is distinct from the feeling of thirst, the urge to drink and the belief that one needs to drink.” (McLeod, 2011, p. 216)

As opposed to the phenomenological account, McLeod argues that there is no direct perception of introspection of needs, rather, the knowledge of need is inferential and a type of knowledge-that. It is acquired by a third-person perspective, namely by *testimony* and *inference*. (McLeod, 2011, p. 218) This claim implies that knowledge of need is objective in the sense of not solely relying on the subject’s very individual experience which cannot be disproven.

Inference and testimony of knowledge of needs

“Since Needs, like Medical Conditions, have Signs and Symptoms, Inference is Involved in the Acquisition of Knowledge of Need” (McLeod, 2011, p. 218) Like medical conditions, needs are expressed by signs and symptoms; those might either point to a lack of resources, like in the case of an illness, or positively seen, to the prosperity of the human being (McLeod, 2011). Needs generate feelings and desires which manifest themselves in signs and symptoms. Like in case of medication, where you report your symptoms to a doctor, you tell the expert about your feelings without - in most cases -

knowing what you need in order to heal an illness, or more concretely speaking, knowing the feelings of a need does not entail having any clue about the satisfier of the need. So, needs and the symptoms and feelings they generate are distinctive entities. For this inferential step from a reported symptom to the underlying need it seems that we need a well-trained doctor - in the case of medication. McLeod argues that knowledge of needs is inferential meaning that needs can be derived from their manifestation. For example, having the patient reporting about symptoms, the doctor may discover - by her expertise - the medical needs the patient has. Symptoms as well as signs of needs and desires can be reported and observed, respectively (McLeod, 2011, p. 219).

2.1.3 David Wiggins, 1987, 1998

“[A] need will often find its characteristic expression in desire. But since this expression will sometimes be markedly inadequate to the need itself, it is hard to believe that needs as such are the same as desires, or that needing as such is the same as any sort of desiring.” (Wiggins and Dermen, 1987, p. 62) Wiggins argues that desires and needs are to some degree independent: “I can desire something without needing it [...]. And I can need something without desiring it (or without even having heard of it).” (Wiggins and Dermen, 1987, p. 62) As a consequence, what humans need does not depend on their conscious will (“working of my mind”, Wiggins and Dermen, 1987, p. 62) but on the quality of the things needed.

Wiggins suggests a distinction between “instrumental needs” and “non-instrumental needs”. The first refer to needs which have a specific purpose which is set by the human himself. There are no limits what the purpose might be. The latter denotation refers to needs which have an already fixed purpose and are not alterable. (Wiggins, 1998)

2.1.4 Garrett Thomson, 2005

Thomson characterizes human needs as

- objective, in the sense of being an observable fact (cf. Crisp, 1994),
- a matter of priority meaning that needs as reasons for action override other motives,
- unimpeachable values meaning that needs are not substitutable and as such they are fundamental.

In this sense, Thomson is talking about fundamental needs which have to be satisfied and are not at our disposal. They are absolute meaning that they do not depend on other conditions than the human existence itself. Thus, those needs are not avoidable and their satisfaction is an inescapable necessity to avoid “serious harm” (Thomson, 2005, p. 175).

In contrast, instrumental needs are requirements to reach a relevant goal which might be a result of the given context and is not necessarily stable. The goal has no direct importance for the human’s survival. Setting the goal is a prerequisite for instrumental needs. Without the goal there is no instrumental need which has to be satisfied.

Inescapability describes the characteristic that fundamental human needs cannot be reduced and serious harm cannot be avoided if the need is not met. “We have to accept the fact that we have the fundamental needs that we do have.” (Thomson, 2005, p. 176)

2.1.5 Dennis W. Stampe, 1988

In his work on the causal power of needs, Stampe (1988) introduces the concept of desire. He argues that a need may gain causal power to its own satisfaction when it becomes conscious in the form of a desire. By becoming conscious, needs are a motivational source to humans to bring about actions which are capable of satisfying corresponding needs. (Stampe, 1988, p. 129) In line with Kant’s argument that necessities gain efficacy through their being explicit, needs are more efficient when they are being explicitly known by the individual. (Stampe, 1988, p. 131). However, needs are not mental states themselves, although it seems to have a immanent feature of intentionality. This becomes clear when we consider the example of a fire’s need for oxygen to burn. The fire has no mental life, nevertheless it is in a state of requiring a relatum to exist. “So a need provides a nonmentalistic model of a mental state” (Stampe, 1988, p. 131) Desires represent needs and are “mental state[s] through which a need effects its own satisfaction.” (Stampe, 1988, p. 158)

2.1.6 Summary

To sum up, the characteristics of need which are somewhat common in the different sources reviewed are highlighted and condensed:

- Needs involve necessity (e.g. Stampe, 1988, p. 129,134, Reader, 2005)

- There are absolute needs and relative needs. The first do not depend on any goal except survival, whereas the latter depend on the existence of a goal to be reached. (e.g. McLeod, 2011; Thomson, 2005) Absolute needs are inescapable and not substitutable. (McLeod, 2011)
- Distinction between needs, desires and satisfiers (e.g. McLeod, 2011; Wiggins, 1998; Wiggins and Dermen, 1987)
- Needs express themselves in desires which are as mental states motivational forces for action (Wiggins and Dermen, 1987, p. 62,64)
- Needs are objective “in the sense that one can have a need without being subjectively aware of it or desiring that it be met.” (Crisp, 1994)

2.2 Concepts

After having discussed several philosophical positions on needs, an overview on two selected concepts on need from different fields namely psychology and economics is given. By doing so, it is exemplarily tried to show how different fields adopt the concept of human needs in their context. The reader should be aware that several other theories on human needs from different fields have been offered. (e.g. Alderfer, 1969; Deci and Ryan, 2000; Hull, 1943; Marshall, 1890; Murray, 1938; Ryan and Deci, 2000)

2.2.1 Abraham H. Maslow: Hierarchy of Needs

Abraham H. Maslow can be seen as the “father” of American humanist psychology who started his career as a behaviourist with a strong physiological background. (Littrell, 2011, p. 33) At least since the first proposal of Maslow’s theories on human motivation (Maslow, 1943), an evident awareness for human needs has risen in economic theories (Wahba and Bridwell, 1976, p. 212), although, there had been earlier attempts to categorize needs (e.g. Hull, 1943; Murray, 1938) including the very similar but less known hierarchy of human needs proposed by Alfred Marshall¹. (Marshall, 1890) Maslow published his theory in the high times of behaviourism and Freudian psychoanalytics. (Kenrick et al., 2010, p. 293) It was a significant paradigmatic shift to consider inner states as being the motivational source of behaviour. (Littrell, 2011, 36)

¹Maslow did not mention ever having read Marshall. (Littrell, 2011, p. 33)

In his theory, Maslow identifies human needs as main motivational source for our behaviour. He derived his theory “directly [...] from clinical experience” (Maslow, 1943, p. 183) and case studies (Maslow, 1970a). Nearly all behaviour (except e.g. reflexes) is motivated by our inner state as well as it is biologically, culturally and situationally determined. Our acting aims at satisfying our (basic) needs and should be understood as a channel for expressing and meeting them. By this proposition, he acknowledges the existence and the potentiality of mental states and rejects “the old, naive, behaviorism” (Maslow, 1943, p. 386).

Maslow categorizes human needs according to their level of prepotency and probability of appearance. This results in a hierarchy of needs, in which “[...] the appearance of one need usually rests on the prior satisfaction of another, more pre-potent need.” (Maslow, 1943, p. 183) A basic need dominates the awareness and generates drive for action as long as it is not sufficiently satisfied (also Littrell, 2011, p. 34), thus, the organism will mainly act in terms of satisfying the current need. As a result, the unmet need “blocks” the pursuit for satisfaction of more prepotent (“higher”) needs as long as the need is vacant. According to this view, a man who is seriously hungry will act in order to get food and will not urge to fulfil himself by writing a doctoral thesis.

- Physiological needs

Manifestations exemplarily named: Somatic and homeostatic needs like nutrition

Those needs are most fundamental for the existence of the human being. For this, humans have indicators like hunger which is highly efficient for getting aware of the actual need (lack of nutrition). Physiological needs have a locatable, underlying somatic base within our body.

- Safety needs

Manifestations exemplarily named: Routine, rhythm, a predictable, orderly world, schedule

To understand safety needs, Maslow observed infants. They clearly show behaviour that seeks for safety. Humans aim at having stability all over. We want to make the world around us as predictable and safe as possible, we want to “feel safe enough from wild animals, extremes of temperature, criminals, assault and murder, tyranny, etc.” (Maslow, 1943, p. 378) As a result, we stick to routines and rhythms, avoid risks, search for a protector etc.; we want to have things we can count upon.

- Love needs

Manifestations exemplarily named: Affection, belongingness, friends, wife, children, place in a group

Humans are social beings. We seek for giving and receiving love. We want to be surrounded by our beloved. This category stresses the diverse dimensions of social love, whereas sex is seen as a (more basic) physiological need.

- Esteem needs

Manifestations exemplarily named: Respect, self-esteem, esteem of others, independence, freedom, being useful and necessary in the world

Maslow subdivided this category into two subsidiaries: On the one hand side, we desire strength want to achieve thing, be confident in the face of the world as well as independent and free. And on the other hand side, we want to receive respect or esteem from other people. So this category has two foci: First, the focus on “I related to me”, and second “the others related to me”. The feelings of inferiority, weakness or helplessness may point at a lack of esteem.

- Self-actualization needs

This is the “highest” category of human needs in Maslow’s hierarchy and, as such, rest on the fulfilment of all other needs discussed. Self-actualization needs aim at being ultimately happy. There is a bunch of self-actualization needs, they vary strongly from person to person. “The desire to become more and more what one is, to become everything that one is capable of becoming.” (Maslow, 1943, p. 180) By definition, those needs cannot be conclusively met, there is always a next stage of fulfilment to reach. (Therefore, Maslow calls the needs in this category “growth needs” and the earlier categories “deficiency needs” (Maslow, 1970a)) Morally questionable is Maslow’s claim that there is “sufficient clinical evidence to postulate the desire to know as a very strong drive in intelligent people, no data are available for unintelligent people. It may then be largely a function of relatively high intelligence.” (Maslow, 1943, p. 182)

There are some fundamental assumptions underlying Maslow’s hierarchy which are especially important to not misunderstand his model:

- Those needs are not necessarily consciously felt and probably most often guiding our acting unconsciously. More basic and unconscious goals are more fundamental

in his motivation theory as “conscious, specific, local cultural desires”. (Maslow, 1943, p. 370) (cf. Thomson, 2005)

- The hierarchy is not as fixed ordered as it might look like. Maslow lists several examples of exceptions in which their prepotency does not follow the order introduced.
- It is not the case, that a need has to be fully satisfied in order to let a “higher” need emerge. In fact, most of us are only partially satisfied in our basic needs and, nevertheless, have “higher” needs.
- There are cultural differences in conscious motivational content (conscious needs) among different societies. The basic needs described are somewhat stable across different cultures. So, they are relatively more ultimate, more universal, more basic, than the superficial conscious desires from culture to culture [...]” (Maslow, 1943, p. 385) At this point, Maslow made a (weak) distinction between “basic needs” and “conscious desires” which differ in respect of their stability across different contexts. As we will see later on, this distinction will be taken up in the definition attempt.
- There is no one to one relation between motivations (needs) and behaviours, rather, a behaviour tends to be a strategy to fulfil several or all needs simultaneously.

Expanded Theory

Nearly 25 years after its first appearance, Maslow extended his hierarchy of needs by three levels (highlighted) (Maslow, 1970a,b):

- Physiological needs
- Safety needs
- Love needs
- Esteem needs
- **Cognitive needs**
Humans want to know, they want to understand, explore their world and find meaning.

- **Aesthetic needs**

We seek for symmetry, order and beauty.

- Self-actualization

- **Self-transcendence**

The need to connect beyond the actual self and help others to find self-fulfilment.
(compare newer approaches e.g. Scharmer, 2001)

Further Advancements

Recently, Kenrick et al. adapted Maslow's hierarchy and examined basic human needs according to three dimensions taking evolutionary biology, anthropology and psychology more into account (Kenrick et al., 2010, p. 293, 309):

- Ultimate evolutionary function
- Developmental sequencing
- Cognitive priority as triggered by proximate inputs

As a result, they removed "self-actualization" from the pyramid's top and added three reproductive goals instead: "mate acquisition", "mate retention" and "parenting". Further, they assume that there is an overlapping between needs rather than replacement, as earlier motives remain important throughout life. (Kenrick et al., 2010, p. 293)

The updated model is shown in figure 2.1.

Critique

Obviously, Maslow uses terms like "need", "desire", "drives" "goal", ... rather synonymously and does not draw a clear line in terms of clear definition between them. (Maslow, 1943, p. 374,380) We might assume that he sees behaviour as an action to satisfy a need. Others call this strategy satisfier. (McLeod, 2011; Wiggins, 1998; Wiggins and Dermen, 1987) Considering the ideas about cultural differences in the needs or desires, as Maslow calls them, it is presumed that he makes a difference between basic or universal needs which are stable across different contexts and desires which are clearly motivational forces and not behaviour, however, change across time and space (context).

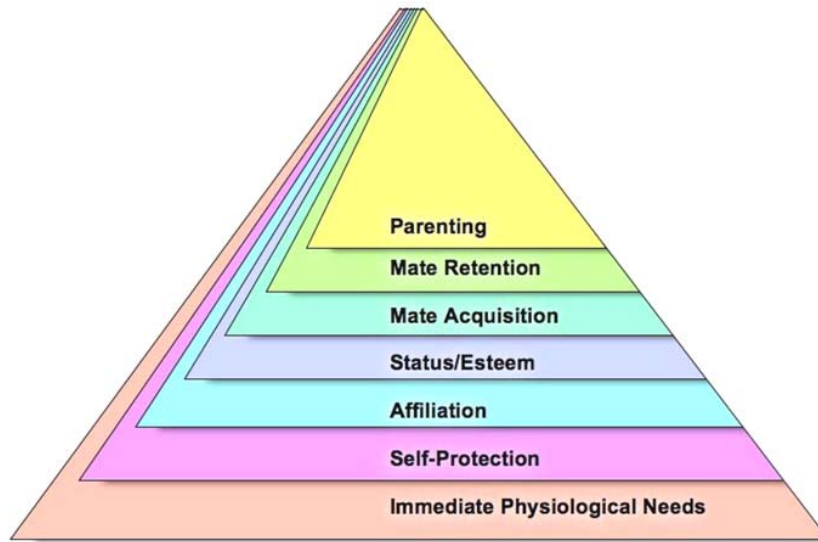


Figure 2.1: An updated hierarchy of fundamental human motives
(Kenrick et al., 2010, p. 293)

Although, Maslow's theory of the need hierarchy sounds coherent and has been widely influencing the field of management and organizational behaviour (Alderfer, 1969), the theory had not been empirically tested until the mid 1960ies (Wahba and Bridwell, 1976, p. 212) and is still often questioned (Doyal and Gough, 1991, p. 36). Although the theory was tested using different approaches and methods, the theory has received little clear and consistent support. The validity could not be shown. (Wahba and Bridwell, 1976, p. 233) However, recent empirical research shows support, at least, partially for the theory (e.g. Cao et al., 2013; DeVaney and Chen, 2003; Hagger et al., 2006; Noltemeyer et al., 2012) including evidence from brain research (Silton et al., 2011).

There are also conceptual weaknesses in the theory: "It is not clear what is meant by the concept of need. Does need have a psychological and/or physiological base?" (Wahba and Bridwell, 1976, p. 234) Perhaps, as a result, Maslow uses the terms need, desire, motivation etc. in an inconsistent way (as already mentioned).

Structuring Model

However, the need hierarchy has proven to be a useful a priori logical framework (Wahba and Bridwell, 1976, p. 235) and, as such, it serves the research enterprise proposed as a guiding model for structuring and classifying needs in the abductive framework. The model may help to cluster the empirical results according to categories and the

hierarchy introduced. By doing so, in line with Maslow’s argumentation, some kind of prioritization among the needs identified might be introduced.

How Maslow’s model is concretely used to compare different systems will be shown in the last chapter (see chap. 4.3).

2.2.2 Manfred Max-Neef: Fundamental Needs

Manfred Max-Neef is a Chilean development economist and environmentalist of German descent. He is a supporter of Latin America’s development and played a crucial part in the Latin American project on Human Scale Development which had the objective to lay the foundations for action programs to boost the development in South and Central America based on a profound theory of human needs. So, he proposed to reconsider the concept of poverty which, according to him, has not to be defined in monetary terms exclusively, but more broadly. Having some needs not satisfied reveals poverty. Hence, community development should not only be used to raise monetary wealth, but should focus on the human being holistically. The Human Scale Development model has been “used as a framework to analyse human behaviour and improve people’s quality of life in developing countries.” (Jolibert et al., 2011, p. 261) His book “Human Scale Development: Conception, Application and Further Reflections” (Max-Neef et al., 1989) was listed among the top 50 books on sustainability (Visser, 2009).

Fundamental human needs are finite, few and classifiable. They are stable among different cultures and historical periods, although they might change in the long run of evolution (e.g. the need for transcendence is not included in the original model as it was not seen as universal. However, Max-Neef suspects to include it one day [Max-Neef, 1992, p. 203]). Needs are interrelated and interactive. Thus, in contrast to Maslow, there is no hierarchy among them meaning no need is more important than another. The sole exception of this is the need of subsistence, that is, to remain alive. This is an absolute need which has to be met in order to satisfy other needs. (Max-Neef, 1992, p. 199)

Max-Neef proposes an interactional structure of the fundamental human needs along two dimensions:

- Needs according to existential categories (being, having, doing, interacting) and
- Needs according to axiological categories (subsistence, protection, affection, understanding, participation, idleness, creation, identity, freedom)

The existential categories of needs refer to different satisfiers being of the following qualities:

- “*Being* refers to personal or collective attributes (usually expressed as nouns related to the subject’s intrinsic attributes as our biological constitution, character and values);
- *having* registers institutions, norms, mechanisms, tools that can be expressed in one or more words (like exosomatic tools, laws and information);
- *doing* has to do with actions, personal or collective that can be expressed like verbs while
- *interacting* makes reference to locations and milieus (as times and spaces) and the way people relate to and articulate their environment” (Cruz et al., 2009, p. 2023)

Each need can be “satisfied within three context:

- with regard to oneself (Eigenwelt)
- with regard to the social group (Mitwelt) and
- with regard to the environment (Umwelt)” (Max-Neef, 1992, p. 200)

According to this theory, any fundamental need which is not satisfied reveals a human poverty. So, poverty is not only seen as an economic quality (e.g. income beneath a threshold) but understood holistically.

Max-Neef clearly distinguishes between needs and satisfiers. A satisfier is seen as a concrete solution to an (abstract) need; it is a “form of being, having, doing and interaction, related to structures” (Max-Neef, 1992, p. 204). Unlike fundamental needs, satisfiers are culturally determined and, thus, might be different in various cultural contexts and historical periods. (Max-Neef, 1992, p. 203) So, satisfiers are “particular means by which different societies and cultures aim to realize their needs.” (Cruz et al., 2009, p. 2024) Some satisfiers are listed in the matrix shown below. The list of satisfiers is neither normative nor conclusive.

In addition, (tangible) goods further concretize the satisfiers derived from the human needs. An example: “Doing” to actualize the need for “Understanding” includes the satisfiers “investigating, studying, experimenting, educating, analysing, meditating, and interpreting”. Those satisfiers generate goods like books, laboratory instruments, tools,

computer and other artifacts. “The function of these goods is to empower the Doing of Understanding.” (Max-Neef, 1992, p. 205)

Structuring Model

The theory was designed to diagnose, plan, assess and evaluation the current (and proposed) situation of nations, communities and institutions and make deprivations and potentialities explicit. (Alkire, 2002, p. 181) With the help of this model, people are also able to keep track of the progress within the entity observed. (Max-Neef, 1992, p. 205)

Max-Neef’s theory has been used in other realms, too. (O’Neill, 2011; e.g. Reader, 2005) It was even extended to non-humans. (Jolibert et al., 2011) In their recent article, Salado and Nilchiani adopted the theory to propose a system-centric Need-based Categorization model of the requirements for system engineering based on the human needs paradigm. This ensures that the (technical) system is completely defined by specifying how the system is (performance requirements), what the system uses (resource requirements) what the system does (functional requirements) and where it “lives” (interaction requirements) (cf. existential categories of human needs). Axiological needs represent stakeholder needs. (Salado and Nilchiani, 2013, p. 7ff)

Another methodological contribution to the Human Scale Development theory was put forward by Cruz et al. (2009). They propose a way to represent the results of a complex analysis conducted through the Human Scale Development methodology which originally did not include a numerical representation. Additionally, the trend indicator points at the delta between a current and a proposed state of affairs is included into the methodological framework. So, this newly introduced tool makes it possible to numerically show the degree of need satisfaction according to the dimensions proposed by Max-Neef and, additionally, to make the progress per each array explicit. (Cruz et al., 2009, p. 2026)

Similarly, for this research enterprise, this matrix and a mapping of satisfiers according to the fields makes a comprehension of different data sets possible. It helps to cluster needs on those more abstract and universal need categories. (cf. Ericson et al., 2009) How Max-Neef’s model is concretely used to compare different systems will be shown in the last chapter (see chap. 4.3).

Critique

However, it remains unclear how Max-Neef came up with this final set of human needs. He does not justify how those need categories emerged neither does he explain the ontological foundations.

2.3 Hierarchy of Needs, Desires, and Satisfiers

Based on the theories discussed, a hierarchy of needs, desires and satisfiers, where needs are the most fundamental category on which desires are based is proposed. Needs are often expressed in desires (Wiggins and Dermen, 1987, p. 62) which are subject of continuous change due to personal beliefs, individual's values, and so on, and are to be met by satisfiers, which are the most obvious phenomena in our hierarchy and are easily observable. These satisfiers are manifestations of concrete solutions to desires and needs, respectively.

A satisfier is either an object or description of a proposed state of affairs by/in which a need is satisfied (Stampe, 1988, p. 138). This might be a description of a vision or the imagined future (cf. learning from the future, story telling (McLellan, 2006)). Satisfiers are seen as a precise realization of needs and desires, respectively. As such, they might vary substantially from individual to individual. (Doyal and Gough, 1991) The question to be asked is how does it look or feel like when the fulfilment of a need or desire has become real.

Desires are personally coined and intentional (Thomson, 2005, p. 179f). Mental states like desires often occur without us noticing them, however, they may have intentional and phenomenal properties. (Rosenthal, 1986, p. 342) There are differences in personal desires: I may desire (or want) x and not y, although x and y are of the same quality and both satisfy the need Z. (Wiggins and Dermen, 1987, p. 63) Additionally, what I desire need not be desired by person B. (cf. Cruz et al., 2009, p. 2025) As such, desires can be regarded as personal strategies of need satisfaction.

By inferencing the underlying need of a desire, we suppose to open up a greater space for the satisfaction of needs. (cf. Pojasek, 2000, p. 79) By knowing Z, the satisfaction may be to realize x, y or even by a new possibility q which is a satisfier to the need Z. By doing so, it may satisfy me and person B in an equal way. (cf. Ericson et al., 2009) Needs are fairly stable, whereas satisfiers (and desires) vary widely related to the actual context. (Doyal and Gough, 1991)

However, the idea that there are desires without an underlying need is discarded (Wiggins and Dermen, 1987, p. 62). A classical example goes like this: I am hungry, I need something to eat, but I do not desire to eat. Wiggins and Dermen (1987) argue for desires without underlying needs. To argue for an need-free desire in this example is too narrowly considered: The desire to not eat has its source in a different need, for example, the need of social acceptance by complying with an ideal of beauty.

This assumption is supported by Thomson’s remarks on the relation between desires and their motivation: “Desires for very different things can have a similar motivational source.” Thomson (2005, p. 179) What he calls “motivational source” might be substituted by the term needs (or “interest”, as Thomson calls it) as they are the driving force for our acting. So, a desire can be seen as a specific instance of a need.

To really understand personally coined desires of an individual, we have to put ourselves in her shoes asking the question ‘What is the quality of the desire to this the very individual?’ We need to understand hermeneutically (Thomson, 2005, p. 181) and have to take the person’s context into consideration. So, we have to sense in an empathic way to approximate the implicit source of an individual’s desire (cf. empathic and generative listening leading to deeper understanding [Scharmer and Kaeufer 2010, p. 18]; generative knowledge interviewing [Peet et al., 2010, p. 76 ff])

In contrast, needs have, according to Thomson (Thomson, 2005, p. 175), three distinctive qualities:

- They are objective in the sense of being a discoverable fact,
- they are matters of priority, and
- are undeniable values.

McLeod (2011) suggests in contrast to the phenomenological thesis, that “needs are not themselves experienced” (McLeod, 2011, p. 215). They “are not to be confused with the desires they generate.” (McLeod, 2011, p. 215) Thus, he argues that “needs may be indirectly manifested in desires, in feelings and in other psychological states.” (McLeod, 2011, p. 216)

“What I need depends not on thought or the working of my mind (or not only on these), as wanting or desiring do, but depends on the way things really are.” (Wiggins and Dermen, 1987, p. 62) (also cf. Stampe, 1988) Needing depends on the quality of the needed things itself rather than on personal attitudes. So, I either need Z or W irrespectively of my certain emotional state or desire.

A need may not be confused with a demand for a certain good. The latter would describe a satisfier according to the hierarchy developed. As such, a need might be seen as a more abstract non-mental state rather than an object at which we can point.

To sum up, satisfiers are explicit and concrete realizations of desires and needs:

What do I want to satisfy my desire and need?

Desires are personally coined instances of needs: *How do I want to satisfy my need?*

Needs are most fundamental and are the basis for our desires and satisfiers, they are the non-mental source of our acting: *Why do I desire a certain thing or an imagined future?*

This hierarchy is accompanied by two additional dimensions which will be introduced:

- Explicitness:

Explicitness is intended to describe two measurements: First, how tangible needs, desires, and satisfiers are. Concrete realisations based on desires and needs are supposed to be more tangible than the underlying need (consider a car versus the need of mobility). Second, this is to describe the degree of awareness we have in our daily life about them. We are more aware about having a car (and that artifact may physically be parked in front of our homes) than about the need we satisfy with it (e.g. mobility).

- Potentiality:

Potentiality reflects the idea that knowing an underlying need opens up a space for finding different satisfiers to meet the need. A need has a greater potentiality to derive satisfiers from it than a concrete realisation has. If I want to have a certain car with specific properties, there might be only a binary decision on getting it or not. But, when the need I know is mobility, I might find different way to satisfy the need even if do not get that specific car. This situation gets more central in group settings. Consider the situation that a family has to decide on a specific car to buy. This idea clearly correlates with the level of abstraction. A need is a more general and abstract concept than a satisfier per se.

2.4 Summary

“It may be an illusion to suppose that there might ever be a consensus about the meaning of ‘need’, even if the context of its use were specific (thus permitting other

concepts in other contexts) and even if it were merely provisional (contingent on a manifest improvement for the context in question or a generalisation that embraced this and other contexts)” (Culyer, 1998, p. 77)

For the purpose of the methodological framework proposed, needs are defined in the following way:

Human needs are necessities for the individual’s well-being. Therefore, those needs are *relative* meaning that they depend on the undoubtedly aim of the individual’s well-being. However, they might be substituted by others, and, as such, are theoretically infinite. Although, it is assumed that all those needs have a *corresponding fundamental need* with which they might be associated. The needs in question are *welfare needs* meaning that their non-satisfaction may harm the human but does not impair its existence directly.

As a requirement for this research enterprise, needs are treated as *objective* meaning that they are observable, although not always directly accessible by the needful human. In contrast to daily life language usage (at least in German), needs should *not* (solely) be seen as a *lack of resources*, although it seems easier for humans to identify shortcomings causing harm than gratified necessities. A need might be well satisfied, nevertheless it exists.

Through the *desires* (mental states) they generate, needs are *motivational sources* of behaviour as the individual is trying to satisfy his or her needs. Needs themselves are non-mental states and, as such, have no causal power.

Needs according to existential categories Needs according to axiological categories	Being	Having	Doing	Interacting
Subsistence	1/ Physical health, mental health, equilibrium, sense of humour, adaptability	2/ Food, shelter, work	3/ Feed, procreate, rest, work	4/ Living environment, social setting
Protection	5/ Care, adaptability, autonomy, equilibrium, solidarity	6/ Insurance systems, savings, social security, health systems, rights, family, work	7/ Cooperate, prevent, plan, take care of, cure, help	8/ Living space, social environment, dwelling
Affection	9/ Self-esteem, solidarity, respect, tolerance, generosity, receptiveness, passion, determination, sensuality, sense of humour	10/ Friendships, family, partnerships, relationships with nature	11/ Make love, caress, express emotions, share, take care of, cultivate, appreciate	12/ Privacy, intimacy, home, spaces of togetherness
Understanding	13/ Critical conscience, receptiveness, curiosity, astonishment, discipline, intuition, rationality	14/ Literature, teachers, method, educational policies, communication policies	15/ Investigate, study, experiment, educate, analyse, meditate	16/ Settings of formative interaction, schools, universities, academies, groups, communities, family
Participation	17/ Adaptability, receptiveness, solidarity, willingness, determination, respect, passion, sense of humour	18/ Rights, responsibilities, duties, privileges, work	19/ Become affiliated, cooperate, propose, share, dissent, obey, interact, agree on, express opinions	20/ Settings of participative interaction, parties, associations, churches, communities, neighbourhoods, family
Idleness	21/ Curiosity, receptiveness, imagination, recklessness, sense of humour, tranquility, sensuality	22/ Games, spectacles, clubs, parties, peace of mind	23/ Day-dream, brood, dream, recall old times, give way to fantasies, remember, relax, have fun, play	24/ Privacy, intimacy, spaces of closeness, free time, surroundings, landscapes
Creation	25/ Passion, determination, intuition, imagination, boldness, rationality, autonomy, inventiveness, curiosity	26/ Abilities, skills, method, work	27/ Work, invent, build, design, compose, interpret	28/ Productive and feedback settings, workshops, cultural groups, audiences, spaces for expression, temporal freedom
Identity	29/ Sense of belonging, consistency, differentiation, self-esteem, assertiveness	30/ Symbols, language, religion, habits, customs, reference groups, sexuality, values, norms, historical memory, work	31/ Commit oneself, integrate oneself, confront, decide on, get to know oneself, recognize oneself, actualize oneself, grow	32/ Social rhythms, everyday settings, settings which one belongs to, maturation stages
Freedom	33/ Autonomy, self-esteem, determination, passion, assertiveness, open-mindedness, boldness, rebelliousness, tolerance	34/ Equal rights	35/ Dissent, choose, be different from, run risks, develop awareness, commit oneself, disobey	36/ Temporal/spatial plasticity

Figure 2.2: Matrix of needs and satisfiers
(Max-Neef et al., 1989, p. 33)

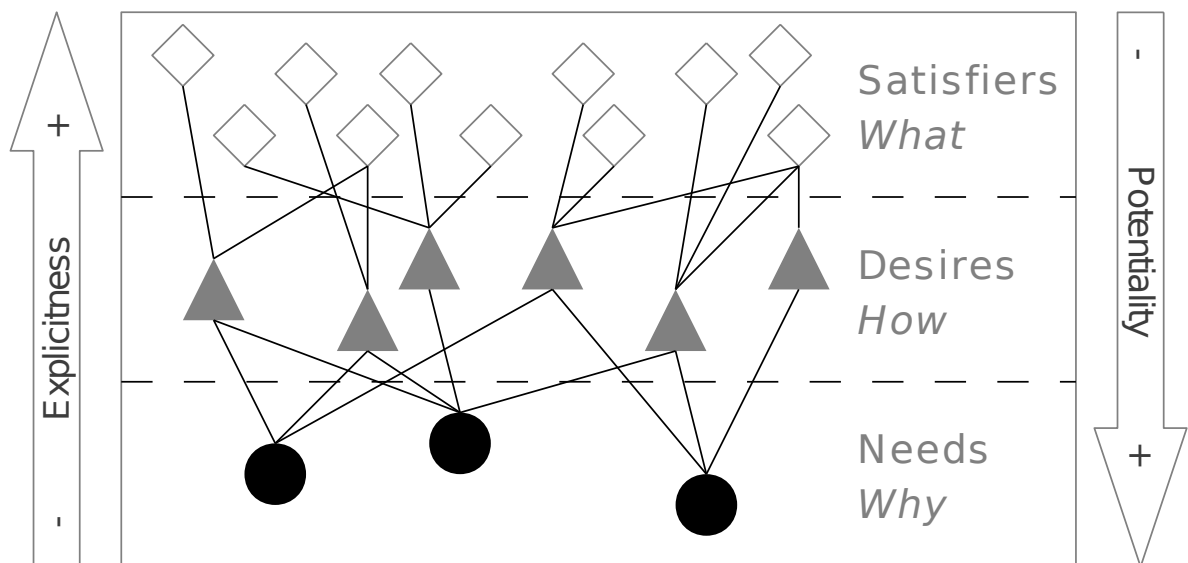


Figure 2.3: Hierarchy of satisfiers, desires, and needs

Chapter 3

Methodological Framework

In the second part of this master thesis, a methodological framework for generating what might be called explicit need knowledge is developed. This knowledge should be understood as explicit knowledge about human needs. As first empirical data suggests, people hardly talk about their needs and desires but rather about certain satisfiers when asked about what they need.

The question this methodological framework wants to address is *how can researchers look behind a satisfier at the underlying need*. The goal is to make explicit what is implicitly defining our acting.

For this enterprise, a qualitative approach based on abductive reasoning is employed. The abductive leap will be enhanced by tools and theories helping to deconstruct the data acquired.

The methodological framework consists of three consecutive steps. The first step is *data acquisition* based on the approach of interacting with the envisioned future. The output of this step is a number of satisfiers articulated by the subject. The second step is *data analysis* which generates hypotheses about the needs on which the satisfiers are based on, constituted on the observations of the first step and enabled by different views on this data. Finally, the third step covers the *validation of the hypotheses* by communicative validation and quantitative analysis (see fig. 3.5).

In the following chapter the three conceptual steps will be described in detail.

The initial idea and an overview of this methodological framework was first presented in “Creation of Need Knowledge in Organizations: An Abductive Framework” at the 47th Hawaii International Conference on System Science. (Kaiser et al., 2014) The paper is co-authored by the writer. Due to the scope of the conference and the

proceedings’ quantitative limitations, this first publication focused on the overall idea and the knowledge-based management aspects of the framework. Complementary, this master thesis aims at deepening the theoretical foundations of the research enterprise and at shifting the focus slightly to its interdisciplinary aspects.

3.1 Data Acquisition¹

At this first stage, data collection and acquisition are in focus. Subjects should name their wishes, dreams, visions, goals and ideas (object or description of a proposed state of affairs in which a need is satisfied [Stampe, 1988, p. 138]). This making explicit should be close to the individual’s reality and his/her common use of language. The explicit result of this process are satisfiers according to the proposed hierarchy of needs, desires, and satisfiers. In principle, data can be acquired in many ways, including social observation, interviews, analysis of artifacts, text analysis, etc.

From an epistemological perspective, this phase is about making explicit what we are (implicitly) pursuing for. Subjects should express the things they desire and demand for.

For the data acquisition in this framework, the participants’ perspective should be directed at the future, more precisely, put into the future. It is not about reflecting on the past, but to imagine how a desirable future might look like and report from the envisioned scenario. This future perspective should take all systems relevant for the deliberated future into account. This should enable people to develop visionary ideas and not to inhibit the thinking by constraints of the presence which might not apply to the future (e.g. different contexts). “Sharing a vision for the desired future is mutually exciting and motivating.” (Jack et al., 2013, p. 370)

This strategy is based on our ability of imagination, theoretically established on theories of memory and prospection from the field of cognitive science (for an overview see Gilbert and Wilson, 2007) and inspired by Scharmer’s theory of “learning from the future as it emerges” (Scharmer, 2001). An overview on the first will be given and the latter will be summarized. In the end, it will be declared how the method used in this framework is different from Scharmer’s theory.

¹Cf. section 4.1 in Kaiser et al., 2014

3.1.1 Imagination and Episodic Future Thought - a Cognitive Science Perspective

Early philosophers such as Descartes, Locke, Berkeley, Hume and Kant already thought about the power of imagination and the humans' capacity to engage in it. They regarded imagination as a "general capacity for mental representation in the absence of sensory input" (Szpunar, 2010, p. 145). Their considerations focused mainly on the distinction between imagination and perception realizing that imagination is somehow similar to actual perception, but they identified a main feature imagination has over perception: Its inherent flexibility in terms of freedom to manipulate the content of imagination or as Hume put it: "Liberty of the imagination to transpose and change its ideas." (Hume, 1958, p. 10) In contrast, perception is determined by external stimuli. (Szpunar, 2010, p. 145)

Imagination has not to be confused with fantasy, they have distinct qualities. Imagination is still related to reality, whereas fantasy necessarily not. The creative power of imagination lies in its strength to provide for innovation and original changes based upon reality at large. (Mellou, 1995)

Indeed, it is a stunning ability of humans to direct attention to hypothetical future scenarios which are more or less detached from our actual environment and sensory input. This mental property has been called differently throughout literature (e.g. "prospection" [Buckner and Carroll, 2007], "simulation" [Schacter et al., 2008], "projection" [Okuda et al., 2003], "visioning" [Jack et al., 2013, p. 370f]; for an overview see Szpunar, 2010, p. 143), but all refer to the same ability we have. Atance and O'Neill (2001) were the first to call this phenomenon "episodic future thought". Episodic future thought points at humans' ability to mentally preexperience personal events that may happen in the future. Atance and O'Neill define it as "an ability to project the self forward in time to pre-experience an event" (Atance and O'Neill, 2001, p. 537). Similarly, "mental time travel" by Suddendorf and Corballis refers to the "faculty that allows humans to mentally project themselves backwards in time to re-live, or forwards to pre-live, events." (Suddendorf and Corballis, 2007, p. 299) We are able to imagine specific events in the future, including the particularities that have characterized past events. This entails a concept of time we apparently have allowing us to mentally locate events on the continuum between past and future. This time line may exceed our personal lifespan. So, we can imagine any point in time, but the phenomenological richness of past and future episodes decreases with the rising distance between imagined point

in time and the present. (Suddendorf and Corballis, 2007, p. 302; Atance and O’Neill, 2001, p. 534) This finding has been described in the “temporal construal theory” in more detail. (Trope and Liberman, 2003, p. 405)

However, the interest in the mental construction of potential future episodes has only recently been rising. (Schacter et al., 2008, p. 55; Suddendorf and Corballis, 2007, p. 299) What has already been discovered is that re-experiencing the past and pre-experiencing the future, thus time travelling in both directions on the time line, are related in terms of cognition. They share the same cognitive resources and mechanisms. (Atance and O’Neill, 2001, p. 537; Suddendorf and Corballis, 2007, p. 302)

To preexperience future events we need imagination which takes place in a representational space in our mind. In cognitive psychology theory, this performance space is our working memory. This cognitive system must host secondary representations which allow to test potential moves by mental rather than physical trial and error (versus primary representation of current reality, which is based on actual sensory input). Infants show this ability from their second year of life on. (Suddendorf and Corballis, 2007, p. 307) (Atance and O’Neill, 2001, p. 537) Neuroscientific evidence suggests that visual imagery (imagination) and visual perception recruit overlapping neural structures in the frontal and parietal cortices. (Jack et al., 2013, p. 371)

Another distinction among cognitive systems is crucial for the concept of episodic future thinking: “Episodic memory, in contrast to semantic memory, provides access to the personally experienced event, rather than just the knowledge extracted from the event. (Suddendorf and Corballis, 2007, p. 301) “The episodic system contributes importantly to imagine the future.” (Addis et al., 2007, p. 1363) It depends on what Tulving calls “autonoetic or self-knowing consciousness” (Tulving, 1985) which is defined as “the kind of consciousness that mediates an individual’s awareness of his or her existence and identity in subjective time extending from the personal past through the present to the personal future” (Tulving, 1985, p. 1). It has a different quality than knowing pure facts. However, there has been little research done on the specific role of autonoetic consciousness in episodic future thought. (Szpunar, 2010, p. 144)

To evaluate memory content, Suddendorf and Corballis introduced the so called “www criterion” which stands for *what*, *where* and *when*. (Suddendorf and Busby, 2003) Those questions are considered as sufficient conditions that an imagined event is an instance of mental time travel, and hence, of episodic memory. (Suddendorf and Corballis, 2007, p. 302)

The neural mechanisms underlying memory for personal events in the past is similar

to those underlying the simulation of personal future episodes. (Szpunar et al., 2007, p. 642; Szpunar, 2010) This has been shown in fMRI studies as well as in clinical psychology experiments on amnesia patients. (Addis et al., 2007, p. 1363) There is neuroscientific evidence that a set of brain areas is equally active in remembering the past and imagine the future. This common region is engaged in visual-spatial tasks which suggests that future events are represented in visual-spatial context. (Szpunar et al., 2007, p. 642, 645) The psychological evidence is that people who suffer from a disability to remember their personal past appear to be impaired in their ability to think about personal future episodes. (Szpunar, 2010, p. 145,151)

Evolutionary speaking, our ability to imagine the future has several benefits and gives humans an advantage over other species (Suddendorf and Busby, 2005, p. 112f; Taylor and Schneider, 1989, p. 299ff):

- Actively influence the organism’s own future by creating an environment that suits its needs.
- Planning of some specific event in the future
- “Problem-solving” prior the actual existence of the problem
- Flexibility in novel situations
- Ability to develop and adopt strategic long-term plans to suit individual’s goals and needs
- Foreseeing beyond the lifespan of an individual enabling us to go beyond merely individual needs and imagine long-term strategies for descendants and posterity. So, being able to forecast outcomes and choose to act to secure the satisfaction of future needs
- Coping with stressful events by regulation of emotions and problem solving

Additionally, it has been shown that visioning (the act of mentally processing an image of the desired future) contributes to human performance and well-being. This has been shown in different realms. (Jack et al., 2013, p. 371)

3.1.2 C. Otto Scharmer: Learning From the Future as it Emerges

How do we learn? A common answer would be to learn from the errors which one has done in the past. This is in line with the classical learning theories and models which

propose that we learn from our past experience and adopt according to those to cope with future situations (for an overview see Kolb, 1984). A prototypical cycle is that of the Lewinian experiential learning model (in Kolb, 1984):

1. Concrete experience
2. Observations and reflections
3. Formation of abstract concepts and generalizations
4. Testing implications of concepts in new situations

This type of learning focuses on reflecting on experiences of the past. It is about “re-enacting the patterns of the past” (Scharmer, 2000, p. 5).

Besides the classical theories, Greenleaf (1977), Jaworski (1998), Senge et al. (2005), Scharmer and Kaeufer (2010, 2013), Scharmer (2000, 2001, 2007b) are proposing a second source of learning, thus a second source for knowledge creation: *Learning from the emerging future*. The idea on which a varying set of authors around Scharmer have been working for several years is to shift the attention to the individual’s inner world, to accept the pure experience and to sense the very moment by “connecting with the source of one’s best future possibility and of bringing this possibility into the now” (Scharmer and Kaeufer, 2010, p. 25f). Thus, it is about learning “from a reality that is not yet embodied in manifest experience” (Scharmer, 2000, p. 6). This is what Scharmer calls “presencing”, a blending of “presence” and “sensing” being the “capacity for sensing, embodying, and enacting emerging futures” (Scharmer, 2000, p. 2). Being aware of the very moment and observe what is going to emerge right now are the key elements for generating new knowledge.

In order to be able to learn from the emerging future, we have to activate a deeper learning cycle that involves opening the mind (transcending cognitive boundaries), opening the heart (transcending relational boundaries) and opening the will (transcending the boundaries of our small will). (Scharmer and Kaeufer, 2013, p. 239)

3.1.3 Interacting with the Envisioned Future

The method used in this framework is slightly different from Scharmer’s approach. It is not about sensing the future as it emerges, thus from a present point of view, but about reporting from a future perspective. Or put it differently, they should narrate as

they would already (inter)act in the envisioned future. Subjects are invited to “time travel” and should interact with their imagination, with the future picture they have in mind, and report from a future point of view. The idea is to be somewhat detached from today’s circumstances (and its restrictions, boundaries and impossibilities) and, so, being enabled to shift the thinking to come up with visionary and creative results transcending the boundaries of the current situation and environment. In this context, it is interesting to consider the example of artists and their way of transcending boundaries and coming up with creative fruits. (Kragulj, 2013)

The process of putting subjects into an imagined future scenario and of naming satisfiers from the future point of view is supported and guided by the question *“How does your fulfilled personal life as [role] in [year] look like, in which all your wishes and goals have become true?”*.

This guiding question has three crucial aspects:

- Future point of view

Subjects should anticipate and interact with their imagination and try to report from a future point of view. Scharmer (2001, 2007b), Uotila et al. (2005) and Uotila and Melkas (2008) argue that engaging in a different kind of learning cycle, one that allows to learn from the future as it emerges, is more effective to generate sustainable satisfiers, rather than from reflecting on past experiences. Learning from the future means to sense, tune in, and act from one’s highest future potential - the future that depends on us to bring it into being (Scharmer, 2007b). Though, it is very important to mention also satisfiers whose realization is not realistic at the moment, because of the embedded need knowledge in these satisfiers. Peltokorpi and Nonaka point out that “exposure to diverse ideas during the externalization phase is important as every step in the innovation process is proposed to be about someone asking about imaginary possibilities, speculating about what would happen if, and reflecting on yet-unrealized and perhaps unrealisable solutions.” (Peltokorpi et al., 2007, p. 56)

- System theoretic point of view

This reporting from an future point of view should cover all necessary positions and systems for the individual’s role in question to describe a holistic picture of a great life. Imagine the professional future of yourself may cover different angles than describing your future in terms of e.g. your love relation.

- Relative goal

The relative goal set is a fulfilled life in general and a specific personal goal set in particular. As a result, relative needs may vary among individuals. Presumably, no one would doubt the general goal of a fulfilled life, however, it makes a major difference in terms of the needs covered. Consequently, it is not purely about survival in a narrow sense, but the subject should think of a bright and attractive future in which the desire to become more and more what one is has become true and, ultimately, in which the subject has achieved self-actualization. Additionally, it has been shown that a focus on positive emotional attraction, hence thinking of a bright future, leads to more behaviour changes in humans, there is more intrinsic motivation attached to it. (Boyatzis, 2008; Boyatzis et al., 2012)

This approach can be called *interacting with the future as envisioned*. “*Interacting*” points at the subjects’ active engagement with their mental model of an imagined future scenario. “*Envisioned*” refers to the fact that participants generate a mental model, an imagination about how they want the *future* to look like. Subjects should use their capability to anticipate future states and events. People should mentally preexperience the future as they wish it to happen. It further indicates the view point from which they report about their imagination.

The main advantage of using this learning from the future is that it offers another source of learning. In general terms, participants have three sources to learn from, hence to decide on their instant actions:

- Memory

This source consists of experiences the individual has made. Thus, it constitutes knowledge that has been effectively proven. Individuals know what worked out well and what did not. This helps to adapt ontogenetically.

- Instantaneous perception

What I perceive in the very moment has an effect on my instant action. Consider the example of a reflex. Without consciously considering and reflecting our past experiences we quickly remove our hand from a hot hotplate. Another example is introspectively observing our instantaneous stream of consciousness. This also covers Scharmer’s concept of learning from the future as it emerges. From a present perspective, he proposes to “listen” to our inner voice focusing on what wants to emerge and what wants to die just now. (Scharmer, 2007b, p. 186)

Thus, he wants subjects to focus on their current stream of consciousness and the immediate perceptions they have.

- **Imagination**

This refers to the idea of learning from the future as envisioned. This source of learning has the greatest potentiality. Imagination has the freedom of being (somewhat) detached from past experience and instantaneous perception, as we may imagine future episodes which seem to be impossible now and were impossible in the past. It has been shown that visioning (imagination of a desirable future) has a positive effect on human's well-being and performance. (Jack et al., 2013, p. 371) Backcasting seems to be a promising method to operationalize this future knowledge for deciding in the presence. (Dreborg, 1996) It has been shown that imagination is related to memory in terms of brain activity.

We can access all three sources by directing our awareness accordingly. What all three have in common is that they inform our decision on how to act in the present. (see fig. 3.1)

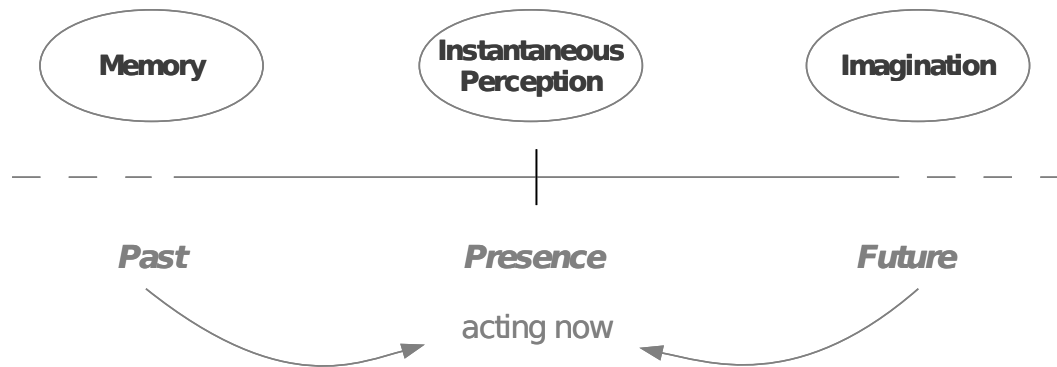


Figure 3.1: Three sources of learning

3.1.4 Summary

To sum up, this first phase of the methodological framework is to acquire data about the individual's goals, wishes, dreams, thus, concrete manifestations of solutions to desires and needs. This is done by a method which might be called *interacting with the envisioned future*. This is to use the power and flexibility of imagination which we as humans have and to mentally preexperience hypothetical future scenarios and personal

events. It is about a “generative process” (Suddendorf and Corballis, 2007, p. 301) of interacting with our imagination and thereby creating a valuable kind of knowledge.

This data acquisition process is triggered by a guiding question which incorporates different aspects. It is taking up a point of view in the future (as discussed), it encourages to take all relevant systems into account, it is based on a general as well as a set of individual relative goals.

This “time-travelling” approach (Suddendorf and Corballis, 2007) has several advantages: It enables us to (mentally) create an environment that suits our needs. We are able to “problem-solve” prior the problem actually exists. And in general, it offers flexibility in novel situations. In short, it enhances our knowledge base to act upon in the presence.

The result of this first stage is a set of explicit satisfiers which are the input for the subsequent analysis step. (see fig. 3.2)

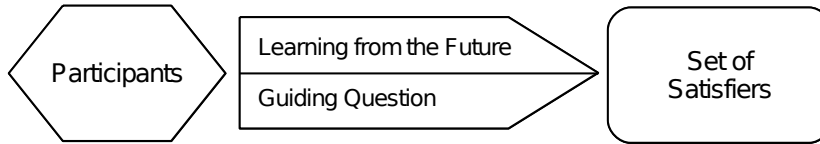


Figure 3.2: Step-1: Data acquisition

3.2 Hypotheses Generation²

After having generated a set of data on satisfiers, the second step in the methodological framework addresses the main question which needs may underlay the satisfiers named by the participants. As there is no law-like rule connecting explicit satisfiers to implicit needs, this process is based on abductive reasoning which should result in hypotheses about the underlying needs the satisfiers meet. However, the abductive reasoning process is not intended to take place by chance. Therefore, two *views* which should trigger and raise the data base in order to enable the abductive process in a reasonable way are proposed and developed. Both views together are strong enablers to create a set of hypotheses about substantial needs of the participants. Within the abductive framework, the first view is based on a method called *generative listening* and the second view is inspired by the *Aristotelian theory of causality*. After arguing why abductive reasoning seems to be promising, an introduction to both views is given.

²Cf. section 4.2 in Kaiser et al., 2014

3.2.1 Abduction

Charles Sanders Peirce describes abduction as “the process of forming an explanatory hypothesis. It is the only logical operation that introduces any new ideas.” (Peirce, 1958, p. CP 5.171) Abduction is therefore a special kind of cognition able to generate beliefs about the world. These beliefs are self-correcting, since it is the nature of hypothesis construction to have a constant revision of the abduction-deduction-induction process (Pike et al., 2007). Abduction often “appears with moments of surprise arising from new information or data” (Shuster, 2012, p. 63).

Besides induction and deduction, abduction is an alternative logical process of reasoning. It is the only one, out of the three, which has the potentiality to uncover new explanations. (Reichertz, 2004, p. 161). In contrast to the former, “abduction is intended to help social research, or rather social researchers, to be able to make new discoveries in a logically and methodologically ordered way.” (Reichertz, 2004, p. 160)

To contrast abduction from deduction and induction, consider the classical textbook example (adapted from Reichertz, 2004, 2013):

Deduction:

Rule: All bachelors are unmarried males.

Case: A is a bachelor.

\Rightarrow *Fact:* A is an unmarried male.

In the case of deduction, we know the rule and we now the case. The fact derives as a logical result. The concrete case is subordinated to a given rule. Therefore, deduction is tautological, it does not tell us anything new. If the rule used is valid, the deductive result has to be valid, too.

Quantitative Induction:

Fact: All birds we have observed could fly.

Case: Y is a bird and flies.

\Rightarrow *Rule:* All birds can fly.

In the case of inductive reasoning, we have a given set of observations and we know the case. Induction is supposed to come up with a rule by trying to “transfer the quantitative properties of a sample to a totality, it ‘extends’ the single case into a rule.” (Reichertz, 2004, p. 161) Unlike deductive reasoning, inductive reasoning cannot establish truth, as the rule might be true or false, even if all premises are true (consider the example of the penguin). As a result, induction is not truth-conveying, its results are merely probable.

(Reichertz, 2004, p. 161)

A special kind of induction is **qualitative induction** which “from the existence of certain qualitative features in a sample [...] infers the presence of other features.” (Reichertz, 2004, p. 161) It is also only a probable form of inference and does not provide anything new, it only finds “new versions of what is already known” (Reichertz, 2004, p. 161).

Abduction:

Fact (Result): The street is wet. (observation)

⇒ *Case:* If it rained last night, the street would be wet.

⇒ *Rule:* It rained last night.

Abduction consists of “assembling or discovering, on the basis of an interpretation of collected data, such combinations of features for which there is no appropriate explanation or rule in the store of knowledge that already exists.” (Reichertz, 2004, p. 161) It is about searching for new explanations. It targets at finding a new rule and, at the same time, it also becomes clear what the case is. In short, “abduction ‘proceeds’ [...] from a known quantity (= result) to two unknowns (= rule and case). Abduction is therefore a cerebral process, an intellectual act, a mental leap, that brings together things one had never associated with one another.” (Reichertz, 2004, p. 162) All actions take to advance abduction should therefore aim at “the achievement of an attitude of preparedness to abandon old convictions and to seek new ones.” (Reichertz, 2004, p. 163)

To sum up, the result of the *abductive* process are hypotheses which are the starting point for further verification. Next, predictions are derived from the hypotheses (*deduction*) and finally the search for facts will verify the assumptions (*induction*). So there is a three-stage procedure consisting of abduction, deduction and induction. By this means, an intersubjectively constructed and shared “truth” can be achieved. That is what abduction can do, however, absolute certainty can never be obtained. (Reichertz, 2004, p. 163f)

It is important, necessary and unavoidable that we interpret data. Doing it in the abductive way by studying facts and devising a theory to explain them as it is proposed in this methodological framework increases the chances that we come up with genuinely new hypotheses about the underlying needs of the satisfiers we observe. Inductive or deductive reasoning would result in linear inference and would therefore not be enough

in order to create new knowledge.

Critically speaking, one could object that abduction is happening by pure chance as it does not follow an algorithmically rule-governed procedure. Peirce himself provoked when he said that “abduction is that kind of operation which suggests a statement in no wise contained in the data from which it sets out. There is a more familiar name for it than abduction; for it is neither more or less than guessing.” (Peirce, 1958, p. MS 692:23 - 1901) However, abduction is not pure chance - or as Reichertz referring to Einstein puts it: “Abduction does not place dice” (Reichertz, 2013, p. 85) - although its logical mechanisms cannot be made explicit. Thus, it cannot be forced, but we can bring about situations in which it is likely that abduction succeeds. Similarly, Reichertz argues that one can create a “climate” or circumstances which enable the success of abduction and its results. (Reichertz, 2004, p. 162; Reichertz, 2013, p. 111ff) This is what is going to happen by proposing two different views enabling the “mental leap” (Reichertz, 2004, p. 162) of abduction.

3.2.2 Generative Listening

The first view intended to enable abduction is the method of generative listening. With this approach we follow several authors (De Jong, 2011; Gunnlaugson, 2006; Johnson and Larsen, 2012; Peet et al., 2010; Peschl and Fundneider, 2013; Scholes-Rhodes, 2002; Senge et al., 2004) who introduced and used this special kind of listening in different contexts. Generative listening is described as a listening from the emerging field of future possibility (Scharmer, 2008, p. 54) and transformative conversation (Scharmer, 2010, p. 16). So generative listening is on the one hand strongly connected with learning from the future and on the other hand it enables the creation of self-transcending knowledge (Kaiser and Fordinal, 2010; Scharmer, 2001). Using the approach of generative listening on the satisfiers which were generated in step-1 (data acquisition) enables the emergence of hidden needs of the participants.

Listening for Differences, Davis 1997

The term generative listening might be traced back to a concept originated in education sciences (Davis, 1994). Based on interactions between students and teachers (in mathematics classes), Brent Davis proposes a classification of three different types of listening according to their quality of attentiveness (Davis, 1997, p. 356ff) (prompted by Levin’s taxonomy of listening stages [Levin, 1989]):

- Evaluative Listening

This type of listening is characterized by the fact that the listener is listening *for* something in particular (e.g. a certain argument to be said) rather than listening *to* the speaker. The motivation for this type of listening seems to be evaluating the correctness of a statement by judging it against a preconceived standard. The listener expects a certain statement to be said, as she has the “correct” answer already in her mind. As a result, we could say that the listener is not really interested in what the other person is saying. The speaker may have the feeling that his contributions are not valued and, thus, have little effect on the listener. (Davis, 1997, p. 356ff) Gadamer refers to the questions related to this type of listening in which the questioner knows the answer in advance “pedagogic questions” meaning that there are not really questions as they lack a real questioner. (Gadamer, 1990)

- Interpretive Listening

This type implements a much more interactive structure. With regard to the questions asked, this type of listening seeks for information rather than responses. The answers can not be fully anticipated in advance. It is best characterised as listening *to* what questionees are saying. This type of listening opens up a space for re-presentation and thereby for a revision of ideas. It is not a passive task of absorption, rather the listener is aware of the fallibility of his or her sense-making. In short, it is not about listening merely to facts we already know, but to access the subjective sense being made. (Davis, 1997, p. 361ff)

- Hermeneutic Listening

Hermeneutic listening incorporates the negotiated and participatory nature of the interaction with the sender of the message. “This sort of listening is an imaginative participation in the formation and the transformation of experience. Thus, communicating in this sense is a negotiatory process. Hermeneutic listening demands the willingness to interrogate the taken for granted and the prejudices that frame our perceptions and actions.” (Davis, 1997, p. 369f) This type of listening should emphasize “the historical and contextual situations of one’s actions and interactions.” (Davis, 1997, p. 370) This may lead to the revising of the listener’s knowledge. This type of learning is closely connected to the idea of constructivism and enactivism. (Davis, 1997, p. 369f)

The taxonomy by Davis (1997) was further advanced by Rasmussen (in Yackel et al., 2003) who proposed alternative stages of listening closely connected to hermeneutic listening (Davis, 1997) namely *generative listening*. This is the ability to “generate or transform one’s own mathematical understanding and it an generate a new space of instructional activities. Like hermeneutic listening, generative listening is intended to reflect the negotiated and participatory nature of listening to students’ mathematics” (Yackel et al., 2003, p. 117) This type of listening was recently taken up and tested empirically. (Johnson and Larsen, 2012)

Generative Listening, Scharmer 2007

Not mentioning previous contributions of classifying listening styles, Senge (1994) and Scharmer (2007b) proposed a similar taxonomy of listening types.

Scharmer proposes four levels of listening (Scharmer, 2007a):

1. Downloading

“Yeah, I know that already.”

Listening by reconfirming habitual judgements. We are looking for statements which confirm what we already now. As a result, nothing new can emerge out of this listening attitude.

2. Factual Listening

“Ooh, look at that!”

This type is characterized by paying attention to facts and novel disconfirming data. The focus is on what confirms and what differs from what we already know. This “is the basic mode of good science. You let the data talk to you. You ask questions, and you pay careful attention to the responses you get.” (Scharmer, 2007a, p. 2)

3. Empathic Listening

“Oh, yes, I know exactly how you feel.”

A shift from the “it-world” of things, figures, and facts to the “you-world” of the living and evolving self takes place. We feel how another person feels, we are able to connect directly to the other person. We see the world through someone else’s eyes.

4. Generative Listening

“I can’t express what I experience in words. My whole being has slowed down. I

feel more quiet and present and more my real self. I am connected to something larger than myself.”

“This type of listening moves beyond the current field and connects us to an even deeper realm of emergence.” (Scharmer, 2007a, p. 2) We are in altered state. Communion or grace may describe the quality of this experience.

Generative listening is seen as the most valuable mode of listening. It transforms the listener’s self profoundly and enables him to connect to “deeper source of knowing, including the knowledge of your best future possibility and self” (Scharmer, 2007a, p. 3).

Summary

The method of generative listening as it is used in this framework aims at “hearing” the essence of what the participants say, thus, try to hermeneutically understand which need they try to express by the satisfier they mention. This approach is based on the two sources discussed. Generative listening has to be understood as an active interaction between participant and analyst meaning that it may changes attitudes of both individuals evolved. It is about capturing the essence by not letting prejudice take over, trying to see the world with the eyes of the participant, thus, hermeneutically. And by doing so, allow the change of the analyst’s self to happen.

As a consequence, the main focus lies on the analyst’s attitude towards the data. Therefore, it seems to be essential to offer surroundings, or what Nonaka et al. (2000) calls “Ba” or Peschl (2007) an “Enabling Space”, in which generative listening is possible and supported.

3.2.3 Aristotle’s Four Causes

The second view of this analytic stage of the framework is based on the theory of causality by Aristotle. It is intended as an analytic tool to deconstruct the data (satisfiers) according to the four causes Aristotle proposes.³

He discusses four causes of existence of any thing (Hennig, 2009, p. 137):

1. Causa Materialis - *the matter of the entity*

This refers to the substrate or substance out of which a thing is made of. Changes take place in this substance.

³Some argue that the four causes should better be called *because*s, as cause indicates an action rather than an explanation. (Hocutt, 1974, p. 386; Mure, 2009)

2. Causa Formalis - *the form of the entity*

This refers to the shape or form (pattern, configuration) into which something is changed. The essence (the essential characteristic) is manifested in the process of becoming.

3. Causa Efficiens - *what brought the entity into existence*

It refers to the entity by which some change is brought about. This entity initiates activity. It is the actual source of the entity's change. (Also called the propelling cause.)

4. Causa Finalis - *the entity's purpose*

This refers to the final cause, that for the sake of which an activity takes place. It is the entity's intended purpose, goal, state of completion or end for which the change is brought about or at which the change aims at. (Also called the telic cause.)

A classical text book example tries to illustrate the four cases in terms of an art work⁴: "We take a sculptor at work on a statue; the marble block is the material cause, the action of sculpting the efficient cause, the formal cause is the shape of the statue, and the final cause is the purpose for which the statue is intended." (Todd, 1976, p. 319) However, it is not the case that we always have to consider all four causes, as Sprague points out, Aristotle did not do either: "The completeness of the statue analysis implies the possibility and even the necessity of a similarly complete analysis in any given case. But it is Aristotle's practice to employ only as many of the causes as are appropriate to the matter in hand." (Sprague, 1968, p. 299)

Still, Aristotle's useful theory is universal and applicable to any type of "thing" including non-material phenomena. "Aristotle's four causes are of ubiquitous value - for structuring our knowledge, for better understanding reality." (Müller-Merbach, 2005, p. 183) Of particular importance for this research enterprise is Causa Finalis, final cause or purpose (telos), which is strongly connected with the needs on which the satisfiers are based on.

Ikujiro Nonaka similarly proposed different levels of questions, ultimately aiming at the final purpose of a thing: (Nonaka, 2005, p. 426)

- Level A: Question about specification

⁴However, Aristotle has never illustrated all four causes at once by giving a single example. (Sprague, 1968, p. 299)

- Level A0: Question about concepts, how to realize the concept
- Level A00: “Why or for what do you do it?”

Questions of *Level A00* are obviously similar to questions about the final cause of an object (Causa Finalis) as Aristotle proposed. By putting the *Why?* question cascadelly, the answers become increasingly focused. (Nonaka and Toyama, 2007, p. 387) Accordingly, Nonaka suggests the practice of “Ask why five times” because by doing so, “it becomes inevitable to ask the essential reason behind your thought or action.” (Nonaka, 2005, p. 426; cf. Pojasek, 2000)

Summary

To operationalize the Aristotelian theory for this research enterprise, four questions to deconstruct the data and enrich the data base for the process of abductive reasoning are proposed:

1. *What is the substance of the satisfier? What is its material?* (Causa Materialis)
2. *How, in which form, can the satisfier be observed?* (Causa Formalis)
3. *What or who brought the satisfier into existence? What (circumstances, action) was necessary for its bringing into existence?* (Causa Efficiens)
4. *What is the purpose of this satisfier? What impact does it have (on the needful person)?* (Causa Finalis)

The Aristotelian theory of causality is used as a structuring tool which helps to deconstruct the data, hence, the satisfiers named. However, to make it clear, it is not that the underlying need is straight in the answers to the four causes. If that was the case, discovering the needs underlying certain satisfiers would be a pure deductive enterprise which it is certainly not as it has been argued. But rather, deconstructing the satisfiers by means of the theory of four causes helps to widen the data base and, thus, to probably find similarities among superficially different satisfiers. Further work could be done to implement a relational database which enable the researcher to interrelate the causes of the satisfiers in term of finding new “causal relations” meaning similarities among causes of different satisfiers.

3.2.4 Summary

“This was the poodle’s real core,

A traveling scholar, then? The casus is diverting.” (von Goethe, 1964, p. l. 1323)

What is “the poodle’s real core”? This is the question we try to answer in this step of the methodological framework.⁵ This is to reveal the essence of the satisfiers mentioned, thus, the needs which they are supposed to satisfy. For this, abduction is proposed to be effective in externalizing deeper layers of knowledge. Abduction relies on observations (step-1 - data acquisition) to stimulate possible hypotheses. As proposed by Reichertz (2004, p. 162) to support abduction by a “climate” which supports its success, two views to enhance the data base and, thus, to externalize deeper layers of knowledge of the satisfiers mentioned have been elaborated. Using the concept of abduction, the output of this second step in the methodological framework is a set of hypotheses. (see fig. 3.3)

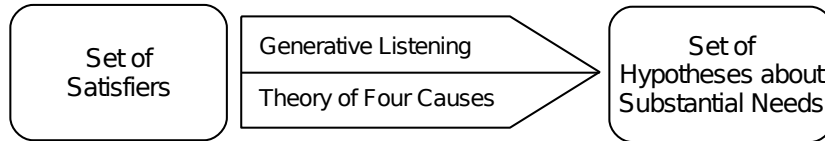


Figure 3.3: Step-2: Hypotheses generation

3.3 Validation of Hypotheses⁶

In this final phase of the methodological framework, the hypotheses generated in the previous step are tested. In order to do so, a mixture of qualitative and (to a limited extend) quantitative methods is used as recommended by several authors (e.g. Denzin, 1989; Punch, 2005, p. 234ff). This is to check for *integrity* as well as for *correctness* of the hypotheses. Qualitative and quantitative tests together enable the participants to accept (or reject) the hypotheses about needs on which the satisfiers are based on and so to finally (not) turn them into justified explicit knowledge about needs.

3.3.1 Qualitative Validation: Communicative Validation

Steinar Kvale elaborated on the theoretical foundations of communicative validation. This approach rests on the postmodern conception of knowledge. Following the post-

⁵Although, we hope it is not Mephistopheles what we discover as in the case of Goethe’s *Faust I*.

⁶Cf. section 4.3 in Kaiser et al., 2014

modern idea, knowledge is neither “God-given” nor is it an objective copy of an external world and, thus, is evaluated according to an absolute truth. Knowledge is rather seen as a social construction resulted out of social interaction and negotiation. (Kvale, 2002, p. 306) “Knowledge is validated through practice.” (Kvale, 2002, p. 300)

The method corresponding to Kvale’s considerations and used in qualitative social research is communicative validation, or member check (mainly in U.S.), informant feedback, respondent validation (mainly in U.K.) as it is termed in English literature. (Kvale, 1995; Torrance, 2012, p. 114) It involves testing the validity of knowledge claims in a dialogue about the social reality of the subjects. This dialogue aims at finding a consensus about valid truth. As an ideal result, both subjects and researchers learn and change through the dialogue. (Kvale, 2002, p. 315f)

Communicative validation is used to enhance the validity of results. With this approach “data or events from the research are presented to the subjects of the investigation with the aim that they assess them in respect of their validity.” (Steinke, 2004, p. 185) Research participants should judge the hypotheses in terms of accuracy, fairness, and validity. (Torrance, 2012, p. 115)

In short, “communicative validation makes it possible to relate the theory developed in the research process back to the informants.” (Steinke, 2004, p. 189) People concerned get the opportunity to reflect on the results and the interpretation analysts have drawn. In addition, subjects may comment on the results whether they are sound, fair and reasonable. As a result, new evidence may come to light. (Torrance, 2012, p. 114)

In theoretical terms, the method is grounded in symbolic interactionism and ethnomethodology. Both are interested in how social groups define and maintain their boundaries, how their members come to “know” meaning and how their membership shape the process of interpretation and knowing. (Torrance, 2012, p. 115) To investigate that, researchers have to get familiar with people’s view and, further, have to see reality as they see it. (Blumer, 1969, p. 51)

Objections against communicative validation include the argument that individuals may have a limited partial view of the collectivity’s activities. Researcher may have a better overview as they are outsiders of the system. However, if the data is not judged by the participants concerned than the hypotheses remain the researchers’ interpretation and construction and do not describe the peoples reality. (Torrance, 2012, p. 116)

In our case, the main question of this qualitative validate process is whether the hypotheses are *sound and complete* meaning that they fit to the subjects’ reality and cover it entirely. Hypotheses have to be negotiated and finally accepted (or declined)

in order to (not) constitute knowledge in the sense Plato first defined it, as justified true belief. (in Tong and Mitra, 2009, p. 50; see also Virtanen, 2013)⁷

3.3.2 Quantitative Validation

The second subsequent validation step is to quantitatively test whether the hypotheses (potentially enriched through the communicative validation process) are *correct* or not. As a result of the communicative validation process, we assume the hypotheses to be *sound and complete* and now they are delivered to a larger group of people concerned. Basically, this second validation approach is to have a larger sample judging (and dis-/approving) the knowledge claims (hypotheses).

Although, it is known that those two validation approaches (qualitative and quantitative) involve completely different research paradigms with different premises and measurements (for an overview see Sale et al., 2002), this second sub-step is an attempt to check the data with a large group in an economical way.

Given that the hypotheses generated in the previous phase get approved in both validation rounds, we can conclude that participants have turned them into explicit knowledge.

3.3.3 Summary

The last of the three phases of this methodological framework is about feeding back the hypotheses which analysts have developed to the people concerned. Those who are in the centre of investigation should judge whether the claims on needs which were abductively extracted out of the data reflect their social reality. This feeding back and letting participants judge on the validity of hypotheses on needs is mainly done on a qualitative basis emphasizing the dialogue between subjects and researchers. In addition, somewhat quantitative methods are used to raise the sample of respondents in an economical way. The mixture of methods should advance the outcome of this final phase. (see fig. 3.4)

⁷This notion of knowledge has been deconstructed and strongly challenged by other authors (e.g. Gettier, 1963)

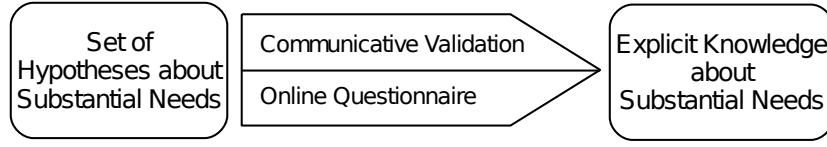


Figure 3.4: Step-3: Validation of hypotheses

3.4 Summary

In this part of the master thesis, the methodological framework for the abductive inference of knowledge about needs has been developed and its theoretical sources were described. Thereby the research question (see chap. 1) was answered.

The framework consists of three consecutive phases: *Data acquisition*, *hypotheses generation* and *validation of hypotheses*. The outcome of the process is explicit knowledge about needs derived from observable and conscious satisfiers the subjects name.

For the first step (data acquisition) the method of *interacting with the envisioned future* has been introduced and theoretically grounded. To generate hypotheses about the gathered data, the method of *generative listening* and questions based on *Aristotle's theory of the four causes* have been proposed. In the last step, hypotheses are converted into explicit knowledge about needs by the participants themselves. For this, *qualitative* as well as *quantitative validation methods* are used.

The whole process is summarized in figure 3.5.

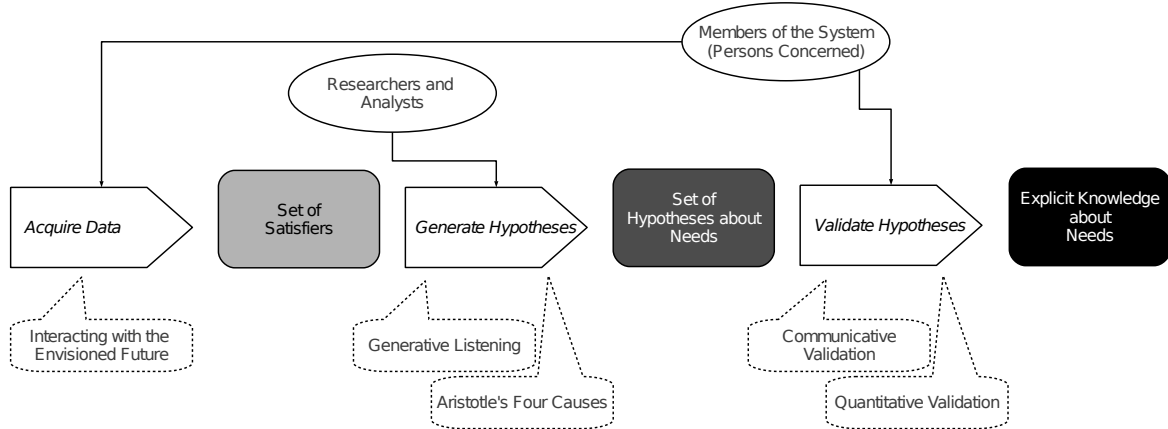


Figure 3.5: Summary of the methodological framework

Chapter 4

Project “Lernen aus der Zukunft für reife KMU”

The third and final part of this master thesis shows how the developed framework has been operationalised and applied in a project conducted with the Austrian Federal Economic Chamber. The project was structured according to the three consecutive phases.

Starting with a short description of the project and the project partner, the concrete procedure of the project will be described and final results will be presented and interpreted.

4.1 Introduction

4.1.1 Outline and Aim

The Austrian Federal Economic Chamber (WKO) offers services on different levels to their compulsory members. On the one hand side, those services should support companies in their daily business (e.g. consultation and coaching) and, on the other hand side, the WKO is trying to scale the legal circumstances according to the needs of its members by lobbying.

In order to offer new/adapted services, the WKO is interested in knowing their members’ needs in more detail. For this, the WKO decided on a two-phase approach. First, they want to gain knowledge about the substantial needs their members have to work successfully, and second, based on this knowledge they are going to develop

services which concretely meet those needs.

The project “Lernen aus der Zukunft für reife KMU” aims at generating a catalogue of the substantial needs of the WKO member companies which are in business for more than 10 years (maturity stage) and employ more than 5 and less than 50 people (small and medium-sized enterprises). According to WKO statistics, more than 60 companies out of 100 are in business for longer than 10 years. The challenge for those companies is to maintain their competitiveness and plan for the future (relative goal; see chap. 2.1.2). However, 80 percent of them have no explicit growth agenda. (Kainz, 2013)

The question to be answered of the joint project was: *What are the substantial needs Austrian bakers / builders have?* The answer to this project question was essential for their superior goal to get in closer contact with their members and develop new services for them.

The project covers the first step (creating knowledge about needs) and was conducted in cooperation with the WU Vienna University of Economics and Business and Vikobama, a spin-off company of the Research Group Knowledge-Based Management and Vision Development at WU Vienna (<http://www.wu.ac.at/kbm>; see Kaiser and Feldhusen, 2011, 2012; Kaiser and Fordinal, 2010) For this research enterprise, two industries were chosen by the WKO: Bakers and builders participated in the project¹. The task was to identify the needs of those sectors independently and to compare the results afterwards.

It was up to the project partner to care for facilities and to motivate their members to participate in the process. The whole project was carried out in German.

4.1.2 Project Partner

The Austria Federal Economic Chamber is a decentralized institution by law which represents the interests of its members on national as well as on international level. Further, it offers services to its member companies on different levels including advice, consulting, education, knowledge sharing, etc. Being member of WKO is compulsory for all Austrian companies in operation. (WKO, 2013a)

The WKO is organized in divisions representing different sectors (e.g. Crafts and trades, industry, commerce, banking and insurance, transport and logistics, tourism and leisure, information and consulting) and states. The principal of this project is the crafts and trades division having 26 subdivisions representing more than 126,000

¹The selection criteria for choosing those industries are unknown to the author.

Austrian companies in total. (WKO, 2013b)

4.2 Realization

In the following section the concrete implementation of the three framework elements in this research project is described. It is shown how the concept is realised in the empirical project introduced. The author has taken part in the whole project and was active in all phases.

4.2.1 Step-1: Acquire Data

In the first project step, the data acquisition was in focus. In a workshop setting, participants were asked to name their wishes, dreams, visions, goals and ideas (object or description of a proposed state of affairs in which a need is satisfied). In order to do this, the method of interacting with the envisioned future was used (see chap. 3.1).

The workshop was designed in the following way: Participants sat in a circle directed to look in the middle. After an overview of the project and an introduction to the workshop setting, participants were instructed to relax, focus their attention and to let themselves in for the following time travel and the interaction with their envisioned future.

This was supported by a ritual, namely an introductory narrative given by two facilitators and the song “Thus Spoke Zarathustra” (Op. 30) by Richard Strauss (commonly associated with the movie “2001: A Space Odyssey” by Stanley Kubrick). Thereby, people were enabled to put themselves into their personal envisioned future scenario. Additionally, this time shift was assisted by the physical change of their sitting position (turning the seats in the circle outwards). All this supported people to detach from the current situation and open their mind for their future projection.

Participants were given time to personally reflect on the guiding question “*From the perspective of [role], how does your fulfilled life in 2015 look like, in which all your wishes and goals have become true?*” The question was intended to guide participants’ preexperience of their imagination. Additionally, two questions sharpened the focus of preexperience and the following narrative reporting: “*In this year 2015, what has come about, what is new? And what has disappeared?*” By design, asking these two questions emphasizes the difference between 2015 and today. The year 2015 as the future point

in time has been chosen in accordance with the project partner and the theoretical foundations discussed (see chap. 3.1).

According to the system theoretic approach presented (see chap. 3.1), this procedure was done four times (with a break in between) to put the subjects into four related perspectives and thereby cover all relevant views in the respective context: As satisfied customers, as a satisfied entrepreneur, as satisfied employees and from the perspective of the WKO as a support giving institution. The last view was slightly different; it was about what kind of support the Austrian Federal Economic Chamber has given in the distant future to satisfy the participant's needs. The considered role changed the guiding question respectively. The facilitators of the workshop inspired the participants to mention as many ideas and answers as possible and considering also satisfiers whose realization is not realistic at present. After each session the participants shared their ideas and answers in small groups of 3 to 4 persons. This sharing helped to clarify their own ideas and it strongly supported the knowledge sharing among them.

Individuals documented the results (satisfiers) of each session on a worksheet (see fig. 4.1), which was anonymously associated by a participant number to identify all worksheets of each person (in total four sheets). Participants were given around 20 to 30 minutes for each session consisting of time travelling (ritual), interacting with imagination (preexperience), documentation and sharing in groups. The workshops lasted for about three hours. In this way, five (bakers) and two (builders) workshops were conducted identically across Austria in which representatives of bakers and builders (mostly the entrepreneurs themselves) participated and expressed their satisfiers.

To sum up, table 4.1 offers an overview on the data acquisition part of the project.

	Bakers	Builders
No. of workshops	5	2
Avg. workshop duration	3 hours	
No. of participants	120	12
No. of worksheets	480	48
No. of items (satisfiers)	approx. 3600	566

Table 4.1: Overview on the data acquisition phase

Lernen aus der Zukunft für reife KMUs

Kunden

Ich als Unternehmener
(Bäcker)

Mitarbeiter

Was ist zu Ende gegangen?	Was ist neu entstanden?

Nr.

Figure 4.1: Worksheet to report satisfiers from envisioned future

The gap between the number of participants from bakers' (120) and the builders' sectors (12) has to be considered and its consequences have to be taken into account carefully. As a result, the design for the builders' part of the project has been adopted to their number of participants and their results are not as stable as those from the bakers' fraction.

All data was transcribed in the following structure: participant number, perspective (role), new/disappeared, statement. A sample data set is given in table 4.2.

P. No.	Persp	New/Dis	Statement
13	Cus	D	Billiges Brot im Supermarkt
13	Cus	N	Kinder sprechen vom Bäcker
...			
13	Ent	N	mehr Freizeit
13	Ent	D	zu hohe Steuern
...			
13	Emp	N	Ich bin gerne Bäcker
2	Emp	D	Ständige Arbeit im Stehen
...			
5	WKO	N	Telefon Hotline
2	WKO	D	ungefilterte Infoflut
...			

Table 4.2: Sample data set from workshop (satisfiers)

4.2.2 Step-2: Analyse Data and Generate Hypotheses

After the data acquisition, the data the participants generated in the workshops was studied by seven analysts who were partly taking part in the workshops. All were trained and familiar with the methodological framework and the project. The analyse phase lasted around two days and another two days for evaluating afterwards.

In the first two days, the complex phenomena hidden in unstructured data was systematically studied and hypotheses about the needs which seem to underlying the satisfiers named were generated. This was done according to the description in chapter 3.2 applying the method of generative listening. The second view based on the Aristotelian theory of causality was experimentally done with a small part of data afterwards.

Listen Generatively

The method of *generative listening* was used in the following way:

To adjust oneself towards the necessary attitude of generative listening, a ritual was introduced. Analysts paired (A and B) and adjourned to a pleasant and silent space. Rotationally, one analyst (A) read out the related four worksheets of one workshop participant connecting the bullet point-like statements/items into a short narrative

without changing the content and adding additional information. The partner (B) listened *generatively* without any other task to do. After reading the text and a moment of silence, the partner (B) reflected and vocalized what he/she heard, what the need might be which wants to be satisfied in the narrative. The reader (A) filled out a worksheet documenting the statements of the partner (B) (see fig. 4.2). This was the crucial step of *abductive reasoning* and the first compression of data at once. One session consisted of six rounds, in the way that each analyst was three times the reader and three times the listener. After each session which took around 45 minutes, the “listening results” were entered into the analysis software. Hereafter, there was a 20 minutes brake. Pairs were mixed after each session.

Bewextra-Analytic BEDÜRFNISBLATT

Bäckernummer:

Bedürfnisse

.....

.....

.....

.....

.....

Sonstige Anmerkungen

Figure 4.2: Worksheet to document the hypotheses about underlying needs

Analysis Software ATLAS.ti

For this project phase the software package ATLAS.ti was used. ATLAS.ti supports the research in managing a great amount of data (especially text-based data). However,

ATLAS.ti is not an analytic program in a narrower sense. In contrast to statistics software, ATLAS.ti is not a tool for analysis, but rather a tool for structuring and organising (text) data. So, ATLAS.ti is not capable of any automatic analysis on semantic level. The features the program has (not) have a great impact on the design and the validity of the analysis process. (Kelle, 2000, p. 488)

Text data can be indexed, coded and structured hierarchically. As a result, codes can be linked and associated, organized on different levels, searched, counted etc. (Kelle, 2000, p. 490) However, counting codes has not to be confused with an quantitative analysis. (Kelle, 2000, p. 498) The idea behind ATLAS.ti is influenced by the grounded theory as it was first proposed by Glaser and Strauss (1967).

In the research project, ATLAS.ti was used to aggregate data, code it and organize codes hierarchically. Additionally we used memos for initial thoughts and draft codes to identify emerging concepts.

The unit of the analysis (defined as a quotation in ATLAS.ti) was each participant. The unit of coding (a code in ATLAS.ti) was the needs that were included (implicit as well as explicit) in their statements. With the method of generative listening we came up with 591 (bakers) and 77 (builders) codes each representing a hypothetical need underlying the satisfiers mentioned. In a second coding cycle, we consolidated these codes to finally 441 codes in total.

As we were working in a qualitative research framework, measurements like frequency from quantitative analysis are not applicable in this stage of analysis. The *groundedness* of the codes tells us how often those concepts have been heard in the primary documents (i.e. how often researchers have put those codes on the narratives they have heard), but this is not comparable to any frequency analysis.

Finding Patterns and Aggregating Data

After finishing the generative listening task and data entry into ATLAS.ti, the resulting 441 codes were printed out on small cards. The next level of analysis was done in a more haptic way. The cards were put down on the floor. First, obviously similar cards (e.g. typos, synonyms) were consolidated, then analysts tried to find emerging patterns, corresponding concepts etc. in the need hypotheses. Cards were rearranged, grouped and clustered. Important was the communication among the researchers in this process. Ideas were exchanged and cards were grouped accordingly. The resulting structure was transferred into ATLAS.ti and its syntax. This procedure turned out to be very efficient

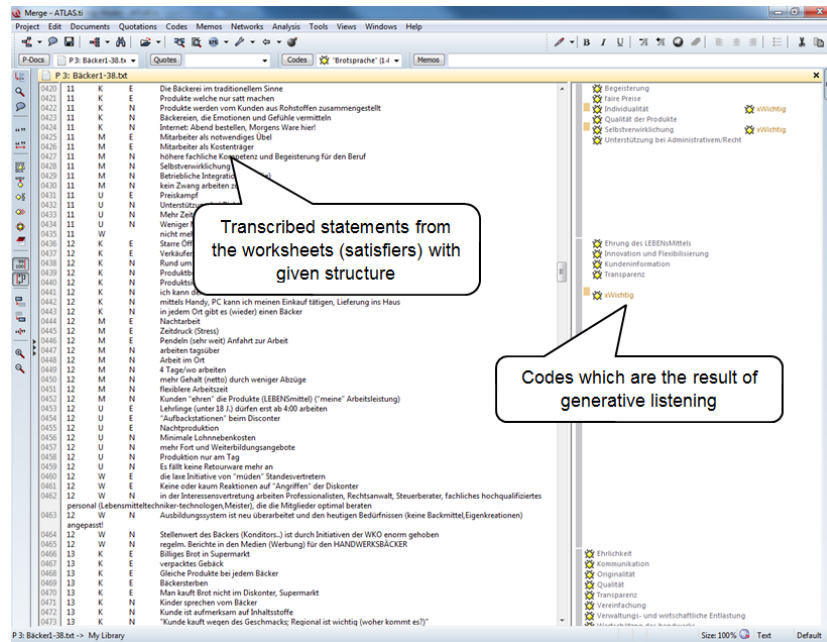


Figure 4.3: Screenshot of ATLAS.ti after the first coding cycle

and successful, it might be doubt that a pure IT-based analysis would come up with comparable results.

In this way, we derived twelve main hypotheses (with several sub-hypotheses each) about categories of needs from these codes. The results are shown in the next section.

Reflection

The method of generative listening as it was used in this project worked out. The attitude towards the data as well as the surrounding seemed to play a crucial role (as discussed in chap. 3.2). The mixing of pairs and the breaks in between reduced the probability of biases occurring. However, it has turned out that the number of generative listening sessions was quite high. In accordance with the amount of information, it might be useful to have more analysts working on the data. Further, it might be interesting whether this analytic phase can be done decentralized or if it is crucial for the process' result to have all the analysis done at one place and time.

It seems to be helpful, if the group of people who are engaging in the generative listening task is partly identical to the people trying to find patterns and clustering data, as the knowledge about the concrete narratives (which have been read out or listened to) seems to be crucial.



Figure 4.4: Haptic work on data

Summary

To sum up, table 4.3 offers an overview on the analysis stage of the project.

	Bakers	Builders
No. of items (satisfiers)	approx. 3600	566
No. of analysts	7	
Duration of generative listening	approx. 8 hours	
Duration of finding patterns and aggregating data	approx. 3 hours	
Duration of postprocessing	approx. 3 hours	
No. of codes (need hypotheses) after 1. coding cycle	591	77
No. of codes (need hypotheses) after 2. coding cycle	441	77
No. of main need hypotheses	12	12

Table 4.3: Overview on the data analysis phase



Figure 4.5: Finding patterns and aggregating data

Apply Questions of Aristotelian Causality

This section is to show how the Aristotelian causality theory can be applied to the data. However, this is done experimentally, as it was out of the scope of the project described.

With the aid of three examples take out of the data (see tab. 4.2), table 4.4 shows how the questions on the four causalities which were developed in chapter 3.2 trigger data generation which is ultimately intended to promote the abductive reasoning step.

Satisfier	Causa Materialis	Causa Formalis	Causa Efficiens	Causa Finalis
Telephone Hotline	Knowledge, infrastructure, ...	Telephone number, service agents, IT system, ...	Decision of service provider, manpower, investment, ...	Support/expertise anywhere and anytime ...
More free time	no (formal) work, leisure ...	doing things outside of work - with other purposes ...	Employer, ... (extrinsic) or employee (intrinsic) ...	Relaxation, personal growth, re-generation, ...
Children talking about the baker	Attitude, ...	Piece of communication, ...	Children's enthusiasm, raising awareness for bakers, ...	Esteem, proudness, happiness, appreciation, ...

Table 4.4: Questions of Aristotelian causality applied to data

4.2.3 Step-3: Validate Hypotheses

The last step in the project was to validate the hypotheses with which the analysts came up. According to the framework described, this was done by the persons concerned in two ways, quantitatively and qualitatively (see chap. 3.3). First, an *online survey* testing the correctness of the hypotheses was conducted (bakers and builders), and second, a *final workshop* in which the results (hypotheses) were presented and feedback was obtained to test the results' integrity (only bakers).

For this final step, the hypotheses with their sub-hypotheses (group of hypotheses) were formulated in short sentences without adding any further content. The purpose of this was to connect the phrases into a sentence to which subjects can (dis)agree.

Qualitative and quantitative validation together enabled us to accept or to reject hypotheses about needs on which the satisfiers are based on and, so, to finally create a catalogue containing explicit knowledge about substantial needs of both industries.

Online Survey to Validate Quantitatively

For the quantitative validation we used an online questionnaire (see fig. 4.6) containing the hypotheses generated in step-2. This questionnaire which was sent to all participants used the Likert scale to rate each hypothesis from 0 to 5, where 0 means that the hypothesis does not fit at all and 5 means that the hypothesis fits perfectly. (Likert, 1938) Additionally, the participants were asked to give some meta information about them, for example information about the size of the organization, the region where the company operates, etc. Additionally, participants had the possibility (optional) to comment on each hypotheses and add ideas (additional information for the project partner).

As the builders had no final workshop to evaluate the hypotheses in terms of completeness and integrity, their online survey was extended by an addition leading question about integrity of the hypotheses.

The screenshot shows a web-based survey interface. At the top, there is a progress bar indicating 0% to 100%. Below this, the section is titled "Lebensqualität und Soziales". The first question is: "*Für mich ist Lebensqualität als Bäcker wichtig. Dazu zählen meine Freude an einem sinnvollen Tun, persönliche Entwicklung und Entfaltung, Kreativität und meine Bäckerei als Wohlfühlraum. Bitte wählen Sie eine der folgenden Antworten:". It features four radio button options: "Stimme zu", "Stimme eher zu", "Stimme eher nicht zu", and "Stimme nicht zu". The second question is: "*Mir ist Gemeinschaft und Beziehung zu meinen Kunden und Mitarbeitern wichtig sowie ein menschlicher Umgang miteinander und Werte (Treue, Verlässlichkeit, Wertschätzung, Respekt, Toleranz, ...). Bitte wählen Sie eine der folgenden Antworten:". It also has four radio button options: "Stimme zu", "Stimme eher zu", "Stimme eher nicht zu", and "Stimme nicht zu". Below the second question is a text box with the prompt "Falls ich Ideen zur Umsetzung dieser Bedürfnisse oder weitere Anmerkungen habe:". At the bottom of the form, there are four buttons: "Umfrage verlassen und löschen", "Später Fortfahren", "<< Zurück", and "Weiter >>".

Figure 4.6: Screenshot of online survey (second question in bakers' questionnaire)

Workshop to Validate Communicatively

The final workshop (only bakers) was intended to validate the results qualitatively using the method of *communicative validation*. All participants of the previous workshops were invited, around 15 of them came to the final one.

In this workshop, the results of step-2 of this project were presented and explained in detail. Similarly, the outcome of the online survey was presented and discussed. The participants were provided with an executive summary of all results.

A last time travel, as it was done in the previous workshops, was conducted and in the spirit of the future participants were asked to reflect on the results and answer the questions whether these represent their future scenario holistically and completely, hence if the list of needs is complete or if there is any need missing. To do so, people formed groups and worked for around 20 minutes to discuss the results and share their thoughts (knowledge transfer). In the end, the teams were asked to give their findings in a short presentation to the others. The facilitators of the workshop collected and documented the missing (or conforming) items named in the groups' presentations on a flip chart.

Those were the resulting items:

- Sortimentsmäßige Individualisierung
- Zum Kunden Kommen [sic!] (Standortpolitik)
- Nationale Bäckerwerbung
- Lokale gesellschaftliche Verankerung
- Wir lesen den Kunden die Wünsche an den Augen ab
- 5-Tage Woche auch für Chefs
- Kundentreue
- Eigene Marke Regional
- Individuelles Coaching
- Ladnerin [sic!] Fachausbildung

If we compare those statements semantically with the definition of needs and satisfiers which has been developed (see chap. 2), it is obvious that most statements describe certain satisfiers rather than abstract needs - although, the bakers were explicitly asked to think of needs, not satisfiers (“Umsetzungen”).

However, the results of this workshop were included in the final considerations.

Reflection

The results of the final communicative validation workshop (bakers) provides evidence for the working hypothesis mentioned at the beginning of this master thesis that people have hard times abstracting and thinking of their needs which they want to satisfy by certain strategies and actions. This underlines the necessity of the framework described.

From a retrospective point of view, the communicative validation workshop might had been conducted before the online survey. So, it would have been possible to reconsider the results of step-2 and include additional and new insights resulting from the qualitative validation (workshop) into the validation of correctness (online survey). However, in the case of this project, putting the workshop first made little difference to the overall final result, as there was little new and no contradictory data to include.

Summary

To sum up, table 4.5 offers an overview on the validation stage of the project.

	Bakers	Builders
No. of participants in online survey	121	22
No. of complete answer sets (survey)	95	18
No. of participants in final workshop	15	-

Table 4.5: Overview on the data validation phase

4.3 Results and Interpretation

In this last section, the validated results of the project “Lernen aus der Zukunft für reife KMU” are presented on different levels. Additionally, explanations of each need

category based on the interpretation of the data is given.

The mind maps in figures 4.7 and 4.8 illustrate the need systems of bakers and builders.

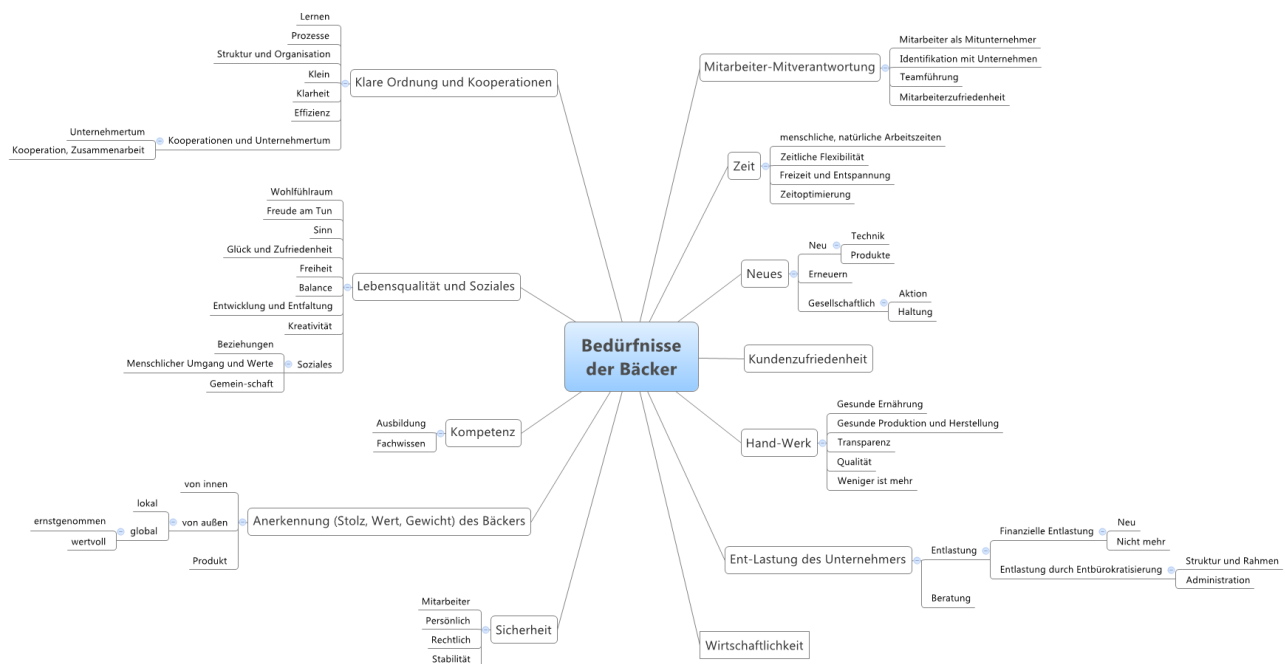


Figure 4.7: Mind map of the needs of bakers

In more detail, tables 4.6 and 4.7 give an overview on the level of acceptance (in percentage) of the need hypotheses, this reflects the results of the online survey.

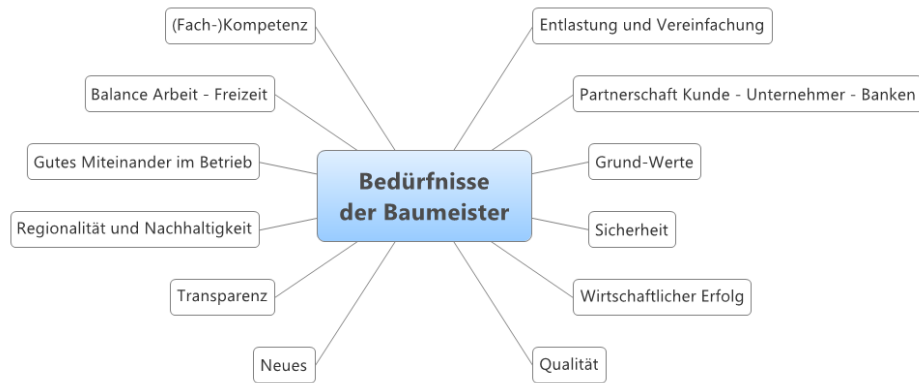


Figure 4.8: Mind map of the needs of builders

Need (hypotheses)	Percentage of acceptance
Hand-Werk	96.84
Lebensqualität und Soziales	97.37
Zeit	89.47
Klare Ordnung und Kooperationen	95.79
Ent-Lastung und Unterstützung des Unternehmers	90.53
Anerkennung (Stolz, Wert, Gewicht) des Bäckers	100.00
Mitarbeiter-Mitverantwortung	94.74
Neues	92.63
Kompetenz	100.00
Sicherheit	96.84
Wirtschaftlichkeit	98.95
Kundenzufriedenheit	95.79

Table 4.6: Bakers: Validated need hypotheses and their percentage of acceptance

Need (hypotheses)	Percentage of acceptance
Entlastung und Vereinfachung	100.00
Partnerschaft Kunde – Unternehmer – Banken	100.00
Grund-Werte	100.00
Sicherheit	100.00
Wirtschaftlicher Erfolg	88.90
Qualität	100.00
Neues	77.80
Transparenz	88.90
Regionalität und Nachhaltigkeit	94.40
Gutes Miteinander im Betrieb	100.00
Balance Arbeit – Freizeit	94.50
(Fach)-Kompetenz	100.00

Table 4.7: Builders: Validated need hypotheses and their percentage of acceptance

4.3.1 Validated Needs in Detail

In the following section, the needs identified and validated are presented in terms of the desires and strategies grounded on the corresponding need.

The bakers’ needs are the following (needs are ordered randomly, their numbers do not make any indication):

- **Need 1: Bedürfnis nach Hand-Werk (Need for handcraft working)**

Bakers want to focus on their core job and their principle tasks. We could summarize loosely this need as “back to the roots”. Closely connected to this, is the need of healthy eating and producing goods in a sustained manner. Products should be of high quality and their ingredients should be made transparent.

- **Need 2: Bedürfnis nach Lebensqualität und Sozialem (Need for quality of life and social safety)**

The need for quality of life manifests itself in following details: The bakers have a need for a comfort zone, need for joy in their actions, need for balance, need for meaning, desire for happiness and satisfaction, need for personal development and growth, need for freedom, the need for creativity. This also includes the need for social relations, value-based interactions (good working conditions, attention, fairness, honesty, kindness, loyalty, reliability, trust, tolerance, appreciation, respect) the need for community and to co-create (“Gemein-schafft”).

- **Need 3: Bedürfnis nach Zeit (Need for time)**

This need group is manifested by the need for balanced working hours, a good work-life-balance, time flexibility for personal growth, more time for social relations in- and outside of work, time for developing and experimenting.

- **Need 4: Bedürfnis nach klarer Ordnung und Kooperationen (Need for an orderly world and cooperation)**

This includes the safety need for structures and order, clearness, learning and cooperation among individuals.

- **Need 5: Bedürfnis nach Ent-Lastung des Unternehmers (Need for relief of the entrepreneur)**

This includes the need for help to focus on the main (professional) tasks. It also covers financial subsidiaries, decrease in taxes and other expenses. Similarly, bakers want to be personally relieved in their companies. Therefore, they require guidance and advice.

- **Need 6: Bedürfnis nach Anerkennung (Stolz, Wert, Gewicht) des Bäckers (Need for appreciation of the professional group)**

This includes the need for local and global appreciation for the bakers. They want people to respect their job and their goods.

- **Need 7: Bedürfnis nach Mitarbeiter-Mitverantwortung (Need for co-responsibility of employees)**

Employees should be co-entrepreneurs, the relation between them and the employer should be partner-like and individuals should identify themselves with their

job and the company. The bakers want to raise employee satisfaction and want so inspire their staff.

- **Need 8: Bedürfnis nach Neuem (Need for innovation)**

Bakers want to innovate, want to discover new things including new methods as well as new products. Additionally, there is the need for a social attitude towards openness and new ways of thinking (change, creativity, etc.)

- **Need 9: Bedürfnis nach Kompetenz (Need for qualification)**

This involves the need for training (apprenticeship, skills, etc.) and the general need for knowledge (product knowledge, technical know-how, expertise, etc.).

- **Need 10: Bedürfnis nach Sicherheit (Need for security)**

This need covers legal and financial security as well as stability (continuity, predictability, consistency, etc.). Also personal and employees' security (existence and job security) are essential.

- **Need 11: Bedürfnis nach Wirtschaftlichkeit (Need for profitability)**

Bakers want to earn money in order to secure their life and existence.

- **Need 12: Bedürfnis nach Kundenzufriedenheit (Need for customer satisfaction)**

This covers the need for social relations to the customer (communication) and the need to inspire other people for what bakers do.

The builders' needs are the following (needs are ordered randomly, their numbers do not make any indication):

- **Need 1: Bedürfnis nach Entlastung und Vereinfachung (Need for relief and simplicity)**

This need includes relief and simplification on different levels: Simplification of policy guidance, reduction of tax requirements and focusing on the essentials. Simple structure and conditions should reduce personal stress.

- **Need 2: Bedürfnis nach Partnerschaft Kunde — Unternehmer — Banken (Need for partnership between customers, entrepreneur and banks)**

Long-term cooperation and partner-like interaction are important. Customers, the entrepreneur and banks form a community of fate.

- **Need 3: Bedürfnis nach Grund-Werten (Need for fundamental social values)**

The need for fundamental social values is essential, those values include fairness and honesty, reliability, loyalty, freedom, recognition and appreciation, trust, reputation and perception, individuality. The individual should be the centre of action.

- **Need 4: Bedürfnis nach Sicherheit (Need for security)**

Security on different levels is essential: Financial security, temporal safety, occupational safety and continuity.

- **Need 5: Bedürfnis nach wirtschaftlichem Erfolg (Need for profitability)**

Builders want to earn money in order to secure their life and existence.

- **Need 6: Bedürfnis nach Qualität (Need for quality)**

Quality of work and goods (buildings) is essential.

- **Need 7: Bedürfnis nach Neuem (Need for innovation)**

Innovation on different levels is a need. This includes innovation of new technologies as well as of working methods.

- **Need 8: Bedürfnis nach Transparenz (Need for transparency)**

Prices and services should be transparent.

- **Need 9: Bedürfnis nach Regionalität und Nachhaltigkeit (Need for regionalism and sustainability)**

This need covers local thinking and ecosensitive acting.

- **Need 10: Bedürfnis nach gutem Miteinander im Betrieb (Need for professional cooperation)**

Employees should be co-entrepreneurs who are proud of and in good balance with their job. Health and a good work climate are also included in this need.

- **Need 11: Bedürfnis nach Balance Arbeit — Freizeit (Need for work-life-balance)**

The time of work and leisure has to be in good balance.

- **Need 12: Bedürfnis nach (Fach)-Kompetenz (Need for qualification)**

This involves the need for training, education and qualification.

The items mentioned on the fourth worksheet, from WKO's point of view in the future (services supporting the realization of future needs), can be clustered into the following categories. Those statements have a different quality, there are more like concrete strategies which might be able to support the satisfaction of the bakers' and builders' future needs:

Statements of the bakers (categories):

- Staff
- Training, education, apprenticeship
- Support in raising the reputation
- Advice and support
- Networking
- Structure and administration of the WKO
- Bakers' handcraft
- Time, holidays, sick leave, etc.
- Reduction of expenses

Statements of the builders (categories):

- Training, education, apprenticeship
- Support in raising the reputation
- Advice and support
- Structure and administration of the WKO

Based on the results of this project, several concrete ideas on how to satisfy the uncovered needs were developed. However, the presentation of these is out of the scope of this thesis.

4.3.2 Comparing Two Systems According to their Needs

According to the comparison approach suggested in chapter 2, the resulting need systems of the bakers and the builders are contrasted. Therefore, the needs are placed on the fundamental needs matrix proposed by Max-Neef et al. (1989) and coloured according to the extended need hierarchy proposed by Maslow (1970a). The colours indicate some kind of prioritization as described in Maslow's theory. They hint at what needs should be satisfied first. The mixture of placement on the two axes of the matrix and the assigned colour generates three-dimensional illustrations of the need systems which are thereby comparable.

This method can be included into the communicative validation workshop or even implemented into an IT-based participatory tool at the end of the process. The advantage of its integration is that participants do the positioning of the results themselves and thereby enhance the outcome.

The presented graph (fig. 4.9) is *one* possible and sound interpretation of the two need systems. Each circle represents a need category as described above on three dimensions (x-, y-axis, colour); they are numbered accordingly (in presented order). As we can see most needs can be assigned to middle and lower levels of the need hierarchy. Four (bakers) and seven (builders) categories correspond to *safety* needs, whereas only two (baker) and two (builders) correspond to *self-actualization* needs. However, no need has been assigned to *physiological* needs (lowest level) or *self-transcendence* needs (highest level). A prominent need category on the x-axis is *protection* (bakers: four needs; builders: three needs). In both cases, the *having*-axis contains the most need categories (bakers: five needs; builders: four needs).

People in power would be well advised to focus on the lower level needs first, those are all safety needs mentioned (bakers: N 3, N 4, N 10, N 11; builders: N 3, N 4, N 5, N 6, N 8, N 9, N 11)

4.3.3 Generalisability

Although, the results of this project seem to be stable and reached high approval, we must not succumb to the temptation that the conclusions can be generalized. The results have to be seen in the light of the qualitative research paradigm used which does not aim at finding representative results for a basic population. Qualitative research must not be judged in terms of concepts like reliability and objectivity which obviously do not fit into the paradigm. Rather, it aims at describing and understanding the social

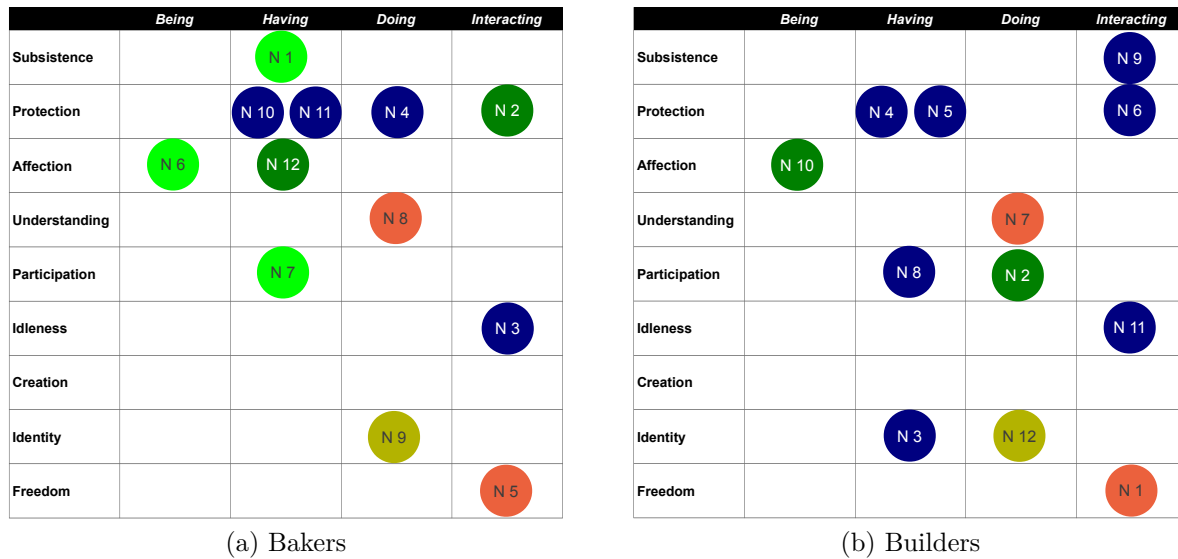


Figure 4.9: Comparison of structured need systems

reality of the actors. (von Kardorff, 2011, p. 4ff)

4.4 Summary

The outcome of this project was a catalogue of substantial needs bakers and builders have. This marks the end of the first step in WKO's approach to develop new services for their members. The combination of this valuable knowledge about the needs and WKO's expertise and "solution know-how" may lead to sustainable offerings for their member companies supporting them in sustaining their competitiveness and becoming ready for the future. (see fig. 4.10)

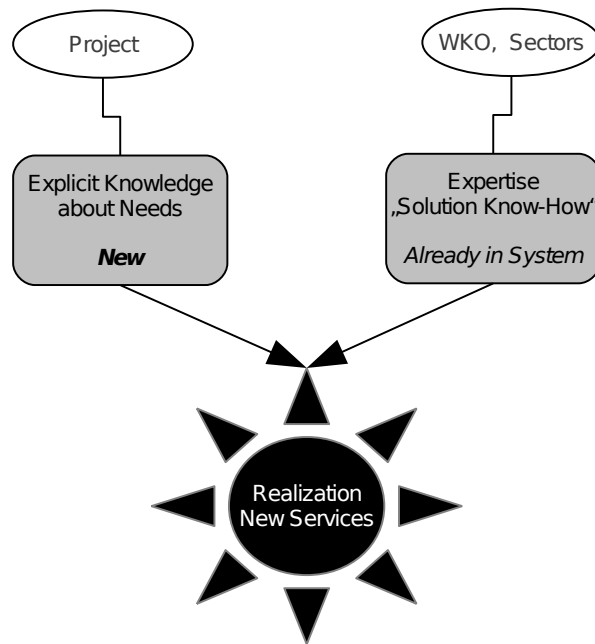


Figure 4.10: Combination of knowledge about needs and expertise

In this project, it was shown how the methodological framework developed can be applied in even large settings. With the methods used need systems can even be compared and indications for first actions to satisfy needs can be drawn.

Further research should be done on how to effectively use the second view (Aristotelian causality theory) in the abductive reasoning phase on the data with large amounts of information and how to handle the emerging results with the help of IT-systems.

Chapter 5

Conclusion and Outlook

This master thesis tried to answer the research question which was put at the beginning: *How to infer abductively - in a methodological replicable and consistent way - human needs from observable satisfiers (by researchers) in a non-instantaneous setting using qualitative research methods?*

The current state of the philosophy of need was reviewed and a stable hierarchy of satisfiers, desires and needs has been developed, further a working definition on human needs has been given.

Afterwards, a methodological framework consisting of three consecutive steps has been developed and described in detail. This should enable researchers to uncover needs underlying conscious satisfiers named by the subjects. The data acquisition phase is strongly connected to the method of interacting with the envisioned future which was developed and presented for the first time. Thereafter, the abductive reasoning step towards the hypotheses about the needs is supported by two views grounded in heterogeneous theories which have been compiled. Lastly, the bunch of hypotheses generated in the second phase are validated in two related ways. The outcome of this process framework is explicit knowledge about human needs.

In the last part, the concrete realization of this methodological framework was presented by reference to a project jointly conducted with the Austrian Federal Economic Chamber, in which needs of two different sectors were uncovered and compared.

Subsequent research should be done on the question whether information technology can support this abductive undertaking. Further, the quantitative methods for validating the hypotheses generated could be enhanced in order to derive further insights and adopt to larger basic populations.

List of Figures

2.1	An updated hierarchy of fundamental human motives	22
2.2	Matrix of needs and satisfiers	30
2.3	Hierarchy of satisfiers, desires, and needs	31
3.1	Three sources of learning	41
3.2	Step-1: Data acquisition	42
3.3	Step-2: Hypotheses generation	51
3.4	Step-3: Validation of hypotheses	54
3.5	Summary of the methodological framework	54
4.1	Worksheet to report satisfiers from envisioned future	59
4.2	Worksheet to document the hypotheses about underlying needs	61
4.3	Screenshot of ATLAS.ti after the first coding cycle	63
4.4	Haptic work on data	64
4.5	Finding patterns and aggregating data	65
4.6	Screenshot of online survey (second question in bakers' questionnaire)	67
4.7	Mind map of the needs of bakers	70
4.8	Mind map of the needs of builders	71
4.9	Comparison of structured need systems	78
4.10	Combination of knowledge about needs and expertise	79

List of Tables

4.1	Overview on the data acquisition phase	58
4.2	Sample data set from workshop (satisfiers)	60
4.3	Overview on the data analysis phase	64
4.4	Questions of Aristotelian causality applied to data	66
4.5	Overview on the data validation phase	69
4.6	Bakers: Validated need hypotheses and their percentage of acceptance .	71
4.7	Builders: Validated need hypotheses and their percentage of acceptance	72

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Zusammenfassung

Die Erfüllung menschlicher Bedürfnisse ist eine der wichtigsten Voraussetzungen für ein glückliches Leben. Dennoch scheint es, als wären wir uns unserer Bedürfnisse im täglichen Handeln weitgehend nicht bewusst, obwohl sie dieses entscheidend leiten. Wir sind vielmehr gewohnt, in konkreten Lösungen und Strategien zu denken, oft ohne die darunterliegenden Bedürfnisse ausreichend zu überdenken und zu kennen. Diese können für gewöhnlich auf vielerlei Weise und durch verschiedene Aktionen befriedigt werden. Daher ist das explizite Wissen um unsere Bedürfnisse wertvoll, denn es erweitert die Möglichkeiten unseres Handelns und ist die Grundlage für nachhaltige Lösungen und Strategien.

Das Ziel dieser Masterarbeit ist es, ein methodisch konsistentes Handlungsmodell zu erarbeiten, das sowohl theoretisch gut fundiert als auch in der Praxis mit Gruppen umsetzbar ist. Die sich daraus ableitende Forschungsfrage lautet:

Wie können Forscher/innen in methodisch konsistenter Art und Weise menschliche Bedürfnisse von konkreten Mitteln der Bedürfnisbefriedigung (wie zum Beispiel Objekte oder Handlungsstrategien) in Situationen, in denen Datenerhebung und -analyse sequentiell durchgeführt werden, mithilfe der abduktiven Logik ableiten?

Zu diesem Zweck wird dem Paradigma der qualitativen Sozialforschung folgend und unter Zuhilfenahme der abduktiven Logik ein Prozess-Dreischritt vorgeschlagen. Ausgangs- und Endpunkt sind dabei die Betroffenen, die anfangs ihre Wünsche, Träume, Strategien, etc. (Mittel der Bedürfnisbefriedigung) darlegen und am Ende des Prozesses die durch Forschende aufgestellten Hypothesen über die dahinterliegenden Bedürfnisse validieren und so zu explizitem Wissen transformieren.

Mit Hilfe des interdisziplinären Ansatzes dieser Arbeit wird versucht, philosophische Überlegungen zu menschlichen Bedürfnissen in die Praxis der Organisationsentwicklung überzuleiten. Des Weiteren sollen die verwendeten Methoden und Theorien um Erkenntnisse der Neuropsychologie, Gehirn- und Verhaltensforschung angereichert werden.

Diese Arbeit ist in drei Teile untergliedert: Nach einem Überblick über die philosophischen Grundlagen zum Konzept der menschlichen Bedürfnisse und der Vorstellung zweier Bedürfnismodelle aus den Disziplinen der Psychologie sowie Ökonomie wird das entwickelte Prozessmodell einschließlich der theoretischen Grundlagen vorgestellt. Am Ende der Masterarbeit wird gezeigt, wie das Modell erfolgreich in einem großen Projekt in Zusammenarbeit mit der Wirtschaftskammer Österreich umgesetzt werden konnte. Das Projekt “Lernen aus der Zukunft für reife KMU” hatte zum Ziel, einen Bedürfniswissenskatalog für das österreichische Bäcker- und Baugewerbe zu erstellen.

Curriculum Vitae

Florian Kragulj



Education

2011 – 2014:

University of Vienna
Middle European Interdisciplinary Master Programme in
Cognitive Science (<http://www.meicogsci.eu>)
supervised by Prof. Markus F. Peschl (study program director)

Exchange semester at the Eötvös Loránd University Budapest
(winter semester 2012/13)

Degree: „Master of Science“

2006 – 2010:

Vienna University of Economics and Business
Bachelor Programme in Business, Economics and Social Sciences
with a major in Business Administration focusing on:

- Management and Organisational Behaviour
Prof. Wolfgang Mayrhofer
- Information Management
Prof. Wolfgang Janko

Degree: „Bachelor of Science (WU)“

2000 – 2005:

Vienna Business School – Handelsakademie Mödling
Secondary college of Business Administration
with a major in Management

Degree: Reifeprüfung-certificate and VET-diploma

1996 – 2000:

Grammar school Franz-Keim-Gasse Mödling
with a major in Computer Science

Publications

Contribution to the Proceedings of a Meeting

Kaiser, A., Fordinal, B., Kragulj, F. (2014). Creation of Need Knowledge in Organizations: An Abductive Framework. In Proceedings of the Forty-Seventh Annual Hawaii International Conference on System Sciences, 3499-3508.

Kragulj, F. (2013). Creating Knowledge of Need: A Methodological Framework for its Abductive Inference. In Proceedings of the MEi:CogSci Conference 2013, Eds. Soheil Khosravipour, Brigitte Roemmer-Nosseck, Elisabeth Zimmermann, Igor Farkas, 34-34. Bratislava: Comenius University Bratislava.

Paper presented at scientific Meeting

Kragulj, F. (2013). Creating Knowledge of Need: A Methodological Framework for its Abductive Inference. MEi:CogSci Conference 2013, Budapest, Hungary, 20.06.-22.06.

Poster presented at scientific Meeting

Kragulj, F. (2012). Tracking Eyes Tracking Photographs Tracking Brains? Investigating Photographic Composition Using a Low-Budget Eye Tracking System and Interviews. MEi:CogSci Conference 2012, Bratislava, Slovakia, 22.06.-23.06.

Bachelor Thesis

Kragulj, F. (2010). Wissensmanagement und Organisationskultur: Vorstellung, Wirkungszusammenhang und Ausblick auf eine integrierte Modellhypothese. Bachelor Thesis. Vienna University of Economics and Business.

Working Paper

Kragulj, F. (2013). The artistic process making thoughts visible. Eötvös Loránd University. Budapest.

Skills

- ✓ Apprenticeship: auditor for quality management systems according EN ISO standard 9001 and 19011
- ✓ Apprenticeship: Berufungscoaching_{waVe}[®]
special coaching method supporting individuals or organisations finding their vocation or vision
- ✓ ECDL Advanced Expert (European Computer Driving Licence)
- ✓ Qualified SAP User 2002 - foundation level (with distinction)
- ✓ Several workshops on social skills at the WU Vienna
- ✓ Winner of the Vienna Business School Merkur award 2002
- ✓ Courses in photography at the adult high school

Language Skills

German (native speaker),
Hungarian (supposedly level A2 according to the Common European Framework of Reference of Languages CEFR),
English (level B2 according to CEFR),
Spanish (supposedly level B1 according to CEFR)

Work Experiences

Since 2010:

Institute for Information Business at
the Vienna University of Economics and Business:
Research group „*SUKOBAMA Knowledge-Based Management & Vision Development*“ (lead by Prof. Alexander Kaiser)
Main research: knowledge-based management & organizational culture
<http://www.wu.ac.at/kbm>

2005 - 2013:

KKS GmbH (accredited body for inspection of pressure equipment),
Korneuburg:
Assistant to the managing director and
staff unit for Quality Management and Information Management

2001 - 2005 (holiday jobs):

Alcatel Austria AG, Vienna:
Broadband Networking Division (ADSL/xDSL)

Activities

- ✓ Digital photography, especially street photography and architecture; participating in photography contests
- ✓ Sailing
- ✓ Interested in modern and contemporary art
- ✓ Community-based software (Linux), usage and development in private and business environment
- ✓ Working for the Vienna Business School's alumni club

Wiener Neudorf, January 2014