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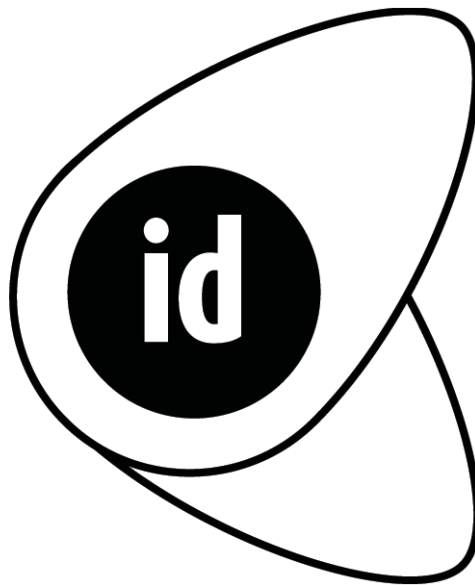
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Value and Vision-based Methodology  
in Integrated Design



Christian Tollestrup, PhD Thesis 2004

Department of Architecture & Design  
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CID

## Value and Vision-based Methodology in Integrated Design

PhD Thesis by Christian Tollestrup  
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PhD supervisor Professor Marianne Stokholm, Department of Architecture & Design.  
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## **Preface**

This PhD project is part of the Danish research framework CID, Center for Integrated Design. This research framework is a Center formed in collaboration between Aalborg University and Aarhus School of Architecture. The overall objective for this Center is to investigate various aspects of Integrated Design in order to clarify and define the concept of Integrated Design. This PhD project is a contribution to this research. Within the overall research framework, this PhD project has a focus on *methods* within Integrated Design.

The PhD project is funded equally by Department of Architecture & Design and CID through a PhD Scholarship (562/06-4-20454).

The research carried out in this thesis is based on empirical studies that involved several institutions and persons. This involvement was vital for the feasibility of the research and thus requires proper recognition.

In terms of theoretical framework, practical knowledge about workshops and fruitful discussions concerning details of methodology, the collaboration with Erik Lerdahl has been a fundamental resource. The Vision-oriented methodology and workshops by Erik Lerdahl affected my line of thinking about design and designing.

In terms of providing empirical data I will express my appreciation to the students and teachers at the institutions HH (Herning Handels- og Ingeniør Højskole), Aarhus School of Architecture and Department of Architecture & Design, AAU for their enthusiastic collaboration and willingness to take active part in the research.

Furthermore I will send a special thanks to B&O Medicom for an extensive collaboration and support by providing two development teams for a long and intense workshop. The company context was both interesting and informative.

Finally I will thank my supervisor Professor Marianne Stokholm, Department of Architecture & Design, for inspiration, support and for posing the vital and intriguing questions. And Thomas Jørgensen for language revision.

## **Abstract**

The research theme of this thesis is based on a paradigm shift in design which outlines two new premises for design.

First, the design must be based on a clearly defined set of values due to the socio-cultural development in our rich modern western society. A massive overload of products offer the same physical and functional features, therefore it is the meaning of the product that carries it through the commercial noise to the consumer's awareness. Second, the creative process is conducted by a cross-disciplinary team and the process must therefore be described.

The research object of this thesis is the value transformation from an explicit set of values to a product concept using a vision based concept development methodology based on the Pyramid Model (Lerdahl, 2001) in a design team context.

The aim of this thesis is to examine how the process of value transformation is occurring within the vision based approach using this Pyramid model (Lerdahl, 2001). This includes phenomena and methods that link abstract and concrete material together in a synthesizing manner; forming a shared vision, developing the initial coherent concepts and supporting the team learning process.

The thesis is based on empirical data from workshop where the Value and Vision-based methodology has been taught. The research approach chosen for this investigation is Action Research, where the researcher plays an active role in generating the data and gains a deeper understanding of the investigated phenomena.

The result is divided in three; the systemic unfolding of the Value and Vision-based methodology, the structured presentation of practical implementation of the methodology and finally the analysis and conclusion regarding the value transformation, phenomena and learning aspects of the methodology.





1. Introduction.....	6
The background and motivation for the research .....	7
Assumptions and Research questions .....	9
Research Approach .....	10
Structure of this thesis .....	12
Main contribution of this thesis .....	14
2. Theoretical Framework.....	16
The concept of values.....	17
Uniqueness of the company: the Brand.....	19
Creating and communicating a brand.....	21
Integrated Design and methodology.....	24
Design process.....	26
Values as guide for decision-making.....	31
Value-based approach to Design .....	32
A Vision-based methodology.....	35
Review of this methodology.....	41
Organizational and social framework.....	45
Team-based organization .....	46
Learning and creating knowledge.....	48
Communication and Qualification of meaning .....	53
Highlight résumé.....	58
3. Research methods .....	60
Paradigms in research.....	60
Typology of action research.....	62
Empirical data.....	65
Planning of workshops.....	70
Collection of data .....	72
Analysis of data .....	75
Reflection on research approach.....	77
Highlight résumé.....	81
4. The Value and Vision-based methodology.....	82
Elements in the Value and Vision-based methodology .....	84
Methods.....	84
Milestones.....	85
Structure in the Value and Vision-based methodology.....	86
Principles in the Value and Vision-based methodology.....	87
Objectives.....	87
Principles of linking and moving .....	89
Procedure and guideline.....	90
Type of movements in the procedure .....	93
Highlight résumé.....	98



5. Practicing the Value and Vision-Based Methodology.....	100
Introduction and overview of workshops .....	101
Workshop 1 (WS1) .....	106
Design and engineering context.....	106
The workshop setup and overview .....	109
The sequence of movements and observation .....	112
Comments from participants .....	120
Summary of workshop.....	122
Highlights from WS 1.....	126
Workshop 2 (WS2) .....	130
The company context.....	130
The workshop setup and overview .....	134
The sequence of movements and observation .....	140
Comments from the participants .....	152
Summary of workshop.....	154
Highlights from WS 2.....	160
Workshop 3 (WS 3) .....	162
Business and engineering context .....	162
The workshop setup and overview .....	164
Sequence of movements and observation .....	168
Comments from participants .....	176
Summary of workshop.....	176
Highlights from WS 3.....	179
Workshop 4 (WS 4) .....	182
Design context .....	182
The workshop setup and overview .....	185
Sequence of movements and outcome.....	189
Comments from participants .....	199
Summary of workshop.....	200
Highlights from WS4.....	203
Highlight résumé .....	207
6. Evaluating the Value and Vision-Based methodology.....	210
Comparing workshops.....	211
Sequence of movements.....	217
Evaluation .....	219
The milestones and values.....	220
Horizontal and vertical movements .....	223
Conclusion on comparison .....	225
Values and the Value and Vision-based methodology .....	227
Methodological phenomena .....	234
Advantages of the Value and Vision-based methodology .....	239
Unsettled aspects:.....	242
Learning the Value and Vision-based methodology.....	245





The five elements .....	245
Contextual issues .....	250
Facilitation and teaching issues.....	253
Highlight résumé.....	257
7. Conclusions .....	260
Conclusion on research questions.....	260
Concluding on research method.....	263
Further research .....	267
Perspectives of the value-based methodology .....	269
8. References .....	276
9. Appendix:.....	282
(A) Methods in the methodology.....	283
(B) Interview guide.....	294
(C) Progression and important events in the PhD project .....	298
(D) Questionnaire .....	302
(E) Design brief for WS4.....	305





## 1. Introduction

The research object of this thesis is the value transformation from an explicit set of values to a product concept using a vision based concept development methodology based on the Pyramid Model (Lerdahl, 2001) in a design team context. Developing product concepts through visions in a design team involves aspects of creativity, negotiation and communication in an organizational context. When developing products based on values, it further adds aspects of transformation and translation of these values into tangible ideas and concepts.

The aim of this thesis is to examine how the process of value transformation is occurring within the vision based approach using the Pyramid model (Lerdahl, 2001). This includes phenomena and methods that link abstract and concrete material together in a synthesizing manner; forming a shared vision, developing the initial coherent concepts and supporting the team learning process. The intention is to provide a description and process model of a methodology based on the Vision approach and dealing with value transformation from explicit values to initial coherent product concepts.

A method is a way of doing things; “a *systematic* and *orderly* arrangement of actions” (www 1). A methodology is *combining* methods and principles into a “*particular procedure or set of procedures*” (www 1). As formulated on Webster:

*Methodology; “a body of methods, principles, and rules used for a specific activity or branch of knowledge.” (www 2)*



## **The background and motivation for the research**

A key motivation for this research is formulated by the Center for Integrated Design (CID). The thesis is part of this research framework investigating various areas related to Integrated Design [Integrated Design: Integrating various parameters through a transformation process of integration and optimization].

The role of this thesis in relation to the field of integrated design is to investigate methods used in integrated design. CID state that a shift in paradigm for design is occurring in the Danish context, this shift has two new conditions for the concept of design that are relevant to the research of methods in integrated design:

1. Products must be designed on a based on a clearly defined set of values.
2. The creative process is conducted by a cross-disciplinary team and the process must be described.

### ***Values***

The first condition is related to the socio-cultural development in our rich modern western society. With a massive overload of products offering the same physical and functional features it is the meaning of the product that carries it through the commercial noise to the consumer's awareness (Kunde, 2000). The meaning and message for this product should be simple, clear and above all; unique (Kunde, 2001). One could almost say that the Maslow pyramid is turned upside down because of our wealth (Fog et al., 2002); we now focus on creating our individual social identity through the products we choose. We communicate through Brands (Kunde, 2000) and judge the products on their connotations, their immaterial value.

The marketing business has had this focus for some years and many companies have defined their missions and visions. Branding a company is about positioning the company and its product in the mental framework of the consumers. A new trend in branding is called storytelling which can be seen as an attempt to activate the set of brand values and make them more tangible for both consumers and employees in the company (Jensen, 2001; Ofman, 2002). Missions and visions for the companies should be inspiring and intriguing, constituting a reason d'être and goal for the work of the employees.

The main effort of branding is focused on the packaging and commercial marketing and not on the product it self.



As Kunde (2000) states: “in order to achieve Brand heaven, where the consumers are loyal to the brand, the company must accomplish consistency between product, concept, organization and communication,” This means that the set of brand values should be earned honestly in order for the company to succeed in the long run. However, there are no suggestions or solutions on how to integrate the brand values into the development of product concepts within this framework.

### ***Demystification means participation***

The second condition that the creative process is done in a team context has several implications for the approach to the design process. This thesis only deals with the methodology-related implications outlined here. Other implications such as the design of the product, organizational and business related aspects might very well be interesting but out of scope of this research.

A team based context means building a platform for interaction and collaboration in developing the product concepts. This platform, a common ground, must be open for participation by the team members. A methodology employed in this context must support communication between team members with different views and competencies. This means understanding the nuances and meaning of the contribution of the others and the perception of the problem at hand.

Articulating the creative process implies that a tacit and less accessible process performed by designers must be made accessible for participation. The integrated design approach includes both quantitative and qualitative parameters. Normally a designer uses a non-factual guideline; a qualitative goal, e.g. formulated by keywords and moodboard (collection of visual images expressing a desired quality). When designing based on a set of values, which constitutes a qualitative goal for the design, requirements of calibrating interpersonal communication arises; agreeing upon the interpretation of values.

This communication differs from communicating about specific objects, where tools like models, sketches and computer models are used. Even though these tools are subjected to misinterpretation, the notion of communicating about values; emotions and qualities, is even more exposed.

A methodology used in this context must support a shared development of a shared goal that also embodies non-factual parameters, i.e. the set of values the design should be based upon. Furthermore, the methodology should support the interpersonal communication aiming at defining the interpretation of these values.



Summarizing the implications the methodology should support trans-disciplinary communication in the process of defining a qualitative goal and making the creative development of product concepts and ideas available for members of the team.

## **Assumptions and Research questions**

### ***Assumptions***

In addition to the implications of the paradigm shift the research question, the viewpoint taken in this thesis is based on the following assumptions:

*1. The way the various aspects are integrated in the design throughout the design process can be determined by establishing a qualitative goal prior or parallel to developing the initial product concepts. Not establishing this goal will render the non-factual design decisions goalless and the factual decisions risk only being subjected to quantitative judgment thus compromising the coherence in solutions and deviate from a holistic approach.*

This assumption is based on the idea that a qualitative goal can function as a guideline for decision made throughout the design process concerning the integration and optimization of aspects. It is part of a holistic view on design where a goal must be relevant to all aspects of the design in order to function as a tool for integrating the aspects into the design.

*2. Developing and formulating a goal for designing the product on a higher level of abstraction, e.g. values, can influence the level of innovation by opening the mental framework and bypassing an evolutionary development on an existing solution.*

Proving the link between the use of values and level of innovation does not seem feasible due to the numerous variables involved in the design process. This is therefore an assumption. However, this assumption is supported by decision making theorists such as Keeney (1992) in the way that focusing on values can create more alternatives. On more practical level design studios that deal with human factors, such as the design studio IDEO ([www3](http://www.ideo.com)) , use low-tech interview methods to probe for the hierarchy of motivation behind actions thus trying to understand the value system of the user.

### **Research question**

Based on the background, aim and assumptions the research question is stated in the following:

*RQ: Within the framework of the vision and value based approach as a methodology for handling the value transformation from a set of values to initial concept proposals: How can this methodology be unfolded, understood and practiced in a design team context in relation to the value transformation?*

The intention is to develop and evaluate a process model related to the Pyramid Model (Lerdahl, 2001), described in chapter 2, that applies to practicing a Value and Vision based methodology. Answers to the question in form of model, examples and phenomena will be proposed chapter 4, 5 and 6.



*Fig.1.1 Conceptual illustration of research*

### **Research Approach**

Understanding and unfolding a methodology is done through a qualitative approach. The creative design process in a team context is a very complex matter with many variables and the results are usually of stochastic nature (Buur, 1989). The viewpoint taken in this thesis is that attempting to quantify and validate the methodology through quantitative measures is not feasible due to this stochastic nature. Understanding *how* the methodology can be unfolded in detail and the phenomena of *understanding* and *practicing* it is a matter of qualitative inquiry.

However, as a means to ensure that phenomena and observations are not linked to the *particular* context the empirical material is produced in different contexts using different participants.



The reoccurring elements are the Value and Vision based methodology and the introductory framework of a workshop for participants, not familiar with this methodology, in the business of developing product concepts.

The action research approach is employed in the 4 cases that are formed as workshops teaching this methodology. Thus, the empirical data is produced and gathered based on the same type of event in each case. The empirical material consists of observations and reflections from the teacher and facilitator point of view. Video clips and photos are used to document the activities and the design related material. Interviews (some informal some semi-structured), questionnaires, verbal and written evaluation on methods and workshops provided empirical data on the participants attitudes and reflections towards the methodology.

The empirical data is analyzed in an involved dialectic approach with similarities to the hermeneutic circle (Kvale, 1996) comparing single events to the entire structure. This establishes the model and methodology description in chapter 4 and the phenomena described in chapter 6.





## Structure of this thesis

### **Chapter 2**

In this chapter the three main contextual frameworks of the thesis are outlined:

First; the concept of *values* and value economy is defined and presented. This represents the overall context of the thesis and provides a framework for discussing values and products in a societal context.

Second; the conceptual framework for the activity in this thesis is *designing*, with focus on the initial phases of the design process. Two main aspects of the design process are discussed and the *integrated design* definition central to understanding the purpose of the methodology is presented. The *Vision based approach* from Lerdahl (2001) that forms the basis for the methodology presented in chapter 4, is unfolded and discussed.

The last framework is related to the context for the activity; the organizational and social aspects. Aspects of creating, learning and communicating together in a team are reviewed using theory of the learning organization, learning theory and communication theory.

### **Chapter 3**

In this chapter, the methodological framework for the research is outlined. The general approach Action Research as the main form of inquiry is outlined and the specific practical approach to producing, collecting and analyzing data is presented.

### **Chapter 4**

In this chapter, the generic system of the Value and Vision based methodology is proposed. This is a process model related to the Pyramid model by Lerdahl presented in chapter 2. The main concept of the methodology is the definition of *horizontal* and *vertical movements* representing dynamic relations *on* and *between* levels of abstraction. These notions are used in the following chapters as tool for discussion and analysis.

### **Chapter 5**

In this chapter, examples of practicing the methodology are presented. Four workshops teaching the Value and Vision based methodology are unfolded by their context, setup, process and sequence of movements, evaluation by participants and analysis of the systemic use of the methodology.



This provides examples on how the generic methodology can be practiced, taught and learned.

### **Chapter 6**

In this chapter, the relation between the generic model and practicing the Value and Vision-based methodology is reviewed.

First, the workshops are compared and differences and similarities are outlined in order to establish whether the participant's background and context influences the practicing of the methodology.

Second, the transformation of values into product concepts in the practical application of the methodology is analyzed and important phenomena are presented.

Finally, the facilitation and learning of the methodology is reviewed based on the empirical experiments and learning theory.

### **Chapter 7**

In this chapter, conclusions on the research are made. The findings are summarized and related to the research question. The research methods are evaluated and some conclusions are drawn. Finally, further research - both deeper and broader - is proposed.



### **Main contribution of this thesis**

The main contribution of this thesis is unfolding of the process of the Vision Based Methodology as operational and dynamic counterpart to the Pyramid model using 4 levels of abstraction (Lerdahl, 2001). The pyramid model provides a 'language' for discussing design related issues on 4 levels of abstraction.

This thesis highlights phenomena of use and learning of the Vision Based Methodology. The related phenomena of practicing the methodology described in this thesis propose a basis for navigating between the levels in order to transform explicit values into initial product concepts consistent with these values.

Describing the systemic qualities of the methodology and its ability to integrate and synthesize values and product ideas is seen as a contribution to design methodology, under the new paradigm of design (Nielsen, 1999) that prerequisites a value base for the design in the creative process, in a cross disciplinary context . The Value and Vision-based methodology is a contribution to understanding the methods used in integrated design and the role of a vision based approach. Furthermore, this can be seen as a contribution to the vision-oriented paradigm of design suggested by Lerdahl (2001).

Unfolding the details of the methodology provides a more generic and operational level of information that might be used in other contexts than traditional product design. Through this description and unfolding of the methodology a step is taken towards a handbook in using a vision-based approach and consciously dealing with the philosophy behind the product when developing the initial product concept.





## 2. Theoretical Framework

In line with our modern society's increasing focus on values and emotional, immaterial aspects of products and services, created in cross-disciplinary teams, the framework for this thesis operates within 3 main perspectives.

First perspective is the *concept of values* in relation to products and companies exemplified by the value economy and the systems and terminology from the phenomena "branding" and "storytelling."

This sets the scene for product creation and development with a focus on the immaterial values that are as equally important aspects as the material and functional aspects. The value economy provides the reason for dealing with values and the importance of focusing on this aspect in designing products and services.

The second perspective is the *Integrated design process* using a *vision based methodology* when developing product concepts. This approach has a more explicit focus on values and immaterial aspects, and therefore it is assumed that the process of transformation is more evident. The vision based design methodology provides a system of concepts, an apparatus, for understanding the product and its intrinsic values and abstract aspects. It also provided some of the design methods and the overall process methodology. A value-focused decision theory aspect provides a model for understanding the concept of higher objectives as a tool for creating more alternatives through the use of higher values.

The third perspective is the *organizational framework*, in particular the notion of the learning organization; here we find overlaps with the vision based approach. The shared aspect is the development of shared vision as a tool for creating common ground and setting a shared goal for the team and the entire organization. Other relevant aspects of the learning organization include the team learning and mental models, which concern the building of shared meaning. The aspects of organizational theory provides insight of the team based conditions in respect to learning and sharing a common goal as important aspects of communicating and creating something together in a social context.



## The concept of values

In the world of communication there has been focus on values for a long time, usually in relation to marketing and selling a product or service. In the following, a brief introduction to the value economy and branding will be presented. The value economy and semiotics of marketing form a basis for understanding the notion of values in relation to products.

### **Definition of value**

To begin with, we have to define the meaning of “value” in this context. The term value has a multi-faceted meaning. The first association when thinking of values is the material aspect, the monetary value. But in the context of developing concepts for new designs, products and services, there is another and more inspiring aspect in a creative sense. This is the immaterial value that describes the abstract worth of a product or a service.

The dictionary definitions unfold these aspects further. Wordsmyth ([www.1](http://www.1)) defines value in the following manner:

1. An amount, esp. of money, considered to be equivalent to, or suitable exchange for, a thing or service.
2. Inherent worth, importance, merit, or usefulness.
3. Degree of merit or usefulness.
4. Pl.) principles considered most important; moral codes

It is a combination of 2, 3 and 4. Interestingly, value is both a concept, an idea, and simultaneously it is an expression of degree of the same concept. Webster ([www.2](http://www.2)) adds the notion of: “*something intrinsically valuable or desirable.*”

When referring to the values of a company, this could mean both the monetary value of the company (1), as well as the value of the role that the company plays in the context (2 and 3), i.e. the local community. However, it could also refer to the principles by which the company acts and the system that guides their thinking. These principles could be called the *value system*.

The same set of values could be applied to a product: the monetary value of the product, the social value of the product and the principles or moral codes associated with the specific product or the type of product.

The notion of values regarding products are, in the semiotic sense (Dahl & Buhl, 1993) related to the added material and immaterial values of an object or a service.

These values are a combination of the values communicated and the perceived values by the consumer and depend on a number of factors regarding the manufacturer: The Company's identity, product, behavior, communication, image, and the user's personal experience, information from the media and impression from other groups (Fig.2.1)

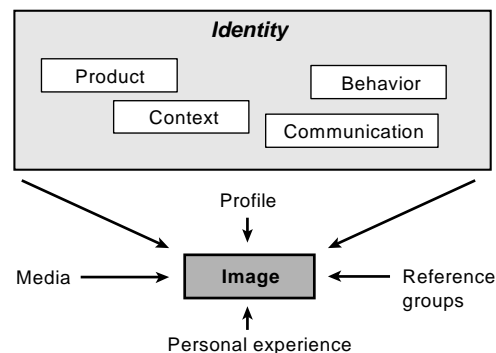


Fig. 2.1. The image model from Dahl (1993). Own illustration

As applied in this thesis, the values are a way of describing connotations (Dahl & Buhl, 1993); the immaterial added value of a product. The monetary value and the value chain (from company to consumer) are not within the focus or framework of this project.

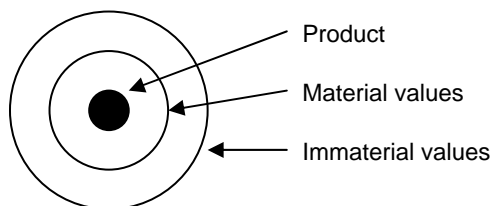
Using values as guides (4) when developing products or analyzing products for their inherent value and worth (2/3). Both are related to the values of the brand, since the connotations are the perceived immaterial values and this perception is connected to the manufacturer. Another value would be the functional value, i.e. the ability to perform certain routines or functions. The latter value is not under consideration in this project. The focus is on using values as *guidelines* during the development process.

### **The purchase of "values"**

As consumers we now expect the product to have certain functions and features, so there are other parameters that guide our choice; the values of the brand. We buy a story as well as a physical product or service (Fog et al., 2002). Jensen (2002) explains it this way:

*"The product quality is taken for granted, the consumer asks for something else and more, an emotional appeal, a story. The industrial products are not only supposed to function, they are supposed to tell a story through its signals and design. It is the same for the products of the information society as their functions gradually are taken for granted. It already is so for mobile phones that sells on their color and design"*

The semiotic description (Dahl & Buhl, 1993) is that the denotative aspect, the basic features and functions are similar for many products (Fig. 2.2). The connotations describe the material and immaterial values associated with the product, and this is where the products should deviate from each other and stand out:



*Fig. 2.2. The semiotic description of a product and the added value (Dahl, 1993). Own illustration*

The emphasis on the immaterial connotations varies with the different product categories and it also varies from one person to another. Kunde describes the phenomena as a puzzle; one person may have certain product categories where the brand is important, in other categories the price is important. The combination of brands in different categories is a way of expressing our identity and navigating in the social context. This constitutes the upper level in the Maslow pyramid. As Fog points out (Fog et al., 2002): in the western world we can maintain a high standard of living, and therefore we focus on the social values of the product: the Maslow pyramid is turned upside down.

In relation to values as connotations, the perception of these values by the user / consumer lies beyond the scope of the project, and it will require extensive sociological expertise to decipher lifestyles, products and values (Dahl, 1997). Hence, the values in focus are the values functioning as guidelines during the development of a concept. These values, however, can easily be related to the value system of the company and other stakeholders, since this will place the product in their internal value or branding systems.

### **Uniqueness of the company: the Brand**

The value economy lays out new conditions for companies, bringing new parameters to the competition for consumers. Kunde (Kunde, 2000), Fog (Fog et al., 2002) and others claim that an increasing number of companies are able to manufacture the same product identical features. This influence the competitive parameters that now not only can focus on features, but have to focus on soft aspects; the emotions and values.



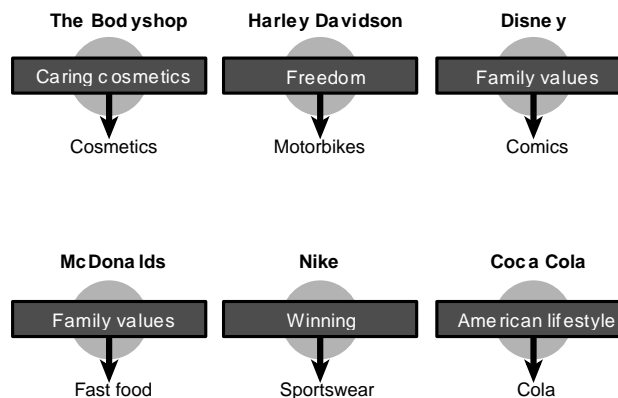


The uniqueness of the company that is trying to penetrate the market is therefore important as Kunde explains in “Unique now or never” (2001). The company must define and signal a unique specific set of values; it must define and develop its brand.

Kunde states that these values should be clear, consistent and strong and communicated globally, thereby increasing the total potential market through geographic expansion, not by expanding the target group through a broader and less clear signal (Kunde, 2001).

*A Brand is the perceived added value represented by a company or a product and comprises of both quantitative and qualitative values; facts and feelings (Fog et al., 2002)*

Many of the examples brought forward are related to the American lifestyle (Fig. 2.3) and the values connected to this lifestyle are about freedom, will, etc. Companies such as Nike, Harley Davidson, and Coca Cola sell more than just the generic products, they sell an idea; a set of values:



*Fig.2.3. The companies uses generic products to sell their values (Kunde, 2001). Own illustration.*

In this context, one can link companies together on the level of their values; companies such as McDonalds and Disney sell the same values to the customer and can therefore be linked. This is obvious whenever a new Disney Movie is released, small figures from the movie can be purchased with the Happy Meal. This connection is possible because their philosophies and values are related. Selling the same figures in a Hard Rock Café or expensive restaurants is less obvious because there is no direct link on the spiritual level.



Defining and maintaining a high level of awareness in the mind of the consumers is an objective for all companies. In the terms of the value economy, the objective is to elevate the company brand to a religion for its consumers.

Once the consumer swears to a certain brand, the brand can move to other product and service categories and through the values that characterize the company they move into the particular market. The existing companies in the category are unaware and cannot foresee this competition; the competition is about values, not brand specific features. As a prime example, Virgin uses the company Virgin that moved from records into airlines and which is now active within more than 150 categories. Throughout the expansion Virgin has used its slogan that states its mission: "Up against conventions". This refers to the history of the company; a long battle with British Airways embodying the conventions of the airline business.

## **Creating and communicating a brand**

### ***Storytelling***

As a means of communicating the set of values of the company, the brand, telling a story is one of the tools. Telling stories is an ancient human activity (Jensen 2002) and stories can contain morale and be efficient to evoke feelings and interest. As Dahl (Dahl, 1997) states: "Story is part of giving meaning to life".

In the company context, the story is active branding (Fog et al., 2002) containing the values of the brand and communicating them through a story. This communication is bidirectional; it can be used internally towards the employees, creating enthusiasm and a sense of direction. And it can be used externally in communicating the values to the consumers. Fog explains:

*"The explanation is simple: values in themselves are empty words. When the company values are a bulleted list in the annual rapport, in the management meeting or in the image brochure, they are anonymous and irrelevant. The factual management language only talks to the mind, not the heart. But through a story that contains strong images and human identification, the values are placed in a dynamic context that we can relate to. The values make sense in relation to the our everyday life and become relevant to work with" (Fog et al., 2002, p. 55"*

The tools for evoking our feelings are the phases and roles. The phases are classical and can be used to describe many stories and movies as well. The three phases are; a fixed situation that is interrupted by chaos and settles into a new situation. In the Hollywood world, the new situation would be the happy ending. The story also contains a number of roles (Fog et. al, 2002); the provider, the receptor, the helper, the hero, and of course the opponent:



The hero of these fairytales (Fog et al., 2002) would be either the employees or the company (or its founder). The opponent is necessary for creating dynamics, something has to be overcome and the enemy now has a face, a character in a fairytale as the evil adversary.

The good story tells a tale of morality, where the company values are the “right way”. The story is about creating meaning, giving the answer to the question of the meaning of life, the way to navigate life or an identity. (Jensen, 2002):

*“Stories of meaning of life are best told by entities like the church or the national feeling.”*

*“Stories of navigating through life is educational and teach us how to behave, this is told by beneficial organizations such as Red Cross.”*

The identity story is used in almost all commercials and fulfills the need for proving that our existence is important. The storytelling concept is mostly concerned with the communicative aspects and demonstrates the importance of transforming the values to something more operational that is easier to handle, communicate and understand. Using a story as a container and activator for a set of values is making something abstract more tangible and relevant.

### ***Improving the brand position***

Kunde (Kunde, 2001; Kunde, 2000) points to the improvement of the brand position require coordination and improvement in the following aspects;

- The product
- The concept (the product and concept defines the mission)
- The profile
- The organization
- The communication

There must be *coherence* between what is claimed as values and the actions that the company takes. Kunde stresses the importance of improving both *quantitative* and *qualitative* values behind the Brand simultaneously.

Otherwise, the consumer will eventually see through the façade and the company will be deemed undependable. An example of a company that communicates one thing but takes other actions is Benetton. They portrayed strong images of the poor and the hungry in their marketing material that evoked many feelings of sympathy and righteousness. However, their actions did not reflect this; instead they sponsored a Formula One racing car.



On the other hand, a company such as Body Shop that sells non-animal tested cosmetics actually joined the effort to stop animal testing on cosmetics. Thus, the company acts in accordance with its own set of values, which is “caring cosmetics”.

The branding literature (Ofman, 2002; Kunde, 2000; Kunde, 2001, Fog et al., 2002) is in general focused on the packaging of the products, the marketing material, and the graphics and, to a lesser degree, on the services. They do not deal directly with the designing of the product that but rather focus on selling what already exist through the other means. Kunde is the most specific pointing the effort to improve the brands position includes developing both the emotional values and the rational values (Kunde, 2000 p.75):

#### **ESP**

The emotional selling point is an emotional argument for the brand. It is the answer to “why this product/brand”; why is this product better, why does it exist, why should you buy this specific product?

#### **USP**

The unique selling point is a rational argument, it is the “what”; what can this product do that the other cannot, what is unique about this product, what makes it special?

The emotional selling points are harder to document, as they are connected to the feeling and emotions. In the marketing semiotic terms; it is the desired connotations for the product; describing the immaterial values (Dahl, 1993).

The ESP’s for a sports car could be connotations such as “Sporty” and “Dynamic”, whereas the connotations for a family car could be “Practical” and “Versatile”. These connotations will only work in connection with practical features and functions that underline the emotions. Otherwise, they lose their meaning.

The unique selling point for the same two cars would be more related to specifications and solutions. The sports car’s USP could be the “maximum speed”, the “road grip” and other features related to the image and values of the sports car. The family cars USP could be the “number of seating combinations”, the “storage potential” and the “gas mileage”.

The USP are solutions and features that are easily verifiable, whereas the validity of the ESP is subject to a more subjective and interpretive judgment.

However, no methodology or approach is presented to deal with this integration and development of ESP and USP.



### **Integrated Design and methodology**

The design methodology presented in this thesis is a part of a *Vision-based* approach to design. Using a vision is a way of focusing on *values as objectives*. These objectives are established in the beginning of the design process in order to navigate towards the goal, thus being able to *integrate* and *synthesize* various aspects of designing the product.

In the following, the chosen definition of integrated design, the design process and phase in focus and value-focused methodology will be presented. Finally a more specific example, the Vision-based Methodology by Lerdahl (2001), which forms the basis for the methodology used in the empirical data, will be outlined and reviewed.

#### ***Integrated Design***

The perspective on design taken in this thesis is Integrated Design (Stokholm, 2003; Nielsen, 1999). The term Integrated Design is related to the paradigm shift in design from the material to the immaterial, which is in line with the viewpoint of the concepts of Branding (Kunde, 2000) and Storytelling (Jensen, 2001). In relation to Integrated Design it introduces two new premises to the concept of *Design* that is very relevant to this thesis:

1. Products must be designed on the basis of a clearly defined set of values.
2. The creative process is performed by a cross-disciplinary team and the process must therefore be described.

The first premise is related to the development in society and the value economy reviewed in the previous section. The clearly defined set values is related to the connotations and immaterial values of the product that can stem from the company Brand (Kunde, 2000), the use context, the culture, etc. Nielsen (1999) states that the success of products depends on the values of the company expressed through the products comply with the priorities of the consumers. This establishes a focus for Integrated Design on *context* and *Value Mission*.

The second premise is related to the increasing complexity and systemic qualities of the products. This places Integrated Design in a *contextual cross field* where *System* is used as a metaphor and approach to design.



Webster (www2) defines a system as “an organized integrated whole made up of diverse but interrelated and interdependent parts”. This could be “a group of devices or artificial objects or an organization forming a network especially for distributing something or serving a common purpose” (www2).

The system-definition used in this thesis broadly defines a system as *elements* (e.g. devices/objects/parts) located in a *structure* (e.g. network/organization) functioning by *principals* (e.g. purpose/interdependent relations) as seen in II.2.4. The notion of a product concept is closely related to this system definition. The product concept defines various elements with relations expressed in a principal structure with principal functionality.

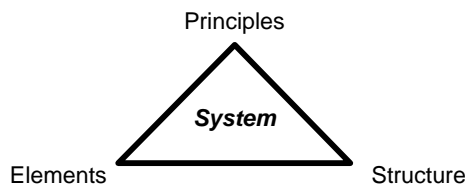


Fig.2.4 A system comprises of elements, structure and principles. Own illustration.

The process is of high importance in Integrated Design as stated in the second new premise of design. Within this viewpoint design is understood as a transformation process. The transformation is carried out through integration and optimization.

***Integrated Design -concept and focus***

- ***Design as a contextual cross field***
- ***System as a metaphor and approach to design***
- ***Understand design as transformation processes***
- ***Transformation through Integration and Optimization***
- ***Focus on context and Value Mission***

***(Stockholm, 2003)***

The objective for the integration and optimization can be expressed in different terms. In quantitative terms this accounts for requirements, specifications and demands that the product should meet. In qualitative terms it accounts for the specific set of values as expressed in the first premise.

The concept of Integrated Design implies a holistic approach through the *contextual cross field* and *integration* of various aspects. Any design activity should from this point of view include objectives that can be related to *all* relevant aspects and parameters. In this thesis the subject of investigation is a methodology focusing on the initial concept development, thus the focus is on the design *process*, not the product that is designed.



### Design process

#### ***Generic structure and principals***

The design process is interpreted and implemented in many ways depending on the cultural, business and paradigmatic context. In an overall view there are two major approaches to the design task (Stolterman, 1994); the “aesthetic approach” and the “guideline approach”.

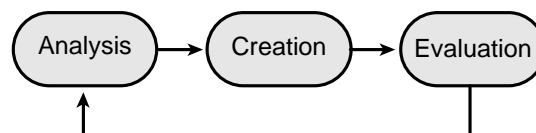
In the aesthetic approach aspects of intuition, personal experience and values are predominant as guide for the designer. Without many externalized tools the teaching is related to crafts apprenticeship and the design process can be viewed as a black box that cannot be rationalized (Jones, 1981).

In the guideline approach the focus is on generic principles and the understanding of the process in order to control the outcome (product). This approach views the process as a glass box (Jones, 1981) and therefore the process is subjected to prescriptive design processes, some being almost manuals.

Within the framework of Integrated Design used in this thesis, the second premise in the new paradigm is bringing the design process closer to the guideline approach. The creative process is to be described in order for others to participate.

There are a few common principals that most versions of the design process share; the iterative approach and divergent and convergent phases.

The iterative approach implies an intrinsic trial and error structure. The design process is of a creative nature thus the answer is not known in advance, but emerges from some form of experimentation (Striim, 2001). The basic principal is exemplified in the model by Stanton (1998) describing the generic phases of design in fig.2.5.



*Fig 2.5 The generic phase of the design process (Stanton, 1998). Own illustration.*

Stanton's model illustrates a basic principal of action that creates some form of material that can undergo an evaluation, i.e. evaluate the outcome in relation to the prior established objectives. From this point one can analyze the current status and what the next step should be.

This creation and evaluation can be further elaborated in terms of divergent and convergent phases in a process (fig.2.6). In addition to Stanton's model, this includes the notion of synthesis. In the divergent phase experimentation is performed and solutions and suggestions are created on the basis of the current status. In the convergent phase the various solutions and suggestions are analyzed, evaluated and synthesized reaching a new status. This involved intrinsic iterations of analyzing the current status in relation to the objectives of the design, as well as iterations from one status point to the next.

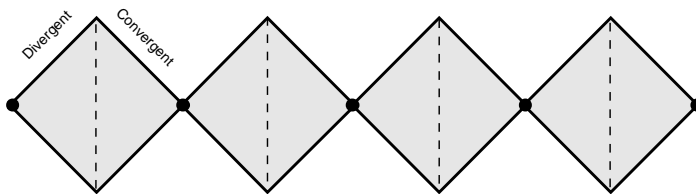


Fig.2.6.. Divergent and convergent phases: the generic design process. Own illustration

Both models prerequisite that objectives as reference points are established prior to the evaluation phase.

### **Concrete structures and phases**

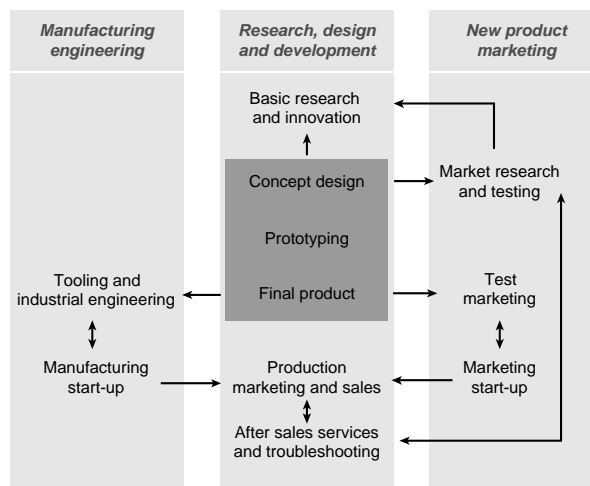
The type of objectives established prior to entering the design process phases vary in the more concrete process models.

Roozenburg & Eekels (1995) focus on a given *function* to be performed as the starting point and perform the analysis and consequent synthesis on that basis. The analysis of the function leads to criteria of what is to be synthesized. This approach has an emphasis on functions as the tangible focal point that can lead to specifications that the product should meet. Connotations and immaterial values are not explicitly handled in this approach.

Ulrich and Eppinger (1995) assume that a *mission statement* is already formulated and operational at the beginning of the process. They believe that it is possible to translate customer needs into precise specifications. Although Ulrich and Eppinger bring in the mission, there is still a matter of the relation to the objectives and specifications. The direct translation between customer needs and specifications does not involve the mission statement, i.e. it does not explicitly use the immaterial values in the translation process.



In the design process model of *Product Design and Technological Innovation* from Roy and Wield presented by Press and Caplan (1995), the concept development process starts with *given* objectives as seen in fig. 2.7.



*Fig.2.7. Innovation comes before concept design according to Roy and Wield (Press and Caplan, 1995) – own illustration.*

In this model, the innovation process lies *before* the design process and is part of the research process, thereby separating synthesis, innovation and the setting of the overall objectives.

None of the presented approaches combine the establishing of objectives with the design process, nor do they take into account that the objectives should be able to relate to all relevant aspects. The models and approaches assume that objectives and maybe even the idea already are established prior to the design process.

The “fussy front-end” is not described in detail, yet seen from the viewpoint of integrated design this is where interesting and decisive factors are developed. In integrated design, the objectives are an intrinsic part of the process because optimization prerequisites objectives to be established.

### ***Innovation and creativity***

The viewpoint taken in this thesis is in line with the definition used by Darsø in “Innovation in the making” (Darsø, 2001, p.158-159).



In creativity the criteria of the products (both material and immaterial) should be unique only to the creator, and the product should meet the criteria for purpose and value that the creator has determined as stated by Welch (1980, in Isaksen, 1988). Creative processes are associated with feelings and humor, and in some cases creative activities can obtain a 'flow'; a state of self-reinforced associative activity (Chikszentmihalyi, 1990)

In innovation the criteria of uniqueness include the recipients, not only the creator. This means that the product should be unique for and meet criteria established by management and clients. Innovative processes involve research, focus, divergent and convergent thinking, conceptual and cognitive processes in defining the problem (Darsø, 2001). Furthermore the driving aspect of the innovation process, could be either user-driven or technology driven depending on the design task at hand. In this thesis the focus on vision-based stage of the methodology that embodies the user-oriented aspects, thus being user-driven innovation."

In short "Creativity is getting the idea, innovation is making it happen" (Gamache, 1988).

This means that creative processes are an intrinsic part of the innovative process in relation to getting ideas. However the innovative process is concerned with getting the 'right' ideas. This is where research, focus and meeting external criteria come into play.

### ***Holistic viewpoint***

When pursuing the *holistic viewpoint* in Integrated Design objectives should be established in the beginning of the design process and objectives for optimization of all aspects should be considered. In that way, aspects and parameters not able to be formulated as precise quantitative specifications also require objectives.

The immaterial values and connotations for the product are not precise and quantifiable parameters but they embrace the entire product and should be coherent with the denotative aspects. A holistic view upon the product implies that immaterial values could be used as overall objectives for guiding decisions, including decisions regarding quantitative aspects - a form of qualitative value specification.

The design process involving values in a design team context involves at least three interesting activities influencing the process; the meaning making, negotiation and decision making.



## Theoretical Framework (2)

Meaning making is related to the reason d'être for the product, both in terms of quantitative and qualitative values.

The decision making and negotiation relates to the integration of aspects in the experimentation that affords a negotiation between the members of the team (Routledge, 1998).

An example of using values in a decision making process is found in Value Focused Thinking (Keeney, 1992).

### Values as guide for decision-making

An example of how values can be used to guide decisions-making is presented by the decision-making theorist Ralph Keeney describing the abstract guideline in value-focused thinking (Keeney, 1992). The overall idea of thinking about values is focusing on a higher objective and thereby opening for new alternatives. Instead of limiting the scope to the specific decision context, one is supposed to look upon the higher objectives for the decision context as illustrated in fig. 2.8:

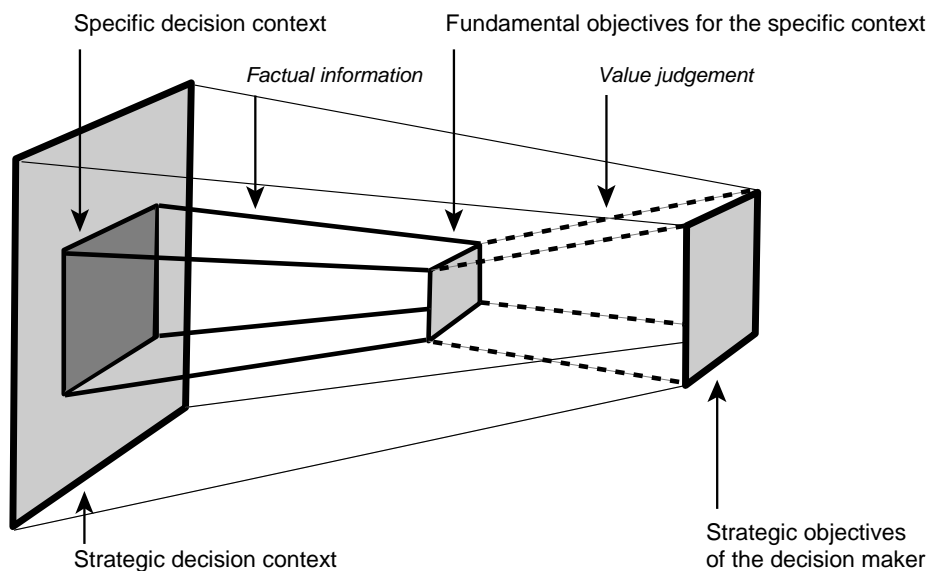


Fig.2.8. The value-focused decision framework (Keeney, 1992) shows that a specific decision is placed in a larger strategic context. Own illustration.

By using the overall objectives to derive new alternatives, one is bypassing the specific context, its limits and specifications and opening a strategic context with more alternative solutions that can be of a totally different nature.

There is an analogy to the design process and the analytical phases of analyzing a problem by looking at a higher objective and motivation and using that as a tool for new solutions. In the research phase, some design companies such as IDEO have a strong focus on human interaction. They use the method of the "5 whys" in interviewing and observing the users. This leads to a hierarchy of motivating factors, hence discovering the objectives of the user and opening a design possibility of fulfilling the needs of the user through alternative solutions.



### **Value-based approach to Design**

The immaterial values and qualitative values can originate from many sources; the use context of the product, the culture, the company Brand, the members of the design team, etc.

The Brand is an already described set of values that could be used in the design process as outlined in the following. However the implementation of Brand values in the particular design process and product might influence the set of values and require *contextualization* of the values in order to make them tangible. One way of making the abstract values tangible in the context is the use of a vision as a *methodology*. This will also be outlined in the following.

#### ***The Brand as source of values***

In a company context the brand values might be a given. A specific company is designing and producing products to the mass market and according to Kunde should they should send clear signals about their Brand. In the communicative aspect the concept of Storytelling has been discussed. The connection between Brand and product is described by Press and Caplan (1995, p.265). In designing a product the objectives would be:

*“To reflect our values in the design of our products. To develop a consistent design” across the product range. To define clearly through design the attributes of each brand.”*

This approach is about implementing the already defined values in the product in a form of translation process implementing the values in the design of the product. The approach and strategy is:

*“Design products that are innovative, easy to use and maintain and which are reliable and durable. Develop a design semantic that should form the basis of the complete range of a product group. Use brand attributes as defined by marketing as significant elements of the design brief”*

The “easy to use” and “reliable” are related to the denotative aspects of the product – it is expected and therefore does not distinguish this product from its competitors. The design semantic is the translation of the immaterial qualitative values as defined by the marketing department. This implies that the concepts development is not exclusively performed in the product development department (Kunde, 2000 p.244). This constitutes a qualitative guideline derived from the brand values and attributes that should guide the product design.



Transforming the brand values might be an ambiguous task, and as Lerdahl (Lerdahl, 2001) points out; the values for a specific product and the marketing produced brand values should have a relationship, but not necessarily be the same; i.e. the values for the product should be more specific.

This indicates that it is not just a matter of translating these values into form, but they are transformed in the process. This process can involve a vision which will be discussed in the following.

### ***The vision as method for making values tangible***

A way of making the goal and values tangible and relevant is using a vision. The vision is something imagined and therefore requires the power to imagine and envision a state different from the present state, for instance a future state. Kunde (Kunde, 2000) describes a vision for a company as “a leading star that one should strive after”; it should be “a mental image of a desired future situation”. In a product design context the vision will be “the desired future product and interaction with this product” and the objectives will be “a leading star for the design process”.

[Vision]:

- the act or power of imagination (Merriam-Webster)
- the power to anticipate or foresee future events or ideas (Wordsmyth)
- Something present in or experienced by the imagination but that is not actually present or true. (Wordsmyth)

For designers the qualitative goal is not a new invention. As Manu (Manu, 1998) described there should be something *more* behind the design of a product, he calls this the ‘Big idea’ of the design.

When referring to companies the terms mission and vision are often used and can be confused. To clarify the understanding and use of these terms in this thesis the definition of mission from Jensen (2001) is used:

A *mission* is the reason why we are here. It defines a frame or principle, not a movement. It is the guiding thought.

This gives the following relation; the *mission* defines the framework, the *vision* provides the leading star and the *strategy* is the immediate plan for working towards the vision.

A methodology dealing with vision as a guideline is described by Erik Lerdahl in his thesis “Staging for creative collaboration in design teams”.



Lerdahls methodology is inspired by the ViP (Vision in product) approach by Hekkert (Hekkert, 1997) that consists of 4 steps:

*Hekkert [1997] and colleagues developed a design approach, called the ViP (Vision In Product) approach, that puts more emphasis on the development of a user-product Interaction Vision and product vision as guiding principles for the design process. Inspiration for this approach came from interviews with designers, and their way of approaching a design task. It is based on “the generation of a product vision, a view or understanding of a new relationship between a future product and a future environment”. This approach consists of four steps:*

- 1. Destructuring or breaking down the old context*
- 2. Creating a new framework or context*
- 3. Developing a vision for the user-product Interaction Vision and a product vision*
- 4. Generating concepts based on the Interaction Vision and product vision.*

*The destructuring step consists of breaking down the old problem space where the designer tries to get hold of all kinds of knowledge, conventions and assumptions regarding the problem. In the next step the intention is to create a new framework or context. This can be based on unease with the current situation or drawing a picture or scenario of a future context. The next step is to develop a vision for the user-product Interaction Vision and a product vision. In courses and workshops where this approach has been used the Interaction Vision and product vision consisted of qualitative keywords, eventually followed by some chosen visual images. The Interaction Vision could consist of words like power, responsibility, sensuality, efficiency and would be connected to the qualitative aspects of the relationship and interaction between user and product. Equally, the product vision could consist of words like soft, aggressive, distant, sharp, transparent and would be connected to the qualitative aspect connected to the product. Based on these two visions new concepts should be derived, where the visions are guiding principles and a basis for evaluating the concepts. (Lerdahl, 2001)*

In the context of modern day product design, the complexity of products and production requires a teamwork effort. This sets the stage for multiple competencies and disciplines within the same framework where the overlap in competencies is crucial for the collaboration and communication (Zaccai, 1998). This diversity requires the formulation and design of the vision to be open for participation and shared by the entire design team.

This resembles the “Shared vision” disciplines in the organizational theory by Senge (Senge 1992) “The fifth discipline”. Approach and process therefore need to be externalized, communicated and adapted by the entire team as a part of establishing this shared guideline; the vision.

This vision-based approach by Erik Lerdahl will be elaborated on in the next chapter.



### **A Vision-based methodology**

The presentation and review of this approach is a result of multiple discussions and reflections together with Erik Lerdahl as well as the thesis describing the Pyramid model (Lerdahl, 2001). The review is supported by observations done as both student and assisting teaching in 3 courses teaching this methodology.

The methodology is divided into two main stages, a vision-based stage and a specification-based stage, where specifications become central and visions no longer are in focus. This thesis only focuses on the Vision-based stage, where initial product concepts are developed by establishing a Value Mission and an Interaction Vision. Furthermore the overall methodology also consists of arrangement of space, which is out of scope for this thesis. Thus, the methodology is applicable in the fussy front-end of the design process.





**An 'abstract' view of a Product**

The thesis by Erik Lerdahl presents a model of a four level pyramid (Fig. 2.9), describing a product on 4 levels of abstraction.

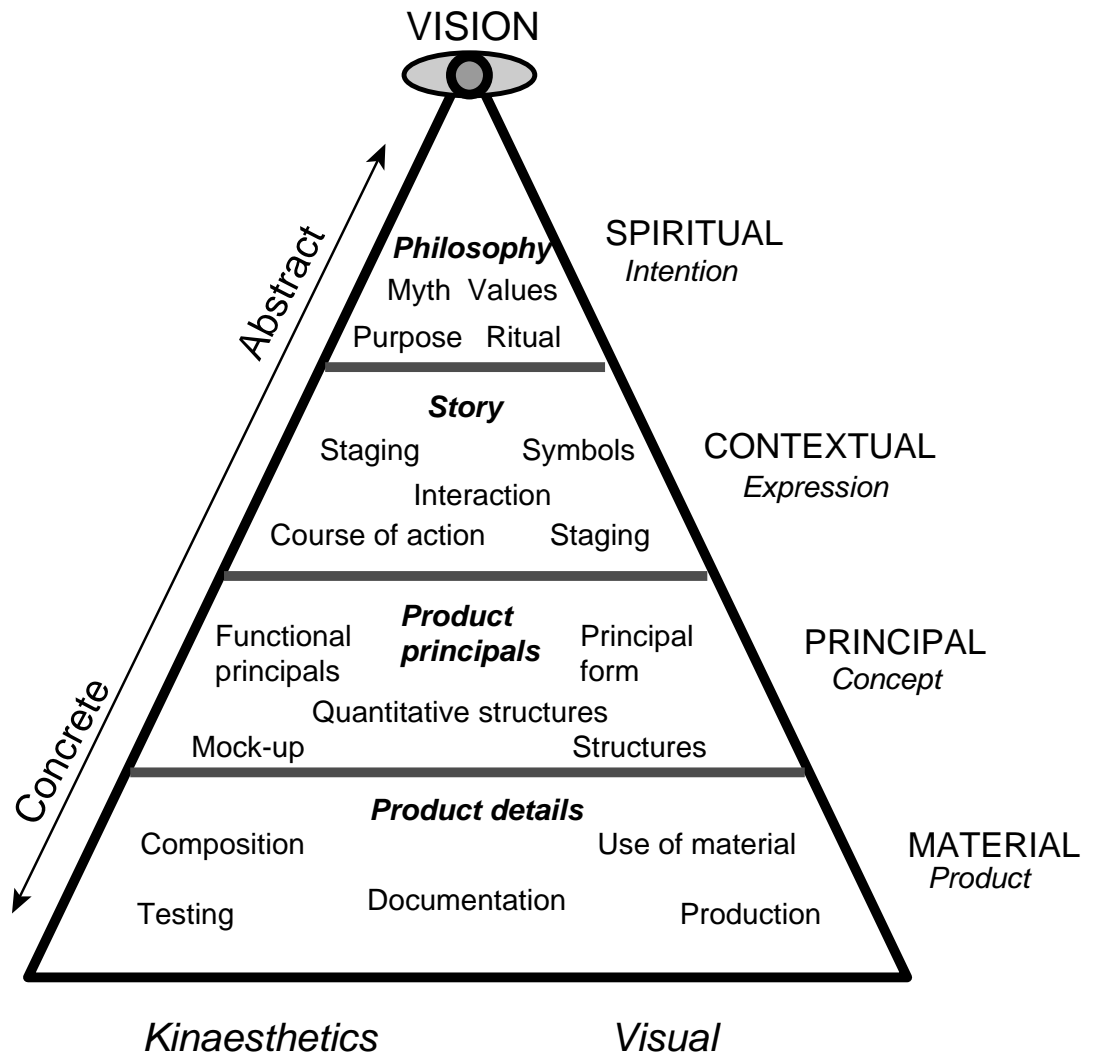


Fig 2.9. The Pyramid Model (Lerdahl, 2001)



A brief description of the 4 levels, as described by Erik Lerdahl:

#### Spiritual level

The spiritual level describes the intention of a product; the underlying values and philosophy. This level will be connected to the mission statement of the company producing it, the “soul” of the company. It is the answer to the “why this product”; the answer will contain information of the signal that the product sends about its intentions and purpose. The product can be interpreted as a “value artifact”; a carrier of a set of values.

#### Contextual level

Lerdahl describes the contextual level as the story and social setting. This level is particular focused on the user interaction, the course of activity and ‘language’ of the product in terms of symbols and style. On this level, the product can be interpreted as a “social actor”; a product influences the social setting.

#### Principal level

The principal level shifts the focus from the immaterial description to the material description. The principles of the product are described in terms of structure, elements and functional principles. On this level, the product is interpreted as a “system”; a general concept.

#### Material level

The lowest level of abstraction is the material level. When using this pyramid to describe an existing product; one would describe the details of construction, material and production. On this level, one can interpret the product as a “result of a production process”; a specific product.

Lerdahl’s model is shaped like a pyramid indicating the relations between the levels. The hierarchy in the level of abstraction; the upper two levels are the ‘soft’ immaterial aspects and the lower two levels are the ‘hard’ material aspects of a product. The claim is that a single value (level 1) can be found in several social settings (level 2), which again can contain several principals (level 3) and for each principal there are numerous ways of implementing them in reality (level 4).



Lerdahl describes the symbolic value of the model in this way:

*The structure of the model has some similarities with Abraham Maslow's need hierarchy pyramid which is a hierarchical categorization of needs from physiological needs at the bottom to spiritual needs at the top, where lower needs must be fulfilled before one can seek higher needs.*

*The model presented here, which is related to different ways of perceiving a product, has also spiritual aspects at the top and is formed as a triangle. It is narrow at the top and wide at the bottom, which symbolizes increased complexity. Nevertheless, the model is not supposed to be viewed as a traditional hierarchy, it could for instance have been turned around where the material level stood at the top. The choice of having the material level at the bottom and the spiritual level at the top is connected with the metaphor that the spiritual aspects are more abstract and floating, such as clouds, while the material aspect are more concrete and "grounded to earth".*

[Lerdahl, 2001: p.102]

### **Process**

Lerdahl uses the model as a guideline in a vision-based methodology. The methodology is supposed to be used in the first of the five product development phases described by Ulrich and Eppinger (1995); Concept development, system-level design, detail design, testing and refinement and production ramp-up.

The process of the methodology is using different creative activities shifting between working on the abstract levels and the concrete levels. The shift in the level of abstraction is supposed to support the creative process and create a larger solution space:

*A change between abstract and concrete definition of task and solution can be understood as a method for supporting the creative processes. This has been confirmed by a series of empirical research on actual design processes [Franke and Lippardt 1997]. By moving up to the higher levels of generalization, like in the triangle, one enlarges the solution space and increases the level of redundancy or duplication [Bastick 1982]. Products that have different functions may for instance carry similar values and intentions.*

(Lerdahl, 2001: p.104)

There is a conceptual relation between this model and the value-focused thinking model by Keeney (1992) as described earlier. Both seem to indicate that seeking higher levels of abstraction will open the solution space, or alternative choices, as Keeney describes it.



The process of shifting between abstract and concrete activities involves two main abstract events and numerous sessions of generating ideas for solutions:

The first abstract event is the formulation of a Value Mission: This is described as the content of the upper levels; the intention and contextual levels.

The definition of mission in this context corresponds to Kunde (2000) and Jensen's definition (2002); a mission is "the guiding thought"; the reason why the company exists. In this context, it will be the reason for the product to exist and the values that guide the creation of the product. Lerdahl also points out that it is fruitful to have the mission of the company in mind when creating this product specific Value Mission.

The second abstract event is the Interaction Vision. This is related to the second level in the pyramid model; the contextual level. The Interaction Vision is the imagined and desired interaction between the user and the product, as well as the product's influence in the social setting. Lerdahl uses a notion of two Interaction Visions; a provocative vision and a goal vision. The provocative vision is in short an extreme version of the goal vision; trying to evoke feelings and 'crazy' ideas.

The notion of a goal vision indicates a function of being an objective in the design process and a more active role than the Value Mission.

Generating ideas is done through a number of sessions employing creative techniques. These ideas are usually represented through sketches, functioning as a place for negotiation and revision (Lerdahl, 2001 p.35).

Some sessions focus on using the content of the upper levels, especially the vision, as an object for forced relationship, i.e. developing concepts that incorporate the vision. Lerdahl notes this as the most crucial step. In fact, this is a direct translation of more abstract values into specifications of a concept of a systemic character. This is strongly related to the RQ of this thesis.

The shifting between the abstract and concrete levels is done continuously using a variety of creative techniques and methods. The shifting in activity follows the principle of sequential divergent and convergent phases, resembling the process models of Striim (Striim 2001) and Trolle (Trolle 1983)

In the early phase, the focus is on the abstract levels moving downwards as ideas and concepts emerge and require further detailing as shown in fig.2.10.

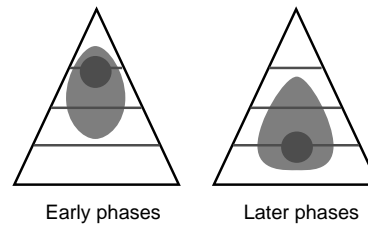


Fig. 2.10. The focus shifts downwards in the later phases, following the level of detail in the work.

### **Methodology**

The sessions of generating ideas involve a variety of techniques; writing, sketching, drawing and modeling. Methods would be Brain pool writing, Forced Relationship, Mental visualization.

The tools for describing the Value Mission are images and words:

*The Value Mission in this methodology consists of 3-4 keywords, combined with visual images that visualize the main underlying values connected to the identified needs... The mission may also consist of some short sentences describing the underlying value and purpose relating to the fulfillment of the user needs. It can for instance consist of short aphorisms, expressing some fundamental insights.*  
(Lerdahl, 2001)

The Interaction Visions; the provocative and goal vision is also described by words and images supplemented by small scenario plays, demonstrating the interaction with the product.

*In the methodology, the goal vision should consist of qualitative keywords, poetic and visual images, metaphors and scenario plays. It may also be fruitful to create a short video film and scenario that express in different ways (form, movement, expression, sounds and tactility) the intended experience. The qualitative keywords can be words like challenging, playful, sensual, intimate, rough etc.*  
(Lerdahl, 2001)

## Review of this methodology

### **Value transformation through systematic methodology**

The main idea of the approach can be viewed as using a value-based platform for developing new solutions and concepts in consistency with this platform.

This structure is also found in other approaches, like “Fornyelsestræet” (The Renewal Tree) by Prehn and Keldmann (1999) using a tree as the model describing the relationship (Fig.2.11). Building on the mission as the foundation, one develops general concepts for products and services. In this model, the mission containing the underlying values is at the base of the system, in this case the trunk of the tree. The Value Mission lives of the soil, being the needs of the users and produces fruits, products and services, to be harvested.

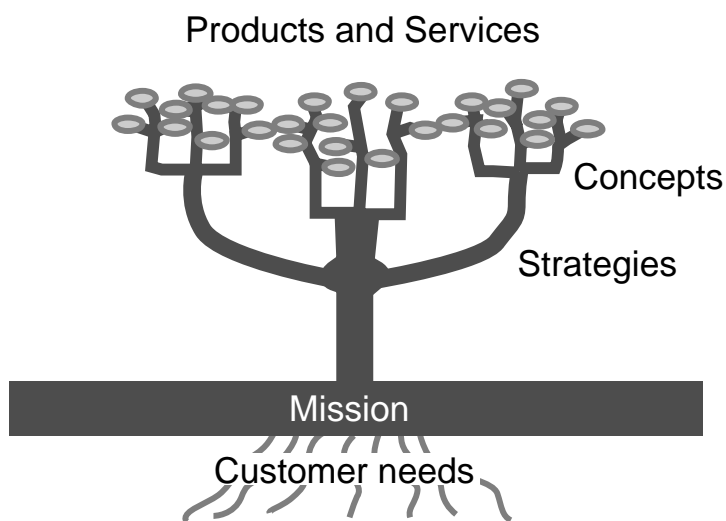


Fig. 2.11. The ‘Renewal tree’ based on the mission – own illustration. (Prehn & Keldmann, 2000)

However, this model only presents the structure and relations between the elements, it does not contain a specific methodology for dealing with this development.

The methods and techniques in Ler Dahl’s methodology are dealing with values and developing concepts in a systematic way. Therefore, the methodology is of specific interest in this thesis and is used in the gathering of empirical data.

Although this model is valuable when integrating many different aspects of a product into one model there are a few points of critique:



### ***Perception of model***

Lerdahl claims that the model could be turned upside down and that the levels should not be viewed hierarchic as such; the order stems from the levels of abstraction. The philosophy and value are the most floating and highest form of abstraction and the material is the lowest. However, as just mentioned the resemblance to the value-focused thinking and the process described indicate the starting point as the top moving downwards through the process.

This is supported by Lerdahl's own description of the process using this methodology to focus on the top levels in the beginning moving downwards later in the project phase – indicating the traditional hierarchy through the sequence.

This ambiguous aspect of being both a conceptual model, a language and indicating the process can be confusing when learning the methodology.

### ***Levels of abstraction***

The shape does not clearly define the border between abstract and concrete; the difference between the upper two levels, as well as the lower two levels, is insignificant and easily mistaken in practice. Combined with the use of many words for describing each level; the understanding and learning of the model is difficult. The designers tend to confuse the levels and their content.

In this thesis, the model is used as a tool for dividing the product into levels of abstraction, mainly an abstract side (the two upper levels) and a concrete side (the lower two levels) and the focus has been on the upper levels describing the abstract aspects of a product.

### ***Vision and mission***

Lerdahl states that the pyramid can be used as a guideline in the process, reminding the design team of the content on all levels in the pyramid in the search for consistency between the levels; i.e. a change in one level will affect the others. Referring to the Interaction Vision as the second level is very confusing, since the top of the pyramid also called a vision. Additionally, the approach is vision-based, functioning as a guideline.

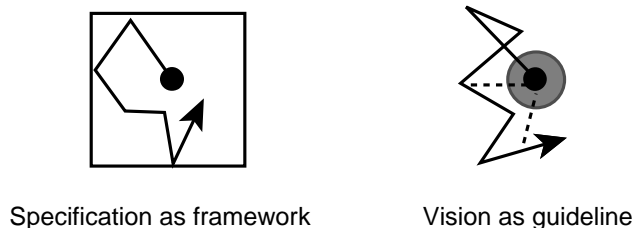
The placement of “vision” on the top of the pyramid indicates a vision-based approach and adds to the ambiguity of the model; process or conceptual. It increases the confusion when the Interaction Vision is in focus as the design guideline for the designer, describing the user interaction with the product. This vision is on the second level and not the upper level.

The Value Mission is claimed to be related to both upper levels, although the values and philosophy is specifically related to the top level of “Intention”. The Value Mission defines the underlying values but is placed at the top of the pyramid.

All in all, the semantics of the model are, as stated, related to the levels of abstraction in the way that the abstraction level is highest in the top and lowest in the bottom. But seen from a process view, the pyramid model loses coherence in the placement of mission and vision.

### **Specifications**

The difference between specifications as a frame and vision as a goal is not as clearly separated and differing aspects as Lerdahl presents it as shown in fig.2.12.



*Fig. 2.12 The difference between specifications and vision according to Lerdahl (2001) – own illustration.*

The specification of the pyramid models is on the principal level, as Lerdahl indicates himself. But the process of shifting back and forth between the abstract and the concrete, i.e. the mission / vision and the solutions described in principal, suggests a closer relationship between the two in practice. The specifications will influence the upper level, i.e. the mission / vision, since the process of the methodology is moving up and down in the search for consistency between the levels as Lerdahl states:

*Product specifications are generally related to the principal and material level in the vision-based model and are thus directly linked to the solution space for the product. The development of missions and visions, which are described later in this chapter, are related to the spiritual and contextual level in the model, and may be viewed as a focusing tool and guideline in the development process. The focus in visions is on the user context, the user needs and the user’s interaction with other users, the environment and the product.*

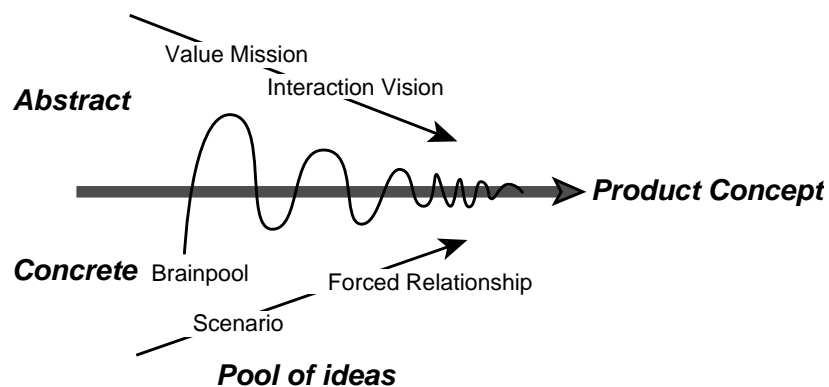
The user needs and user’s interaction also revolve around the specifications of what the product does, i.e. functions.



Although the model in figure 2.12 presents the specifications and vision as belonging to opposite approaches, Lerdahl recognizes a sequential coexistence of the two in the pyramid model; the specifications are related to the principal level in the pyramid model (Fig.2.9).

### ***The need for a process model***

As indicated earlier, the pyramid model does not fulfill the role as a process model describing the actual relation between the sequence of activities and relation between the Value Mission, Interaction Vision and the specifications of a concept. The process model (Fig 2.13) by Erik Lerdahl describes the process as slowly combining and synthesizing the abstract and concrete through events and creative techniques.



*Fig 2.13 The Process as Lerdahl (2001) describes it is a slowly converging process of merging abstract and concrete work. Own illustration*

However, as observed during the workshops with Erik Lerdahl, this was not the process that unfolded itself. The navigation and facilitation of the process depended on ad hoc adjustment and the planning was done through focusing on abstract milestones.

Part of the objective with this thesis is to unfold and describe the mechanisms and phenomena in the Value and Vision-based methodology as a system. This will be described in chapter 4 and 6.

## Organizational and social framework

This chapter will outline the organizational aspects of using and learning the methodology. Important and relevant notions from the learning organization will be presented. The creation of knowledge and learning styles are interesting in relation to learning a new methodology that intrinsically deals with the creation of knowledge in the form of product concepts and vision. Finally, the communicative aspect of this interpersonal interaction will be presented and discussed. Before the organizational and learning aspects are outlined, the notion of learning will briefly be linked to the design process.

### **Design process and learning**

As described earlier, the design process contains intrinsic iterative aspect. The iteration itself presents a reflection. Reflection is a part of the learning process (Kolb, 1984) thus linking the design process and the learning process. Schön (1983) has described the type of reflection as ‘Reflection in action’. The reflection in action concerns the relation between experiments / suggestions (actions) and the problem. This reflection evaluates and analyzes how the current experiment solves the problem. In terms of the design process, it means that one reflects upon the current status of suggestions and experiments in relation to the defined problem and requirements.

However, there is another level of reflection described by Schön that also relates to the design process; the reflection *on* action. This reflection concerns the perception of both handling of the problem and the problem itself; learning to correct the way one handles a problem constitutes a *double loop learning* (Argyris and Schön, 1978) as shown in fig.2.14.

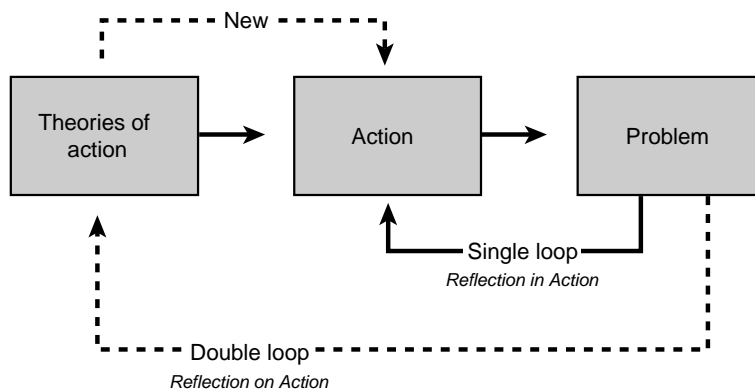


Fig.2.14. Reflecting in and on action relates to the experimentation in the design process; evaluating suggestions, methods and perception of problem. Own illustration. (Argyris and Schön, 1978)



In terms of design, this means a reflection upon the methods employed to deal with the problem as well as reflecting upon the perception of the problem. In other words, is the problem defined “*properly*” and are the methods employed *appropriately* to deal with the problem or aspects of the problem, or should other methods be used to deal with a certain aspect of the problem instead.

This constitutes a learning process regarding the perception of the problem that unfolds parallel to the design process, as experiments reveal new aspects of the problem and the perception of the problem.

### **Team-based organization**

The organizational framework in this thesis is the design team. The distinction between team and group used in this thesis is taken from Darsø’s (2001) description in “Innovation in the making”, that is based on the work of Katzenbach and Smith (1993); the biggest difference is the mutual accountability that belongs to a team. The team has two major conditions; a demanding performance challenge and shared purpose. The group is leader-oriented, whereas the team is purpose-oriented and shares the responsibility and rewards.

The teams used in the empirical data of this thesis all belong to the team category. The students and participants from the company share a purpose and have demanding performance challenges in relation to designing concepts.

### ***The learning organization***

When observing the use of a vision-based methodology in a team-based context, it almost impossible not to incorporate some of the theory of the learning organization. As just presented, there are intrinsic *learning* aspects of the design process and itself, and combined with the organizational setup of a design team one can find several aspects of learning in an organizational context.

According to Senge (1992) there are five disciplines in the learning organization; “Personal Mastery”, “Team Learning”, “Shared Vision”, “Mental Models” and the most important “Systems thinking”. The Personal Mastery discipline is concerned with the creative tension of the individual; the ability to maintain a goal. The Team Learning discipline is concerned with the dialogue among team members. The Shared Vision discipline deals with giving members ownership and insight in the overall goal. The Mental Model discipline is about communication and perception.



The Systemic Thinking discipline is concerned with thinking in systems and roots of problems and phenomena rather than dealing with the symptoms of these problems. This is similar to the principles used in the value-focused thinking (Keeney, 1992) presented earlier.

Three of the most relevant aspects in relation to this thesis will be briefly discussed in the following; The Shared Vision and the combination of the Mental Model and Team Learning discipline.

### ***Shared vision***

The discipline of shared vision is a vehicle for building a shared meaning (Senge et al., 1994) and involves several key aspects of guiding aspirations. Senge uses the labels *vision* for convenience, but it covers several guiding principles; vision, values, purpose (mission) and goal.

The definition of vision is similar to the definitions by Kunde (2000) and Jensen (2002); the vision describes the image of the desired future, a sense of direction for the organization. The values are a description of how the organization intends to operate; a code of behavior and thinking. According to Senge (Senge et al., 1994) the values should be articulated and made an intrinsic part of the shared vision effort.

The purpose, or mission, states the fundamental reason for the existence of the organization – it would be the answer to the “why” question.

The goals are milestones to be reached within the nearest future and are very tangible.

Building a shared vision for an organization can be done in several ways of collaboration between the members of an organization and the leaders of the same organization. Senge (1994) presents five steps of building the shared vision, with an increasingly active involvement from the members; Telling, Selling, Testing, Consulting and Co-creating.

In the context of this thesis, the co-creating of a vision is the condition for the design teams, as according to the definition of teams presented earlier, they share the purpose and responsibility. However, in the context of business, there might be instances where some part of the vision for a product may be dictated by other parts of the organization, such as marketing. In any case, the design team is co-creating the specific product vision.

The shared vision discipline incorporates the same elements as the vision-based approach methodology; the building of shared meaning, the definition of the purpose (mission) and the description of behavior as the expression of values.



### ***Mental Models and Team Learning***

The Team Learning discipline is concerned with the verbal communication between team members as a tool for learning as a team. The tools are dialogue and skilful discussion. This incorporates a vital distinction between discussion and dialogue, or more precisely between advocacy and inquiry, which is a Mental Model discipline. Advocacy is defending your point of view and trying to convince others that you are right. Inquiry is curious investigation, searching for others' point of view.

The dialogue contains the notion of the ideal conversation of Habermass, i.e. one being able to communicate 'honestly' while suspending all assumptions. The balance of skilful discussion involves the aspect of both being curious to others' assumptions, as well as presenting one's own reasoning.

The skills in the Mental Model discipline is closely connected to the Action Science approach by Argyris and Schön (Senge et al., 1994, p.237); reflection and inquiry. Reflecting on the forming of our own reasoning and genuinely inquiring for assumptions that others people's reflections are based on.

The awareness of mental models and assumptions is an intrinsic part of the vision-based methodology used in this thesis. The empirical work also incorporates scenario building and learning laboratories that is a part of working with mental models and is related to the setup of the workshops used in this thesis.

In the design context, the understanding between the members of the team is more important than specific competencies represented. Zaccai (1998) has described this as an overlap, meaning that the team members should understand each others' function, goal and purpose. In other words, as the Mental Model and Team Learning discipline; the team members should understand each others' reasoning and goals.

### **Learning and creating knowledge**

Both Kolb (1984) and later Nonaka and Tekeuchi (1995) divide the way we learn and create new knowledge into 4 categories. This chapter will briefly present and discuss the learning styles and modes of creating knowledge.

#### ***Learning***

Kolb (1984) defines his four learning styles from a combination of 4 basic learning modes. The basic learning modes can be viewed as extremes; any specific learning style profile for a person will be a combination that shows tendencies towards one or two basic learning modes.



The basic learning *modes* are; Active Experimentation, Concrete Experience, Reflective Observation and Abstract Conceptualization. The four learning *styles* of Kolb are combining the learning modes in pairs;

- *Convergent*: A combination of Active Experimentation and Abstract Conceptualization learning modes. This learning style has its strengths in problem solving, decision making and tends to look for the single correct answer through deductive reasoning.
- *Divergent*: A combination of Concrete Experience and Reflective Observation learning modes. This learning style has its strengths in imagination and awareness of meaning and values and tends to use multi-perspectives in generating a meaningful gestalt and alternative ideas and implications.
- *Assimilation*: A combination of Abstract Conceptualization and Reflective Observation learning modes. This learning style has its strength in inductive reasoning and integration with focus on ideas and concepts that are logically sound and not necessarily of practical value.
- *Accommodative*: A combination of Concrete Experience and Active Experimentation learning modes. This learning style has its strength in action; it is learning by doing in an intuitive trial and erroneous manner and is adaptable to the changing circumstances with a practical focus rather than a theoretical one.

The learning styles of Kolb demonstrate the divergence in ways of learning. One of the main aspects of the empirical material of this thesis involves a teaching and learning situation. The framework of a workshop implies an emphasis on concrete experience and active experimentation as a main tool for learning the methodology. But the methodology itself also requires a preliminary theoretical presentation, the ability to handle abstract concepts and reflection upon the action. Analyzing the methodology used in the empirical material will also incorporate a learning aspect, investigating the steps of the methodology for preferences in learning style.

### ***Creating knowledge***

The four modes of creating knowledge from Nonaka and Takeuchi (1995) revolve around the transition between tacit and explicit knowledge. Darsø (2001) has combined the four modes of individual knowledge creation with the four types of knowledge by Heron (1992). The knowledge creation is seen as the engine of the entire knowledge creation process.



Although the framework is originally individual, it is suitable for understanding the learning process of the design methodology in teams in broad terms.

In the following, the creation of knowledge of the Nonaka and Takeuchi framework will be combined with the knowledge framework PPEP (Propositional, Practical, Experiential and Presentational) of Heron, as Darsø (2001) has suggested and furthermore they will be compared to the learning styles of Kolb.

- *Socialization*; from tacit to tacit knowledge. Sharing experiences and building shared mental models through observation and direct experience create a *sympathized* knowledge. Activities such as brainstorming would create this knowledge.

Heron: According to Darsø this corresponds to Heron's *Experiential* knowledge that stems from first-hand experience.

When compared to the Learning styles, this would correspond to the *Divergent* learning style combining the learning modes *Concrete Experience* and *Reflective Observation*. The learning modes of *Concrete Experience* correspond to the learning through this first-hand experience. The learning mode *Reflective Observation* corresponds to the reflection upon mental models based on observation.

- *Externalization*; from tacit to explicit knowledge. This constitutes *conceptual* knowledge. This arises from articulating tacit knowledge using metaphors, analogies, images and models, typically in creating concepts through collective reflection.

Heron: According to Darsø this corresponds to Heron's *Presentational* knowledge that is a deeper level of *Experiential* knowledge and embodies non-linguistic and spatio-temporal aspects. This knowledge is holistic and can best be expressed through drawing, fantasy, storytelling or movement.

When compared to the learning styles, this would correspond to the *Assimilation* style consisting of the *Abstract Conceptualization* and *Reflective Observation* learning mode. The *Abstract Conceptualization* learning mode corresponds to creation and integration of concepts and the *Reflective Observation* correspond to the reflection upon the tacit knowledge.

- *Combination*; from explicit to explicit knowledge. This constitutes *systemic* knowledge and arises from concepts linked to explicit knowledge that is sorted, systematized and recombined.



Heron: According to Darsø this corresponds to the *Propositional* knowledge that is a matter of fact, such as a product, an entity or a law (e.g. the law of gravity).

When compared to the learning styles, this would correspond to the *Convergent* style consisting of Active Experimentation and Abstract conceptualization learning modes. The *Active Experimentation* corresponds to devising new concepts through deductive reasoning and the *Abstract Conceptualization* corresponds to the creation of systemic knowledge by combination of rules.

- *Internalization*; from explicit to tacit knowledge. This constitutes *operational* knowledge and arises from absorption of documented knowledge (document, manuals, and stories) into each individual's knowledge and experience.'

Heron: According to Darsø this is a combination of *Practical* and *Experiential* knowledge that entails a completed learning cycle. The practical knowledge is "knowing how to do something", or as we normally call it; Know-how.

When compared to learning styles this would correspond to the *accommodative* style consisting of Concrete Experience and Active Experimentation. The *Concrete Experience* corresponds to the first-hand experience and the *Active Experimentation* corresponds to the personal involvement that creates the know-how. It embodies the learning-by-doing approach.

The design methodology in the vision-based approach has a special focus on articulating the tacit values. This is done both by making them explicit in concepts and solution, as well as articulating them on an abstract level.

The explicit articulation corresponds to the *Externalization mode* and the *Propositional* knowledge. Conversely, the forming of shared mental models and definition of values has similarities to the *Socialization mode* and the *Experiential* knowledge and uses the ability of the Divergent learning style to create a meaningful gestalt. Also the *Combination mode* is activated when concepts and ideas are to be synthesized and the systemic qualities of the product are created and defined.

The *Internalization mode* can be related to the entire learning situation of the workshop, where the participants are actively involved in using the methodology.





### ***Facilitation and teaching***

The notion of facilitation is interesting in the context of learning and teaching a methodology, and as later discussed in the research approach in chapter 3, as an Action Researcher.

To learn means to “acquire knowledge” and to teach means to “instruct” (www1). As just reviewed, the learning styles vary and the notion of instruction is not adequate to cover the activities in all learning styles of learning this methodology. For instance, the question could be asked whether the *propositional* knowledge stemming from the *Externalization* mode and the *Experiential* knowledge from the *Socialization* mode are not exclusively learned through instruction.

In relation to using, learning and teaching the design methodology under investigation in this thesis, the notion of facilitation is used.

Facilitation means to “make less difficult” (www1) and “help in progress”. When learning to use a complex methodology, the role of the teacher goes beyond just instructing. It furthermore requires empathy and insight into the progression of the use and learning process. “Helping in progress” indicates a continuous monitoring of activities and occasional intervention, for instance in form of instruction, guidance, advising, providing examples and suggestions.

As the term is used in this thesis it placed an emphasis on autonomy of the participants in the teaching situation. The focus is on learning a methodology with the objective of acquiring qualifications that enable the learning part to take control when using the methodology. The job of a facilitator is then defined as *making it less difficult* to learn and use the methodology.

When compared to the design process and reflections in fig.2.14, the facilitation is focused on reflection *on* action, whilst not interfering with reflection *in* action, i.e. seeking not to influence decisions regarding the design and solutions.



## **Communication and Qualification of meaning**

In the team framework, communication with and understanding of each other is a central issue. There are several elements in this communication, and this chapter will outline some of these elements.

### ***Taxonomy and valor***

One of the elements in communication is how we categorize things and value them.

According to the sociologist Dahl (1997), we have different taxonomies and different valor for each subject. That means that we structure our attitudes to objects in the world according to categories and classifications which we weigh and judge. A simple example: we can structure the object cars in classifications based on size and form our personal opinion on what makes a good car. But we could also have structured them, using the car manufacturing business own classification; station car, sports car, minivan, etc. The valor we give to the different entities in the classification is formed by many things; the personal need the desires, our experience, etc. If two people were to agree on what constituted a “good” car, they would have to agree on the classification they use, as well as the valor they give to the entities in the qualification.

This is a simple system and some categories might have classifications that are commonly used, while other categories have various classifications and are called heterogeneous systems.

This type of misunderstanding is also found in our daily life, we believe we reached an oral agreement on a subject with another person, we are each confident that we understood each other and confirm this. Later, it turns out that we misunderstood each other after all, either because of different taxonomy, or that we gave different valor to the same taxonomy. In other words, we unconsciously disagreed on the classification or we gave different valor the same entity.

Our taxonomy and valor is a product of our socio-cultural background and our experiences. In this respect, it has similarities with the phenomena of the ‘ladder of inference (Senge et al., 1994). When interpreting products and objects Lerdahl (2001) uses Monö (1997) to describe the same phenomena of selective perception:



*According to Monö [1997], which belongs to the 'semiotic school', "when a group of people look at an object, not one of them see exactly the same thing as anyone else". Even though they receive approximately the same image on their retina the image will be interpreted based on the observer's personality, mental state, cultural background and role.*

When the design process is viewed as a social process of negotiation, the taxonomy and valor problem becomes a central issue for the design team.

One cannot negotiate if the terminology is unstable. This bears some resemblance to the Team Learning and Mental Model disciplines in the learning organization (Senge et al., 1994), where the idea of the ideal conversation is inquiring for others' reasoning and purpose, almost like the judgment free conversation as described by Habermass (Flyvbjerg, 1991).

### **Contextualization of communication**

Another key element in communication is the contextualization of meaning; both the forming and interpretation of meaning is related to the contextual setting. Charles Briggs (1986) describes this contextualization as an aspect of metacommunication:

*"Context is communicated as a part of the whole message"*

*- communication is punctuated with contextualization cues that mark relevant features of the social and linguistic setting, thus providing interpretive frameworks for deciphering the meaning of other participants' signals and for shaping one's own contribution.*

Sharing is a part of the social context and is central to Darsø's (2001) model for genuine communication. This model (fig 2.13) is inspired by the work of Ernest Bormann and others during the 1970's and 80's building the theory of Symbolic convergence. The theoretical focus is on forming a group consciousness through shared concepts, ideas and motives. It builds upon the notion that sharing fantasies and visions in relation to the task will influence the communication and decision making.

According Darsø's notion on Genuine communication it can be achieved if an idea can be rephrased by another person, in his own words, by a model or a metaphor to the satisfaction of the originator.

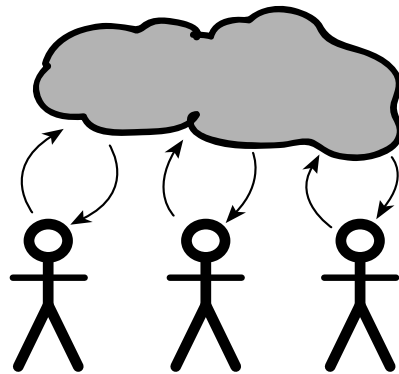


Fig 2.13. Model of genuine communication (Darsø, 2001) – own illustration.

In line with the Symbolic convergence theory and the notion of genuine communication, Lakoff and Johnson (1980) believe that our thinking and actions are guided by metaphors. The thinking pattern will determine our actions and the way we live. If we live by the metaphors “time is money”, our actions and consequential thinking will be guided by this metaphor. The workload is counted in hours, the interest rates on the mortgage is calculated in months, and so forth.

It is the viewpoint taken in this thesis that the mental framework and setup for the communication in the design team will influence the way the team deals with its task. The forming of a common ground and shared meaning, using abstract fantasies and vision, is a central activity in the interpersonal communication in the team.

#### **Metaphors as qualification of meaning**

Metaphors can be used to point to certain aspects of an abstract concept. The function of metaphors is to emphasize some and reduce other aspects. According to Lakoff and Johnson (1980):

*“Metaphors have inferences by which they emphasize certain aspects of our experience and make them coherent. A given metaphor can be the only way to emphasize these aspects and structure them in a coherent manner. The metaphors can create realities, especially social realities. A metaphor can thereby function as a guide to future actions. Such actions will, naturally, fit the metaphor and in return strengthen the ability of the metaphor to create coherence in the experience. In this way, the metaphor can be a self-fulfilling prophecy.”*

It is interesting to note their function in the sense of a guideline for future actions, which is central for the design methodology employed in this thesis.



Their ability to highlight certain aspects of an experience and structure them coherently is a useful tool in developing a shared goal and building a shared meaning. And, in line with the general idea of Lakoff and Johnson, the metaphors will guide the thinking and actions.

According to Lakoff and Johnson (1980) metaphors are a synthesis based on experience, and can handle subjects that are difficult to comprehend completely:

*“The Metaphors is one of the most important tools in the attempt to partly comprehend that which cannot be understood completely; our feelings, aesthetic experiences, moral praxis and spiritual awareness. These imaginative endeavors are not without rationality because they use metaphors, they employ an imaginative rationality.”*

### ***Triangulating tools in qualification***

According to Lerdahl, the communication of the abstract vision and mission statement can be carried out through several tools. Besides the metaphors, the use of poetic images (Lerdahl, 2001 p.293), visual images (Lerdahl, 2001 p.282) and scenario plays (Lerdahl, 2001 p.216-219) are useful in awakening emotions and discussions.

The *poetic images* are closely related to the metaphors and can resemble slogans and statements; they embody an emotion or feeling that the product should awake or express.

The *visual images* are similar to what is used in mood boards and strive to express the emotion through an image (photo). This tool is familiar to designers that normally use a visual guideline.

The *scenario play* embraces the importance of working with scenarios in relation to a desired future. The scenario play technique is about activating the scenario and using your own body and body language to express and communicate the scenario.

Lerdahl uses these tools as a means to broadening the discussion and awakening feelings, but it could also be seen as a form of triangulation in communication. The triangulation can be interpreted as having two purposes in respect to communication.

The *first purpose is precision*. Even though Lakoff and Johnson argue that metaphors can be used in communicating certain aspects of an experience, there still remain elements of uncertainty when trying to describe something non-existing, such as a goal or a vision.



By supplementing the metaphors with images that embody the same nuance of a word from a vision or mission as the metaphors, the precision can be improved. Adding yet another tool, the scenario play completes a triangulation in the communication by adding dynamic ability to express emotions over time. When the design team combines these tools it can triple check its initial interpretation of a nuance and build a shared meaning through the repetition of the qualification process.

The *second purpose is participation*. Usually the drawing is the place of negotiation (Lerdahl, 2001 p.35) in the design process, and the one doing the sketching is in control of the process. By using multiple tools, not limited by drawing skills, there is a possibility for all members to participate. One could even interpret this specific triangulation as being idealistically democratic in the sense that there are tools for different preferences in cognitive orientation; the verbal-oriented (poetic images), the visual-oriented (visual oriented) and the kinesthetic-oriented (scenario play).



### **Highlight résumé**

In this chapter, the theoretical framework of this thesis has been outlined; the three perspectives of Value economy, vision-based design methodology and the team based learning organization has been discussed. This constitutes a certain view of the design methodology employed in the empirical work which is summarized in the following:

#### ***Value-focused methodology in a design team context***

The emphasis on experiences, stories and emotions in products and services in our modern dream society (Jensen, 2002; Kunde, 2000; Fog et al., 2002) should influence the design process. The design and design process should actively involve and be based on a defined set of values (Nielsen, 1999).

Developing product concepts through a vision-based methodology involves qualitative goals and tools parallel with the specification process. The team is dealing with the representation and transformation of values through numerous qualitative tools in a dialectic tension between abstract and concrete levels of abstraction (Lerdahl, 2001).

The vision-based approach uses a shared goal and building of common ground in a process of qualification regarding the nuances and meaning of words and concepts. The objective is developing a qualitative goal, a guiding star, useful for evaluation and decision regarding solutions and specifications (Lerdahl, 2001; Hekkert, 1997).

The design process in a team is a social process of negotiation (Routledge, 1998), where the interpersonal communication (Darsø, 2001), collaboration and learning (Senge et al., 1994) are key elements. The objectives of employment of multiple tools in the process are precision in communication and active participation of team members and ownership of the goal in order not to give exclusive control of synthesis process (Lerdahl, 2001) to the person visualizing through sketching.







### 3. Research methods

The research carried out in this thesis is of qualitative nature, using an Action research approach and workshops as learning laboratories. This chapter will outline and discuss the major types of action research and motivate the chosen approach. Subsequently, a description of the collection of empirical data and setup of the learning laboratories will be presented. Finally, a discussion of the researcher's role in the empirical data collection will be discussed.

#### Paradigms in research

There are two major paradigms in research; the positivistic paradigm and the constructivist paradigm.

The positivistic approach has a strong focus on falsification and the belief that the truth is out there waiting to be discovered in its original shape. It can be verified through observations, experiments and measurements. The falsification approach by Karl Popper assumes that any statement is truth/true until proven invalid; therefore one should make bold conjectures and test them anyway possible. Thomas Kuhn modified this positivistic approach by defining that any truth is relative to paradigm. A paradigm is the entire constellation of beliefs, values, techniques shared by a given community.

The constructivist approach takes the stand that knowledge is a social construction. Meaning that research in this field should be done in a subjective or inter-subjective way, interpreting the observations either as phenomenology or hermeneutics as the text analysis.

*"Phenomenology is the study of the structure and the variations of structure, of the consciousness to which any thing, event, or person appears" (Giorgi, 1975)*  
*- Phenomenology is interested in elucidating both that which appears and the manner in which it appears.*

*A phenomenological reduction calls for the suspension of judgment in order to obtain unprejudiced descriptions of the Lebenswelt in relation to the world of science. The phenomenon is a basis for abstraction and theories."*  
(Kvale, 1996)

An example of the two viewpoints on the dynamics of technological change from Philosophy of Technology in Routledge Encyclopedia of Philosophy, 10.vol. 1998, discussing the difference between technological autonomy and social constructivist the viewpoint on the design of an artifact::



*“The final form of an artifact is schematically determined by two kinds of constraints. On the one hand there is a list of specifications which describes all kinds of requirements the artifact should fulfill. This heterogeneous list may contain, among others, constraints derived from the primary technological function of the artifact, the conditions under which this function has to be performed in practice, the conditions under which the artifact has to be produced, its price, standards and norms. The defining feature of this list is that it is the outcome of a process of negotiations between all parties with some interest in the artifact; it contains social or contextual constraints which are imposed by conventions.*

*On the other hand, there is a list with technological constraints that is constraints due to what is possible, as a matter of fact, physically and technically possible. The desired artifact should satisfy both lists of constraints.*

*According to this conception of the design process, the driving force behind technological change is the tension between the two lists of constraints which are different in nature (one describing what is desirable, the other what is possible) and in principle independent of each other.*

*...defenders of technological autonomy rejects this independence; they assume the list of specifications is determined by technological constraints (what can be done, will be done)*

*..social constructivist tend to deny any difference in nature between the two types of constraints; they assume that physical and technological constraints are socially constructed in ways similar to the constraints in the list of specifications.”*

This interesting definition demonstrates the two approaches to the creation of artifacts; either as something to be created because it is physical and technological possible or something to be created because we desire it. The approach to knowledge in the positivistic view, here represented by technological autonomy, is the rationality. The idea is that things and knowledge can be derived rationally, whereas the constructivist view is that things and knowledge is derived through negotiations, i.e. through social interaction.

The investigation includes both the description of phenomena (Phenomenology) and the interpretation of the observed (Hermeneutics) in order to construct the unfolding of the use of the method.

The constructivist approach is taken in this thesis in relation to the subject of investigation, namely the design process and the transformation of values, both subjected to negotiation and interpretation that is intrinsic in this approach.



### **Typology of action research**

Within the constructivist paradigm there are different types of action research, but all action research works under the assumption that: experiential knowledge arises through participation. Its traditional subject of investigation is organizations. Some differences in the approaches will be outlined:

#### ***Pragmatic Action Research***

Action research according to Greenwood and Levin (Greenwood and Levin, 1998) is a pragmatic activity with a conjunction of three main elements; research, action and participation. It is not defined as a discipline, but involves several; anthropology, education, human services, psychology, sociology, planning, civil engineering, etc. and there are several 'right' ways of doing it.

Action Research is not an applied research. According to Greenwood and Levin, action research rejects the separation between thought and action that underlies the pure-applied distinction that has characterized social research.

Levin and Greenwood emphasize the democratic point of view and the importance of the participants having influence on their own life situation. The action researches provide the tools for the change, but do not guide the decision making.

*"We believe in trying to offer, as skillfully as possible, the space and tools for a democratic social change, but refuse to guide such change unilaterally from our position as action researchers. We consider ourselves participants in the change processes and where democratic rules guide decision making. We bring to the table certain skills and knowledge and other actors do the same, bringing their own capacities and experiences to bear on the problems. This is why we call our own particular variety of action research pragmatic action research" (Greenwood and Levin, 1998 p.11)*

This democratic philosophy has been criticized for its tendency to lead to the lowest common denominator in the attempt to seek consensus, and therefore diversity is emphasized as a resource. As Whyte (Whyte, 1991) states reflecting on Greenwoods approach:

*"All democratic systems risk achieving equality by reducing themselves to the lowest common denominators or by having the organizational goals formulated in such an abstract and normative manner that they become meaningless in most everyday situations. If taken seriously, such uniform conceptions can lead to formula-driven approaches to organizational change and discipline and can undermine the very democracy they seek to create.*



*As a result, he emphasized the diversity within the organization as a source of potential strength and the joint payoffs to be gained by making diversity into and organizational value.” (Whyte, 1991 p.34)*

This pragmatic approach balances between the influence on other people's life situation and the democratic process with an objective of changing the situation to the 'better'. This implies an intrinsic set of values concerning democracy and influence on ones own life situation.

### **PAR (Participatory action research)**

In participatory action research the subjects under investigation are not treated as passive subjects, but play an active role in the research. According to Whyte (Whyte, 1991 p.20) PAR is an applied science, but in the sense that researchers do not serve as professional experts, as in traditional applied sciences. In PAR the members of the organization are actively engaged in the quest for information:

*“In PAR the consultant/facilitator acts less as a disciplinary expert and more as a coach in team building and in seeing to it that as much of the relevant expertise as possible from all over the organization is mobilized. The consultant/facilitator can also help bring in expertise from outside the organization.” (Whyte, 1991, p.40)*

In PAR the scientific rigor stems from checking facts with the participants, the eye witnesses (Whyte, 1991 p.41) and the art of measurement hold little importance:

*“It is important not to confuse measurement with science... Measurement is driven by definitions. Poor definitions generate misleading measurements, which, added together, yield misleading conclusions.”*

Instead there is focus on the impact on the organizational and intellectual space that guides the thinking and actions of the members of the organization.

This is based on the assumption that the social setting guides the way we think about problems, and creative solutions will depend upon the ability of the organization to change the organizational and intellectual ground rules.

### **AS (Action science)**

The Action science perspective from Argyris and Schön (Whyte, 1991 p.85) describe Action Research as not being a part of normal science's toolkit, but a fundamental choice between rigor (science) and relevance (application). The challenge is to define and meet standards of appropriate rigor without sacrificing relevance.



The most interesting aspect of Argyris and Schön is the criticism of 'normal' AR's lack of awareness on "Model 1", due to strength (unwillingness to be swayed by others) and care (unilateral protection of others).

"Model 1" is the spontaneous, tacit theories-in-use that practitioners bring to practice and research. They include strategies of self-protection, smoothing over and covering-up.

Theories in use formulated by Argyris and Schön (Tossey, 1998, p.11):

*"When someone is asked how he would behave under certain circumstances, the answer he usually gives is his espoused theory of action for that situation. This is the theory of action which he gives allegiance and which, upon request, he communicates to others. However, the theory that actually governs his actions is his theory-in-use, which may or may not be compatible with his espoused theory; furthermore the individual may or may not be aware of the incompatibility of the two theories."*

Model 1 constitutes an anti-learning phenomenon and in the action science view one should investigate the learning of the intervention for single and double loop learning. In other words, did the members learn and correct an error (single loop) or did they also learn about the origin of the error (double loop) and how and why it occurred. It also implies that one should search for alternative explanations that remained undiscovered due to the covering-up related to the "model 1". Finally, one should reflect upon the function of the research:

*"Is an idea suggested by the intervention itself or was the development of the idea and important part of the intervention it self?"*

The approach to action research taken in this thesis is in line with the action science view of Argyris and Schön with some similarities in the Whyte and Greenwood notion of facilitation; not as an expert in the field, but mobilizing expertise concerning the design methodology in use.



## Empirical data

The object under investigation is a methodology, a body of methods, principles and rules.

The methodology under investigation is based on Vision based approach by Lerdahl (2001) described in chapter 2. This methodology was chosen after attending a workshop at the Institute of Architecture & Design, AAU where Lerdahl taught this methodology for 7<sup>th</sup> semester student, using the Pyramid model as the paradigm for products.

Through attending this workshop as a participant and discussing subjects with Lerdahl, the methodology was found to be useful for studying the transformation of values which are in the scope of this thesis. However, using this methodology in workshops requires practical skills and knowledge. This was obtained through a continuous contact with Erik Lerdahl. This includes attending and assisting in preparing a PhD course in Facilitating integrated design, where Lerdahl presented his methodology for PhD students. Again, fruitful discussions and reflection provided practical insight.

Attending the same type of workshop the year after the first workshop at Architecture & Design, provided the opportunity to use it as a case and assume the role of assisting teacher and facilitator. This is WS 1 in chapter 5. Assisting the facilitation elevated the discussions and reflection with Lerdahl and provided a basis for generating the empirical data.

### ***Producing data: Workshops as laboratories***

The research focus is on how it can be *unfolded*, *understood* and *practiced*. This means that the methods and principles are observed and interpreted in a *practice* context and these observations are analyzed in order to reconstruct the principles and rules, thus unfolding the methodology. The focus on how it can be practiced also involves an aspect of *learning* the methods, principles and rules. The context of practice contains learning and teaching aspects as well as an object on which the methodology can be applied.

Therefore, the empirical data is generated through a series of workshops teaching this methodology. During these workshops the data has been gathered through observation, notes, verbal evaluation, photo documentation and short video clips. The workshop done in company context has also included pre-interviews with the participants and post-questionnaires one month after the workshop.



The workshops have functioned as laboratories focused on learning new methods. Setting up the teaching of this methodology as a workshop also provided an intense and focused atmosphere, where the participants could concentrate on the methods and techniques introduced. It was, to some extent, possible to control the environment and shield the participants from other distractions; mobile phones, email or other colleagues.

It also made it possible for the facilitator and organizer to plan the sequence, events and methods employed for the entire day. This provided a framework, where the participants could focus on learning a new methodology and at the same time enthusiastically deal with problems and solution concerning their own relevant projects.

The workshops' framework allowed for continuous observation, facilitation and interaction with the participants, thereby allowing empathizing and closely monitoring the progress and mental state of the participants. This made it possible to participate in the activities as a facilitator guiding the participants through the methodology.

### ***Focus and objectives***

The series of workshops in different context is an attempt to de-contextualize the observed phenomena. By using the same methodology and the same facilitators in *different* context, it is argued that the observed phenomena will be of more general character. This will link the phenomena to the methodology and facilitator. However, there will still be specific contextual issues of learning for each workshop.

The data production is of large scale using a series of workshop to meet the above stated objective. This amount of data also influences the level of detail for the investigation. The resources available for facilitation and observation combined with the series of workshops means that the level of details is lower. The focus on practicing and understanding the methodology is not investigated for each individual attending the workshops. The focus is on a team and workshop level. At this level the principles and phenomena practicing the methodology is outlined. The data produced for this thesis does not support an in-depth analysis of each step in the progression of the methodology. In stead the parameters of research have been concerned with a more general view for each workshop. In short this can be summarized

In-scope: Investigating aspects of facilitation, understanding and using the methodology, mainly on a process related structural and principal level of detail, searching for phenomena concerning practicing and learning the methodology in a team based organization.



Out of scope: The detailed practicing of the methods concerning personal and cultural related issues of negotiation, collaboration and decision making. Nor the product or problem of the design process as such has been under investigation.

In relation to the posed research question there are three main aspects of concern for the investigation: unfolding, understanding and practicing the methodology. The aspect of unfolding the methodology is presented in chapter 4 using the *system* definition presented in chapter 2; elements located in a structure functioning by principles. The aspect of practicing and understanding the methodology is presented in chapter 5 and 6. These are directly related to the production of data and the parameters used in this production. Some parameters have been under the control or influence of the organizer and facilitator. Other parameters have been uncontrollable or out of scope of this investigation. The schematic below illustrates highlighted aspects and parameters of interest in the investigation.

Aspects	Parameters	In scope of research	Controlled*	Variance**	Out of scope
Context	Team based organization	Prerequisite for research	Yes	No	The constellation and forming of teams. Personal chemistry, background and competencies.
	Type of participants	Design related	Yes, on a workshop level. / Variance	Yes	
	Cultural context		No	Yes	Not investigated
Assignment	Product category or design problem		No influence, decided before the workshop	Yes	No distinctions are made
	Phase of the design process to employ methodology	Initial concept development focus	Yes, partly	Yes	
	Result of workshop	The milestones and initial concepts	Yes, guided by facilitation	Yes	The product concept as a design object.
	The product		No	Yes	Not investigated
Methodology	Process of workshop	Sequence of events, exercises and activities	Yes, by facilitation and organization	Yes	Detecting variance related phenomena by completely reversing the process





	Milestones	The formulation, illustration and derivation of abstract milestones: mission and vision	Yes, by facilitation and organization	Yes	Product on material level (solution)
	Qualification of keywords	Qualification through abstract and concrete approaches	Yes	Yes	
	Methods	Methods as elements and steps in the methodology. Especially methods concerned with qualification.	Yes	Yes	Detailed use of methods to generate ideas / Process related methods
	Progress	On team level pr. exercise General phenomena	Partly, outcome is stochastic	Yes	
	Negotiation	On team level pr. exercise: general phenomena	Partly by facilitation	Yes	Detailed decisions
	Result	Initial product concepts in relation to abstract milestones	Partly by facilitation	Yes	
Facilitation	Type of instruction	Direct, implicit, examples, plenum, etc.	Yes	Yes	
	Preparation of participants		Yes		Not investigated
	Number of facilitators		Yes		Not investigated
	Facilitation style	Facilitation concerning the practicing of the methodology	Yes		Facilitating concerning the problem / product
Learning	Evaluation	Expressed comments regarding the use and practice of the methodology.	No	Yes	Detailed personal experiences for each individual.
	Compliance in relation to exercises	Observed behavior in relation to instructions	Yes	Yes	
	Control	The self autonomy of the teams. Taking over control of the process	Yes	Yes	
	Understanding of principles and structure of the methodology	Re-instruction / facilitation The observed behavior and team decision in relation to instructions	Yes	Yes	The level of details concerned with each method.

*\*Control: Indicates whether the parameter has been under influence of the organization and facilitation of the workshop.*

*\*\*Variance: Indicates whether there has been detected a variance within this parameter.*



### ***Choice of participants for workshops***

Doing action research requires partners willing to co-operate in the investigation; for companies it also involves a cost-benefit issue. The choices of partners therefore depend on contacts interested in this type of design methods. With the learning perspective of a methodology and the experimental investigation in mind institutions involved in educating designers were targeted.

The first and obvious institution was the Institute of Architecture & Design (A&D), where Erik Lerdahl had held workshops introducing this methodology several times. It also provided an opportunity to learn about the methodology through praxis, the philosophy behind it and to discuss the teaching of methods and effects of the various methods and sequences of methods. In this context, the workshop was already part of the curriculum.

The second institution was Herning Handels- og ingeniørhøjskole (HIH) with already established contacts to Aalborg University: They educated Business development Engineers, who on their 4'th semester touched upon 'design'. This provided an opportunity to introduce this methodology to engineers involved in the design process through another aspect than the traditional industrial designer. In this context, the workshop was a part of introducing 'design', and was loosely connected to the rest of the curriculum.

The third institution invited to participate was the Industrial Design department at Aarhus School of Architecture (AAA). Through cooperation with teachers at this institution, a lecture and later a workshop were planned. In this context, the workshop was organized as a part of a short project focused on branding and values.

The fourth workshop was done in a business context. Besides the interesting and rather controlled workshops within the educational context, several companies were invited to participate. The intention was to investigate any differences and similarities in using and learning the methodology in a business context with a cross-disciplinary team.

There were difficulties in asking a company, especially small design studios, to spend many man-hours in a workshop with no guaranteed result. Through personal contacts, an agreement with a company designing and manufacturing devices used in the medical sector was made. The company was already involved in collaborations with various institutions and was interested in working together with researchers. A deciding factor with regard to involving this company as a case was due to the fact that the type of products that they produced involved many stakeholders, generating a complex landscape of values in which the products should fit.



### **Planning of workshops**

#### **WS1**

The first workshop had already been organized by Erik Lerdahl, whereas the following three workshops were organized for this project with the respective stakeholders.

#### **WS2**

The second workshop (HIH) was organized in collaboration with a student at A&D interested in this methodology. The planning, organization and facilitation was carried out together with this student, providing a team work for discussing and reflecting upon the activities. For the purpose of planning this workshop for the target group, HIH provided material concerning the curriculum and purpose of the education of Business Development Engineers.

In an attempt to train the teaching of this methodology and getting to know the type of students at this institution, a test run of this workshop was performed a year in advance. This provided insight into the education of the participants and some of the communication problems that could be anticipated due to difference in taxonomy and valor.

#### **WS3**

The third workshop was organized in collaboration with visiting professor Jørgen Rasmussen and assistant professor Birgitte Jensen from the department of Industrial Design at Aarhus School of Architecture.

This planning and discussion started 8 months prior to the workshop and included a lecture at the department 6 months prior to the workshop. Through this planning process, the workshop was placed together with a Product and branding design project that focused highly on the definition and transformation of the brand values.

This project was carried through in collaboration with a company, and the planning and organization included a dialogue with this company, in order to prepare the company to provide the appropriate information to the students.

#### **WS4**

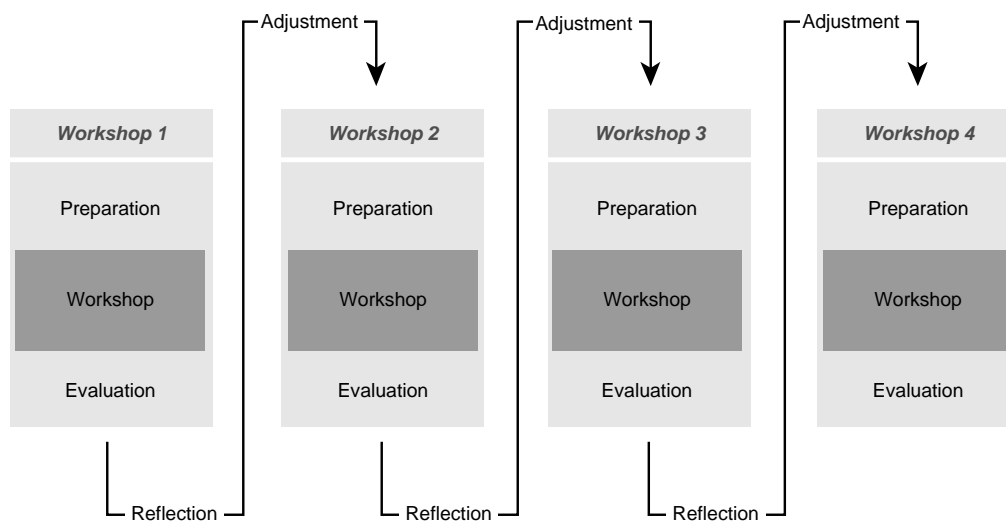
The fourth workshop was prepared in collaboration with two representatives from the company through several meetings. As a part of the preparation process, prior workshops were presented and the workshops' activities and expected results were outlined, so that expectations to the workshop and methodology were calibrated. Through these meetings several issues were discussed, e.g. the nature of the design project used in such workshops, the amount of preparation and research, the timetable, the number of participants, etc.

The actual participants were chosen by the representatives and they also arranged the practicalities concerning the location, materials and provisions. At their own request, they rented a weekend cottage which was a relatively normal activity for a 'brainstorm session' in this company. The participants were divided into two teams; this division was made on basis of the participant's competencies and experience and was done by a senior representative that had had a long working experience with the participants.

During this planning phase several visits were made to the company, in an attempt to learn about their life world and normal work routines, as well as getting to know the participants. Interviews with each participant that were would attend the workshop, were carried out to further investigate their background and attitudes towards design and methods.

### ***Intrinsic iterations***

The practical circumstances in the planning also influenced the research approach. The period of producing data is 8 months, plus the period of training and preparing. The planning of curriculums in the participating institution influences the time available for workshops. Therefore, periods of without production of data occurred. These periods have been used to work on documenting the course and events in the workshops. This work has meant reflections upon both phenomena and teaching of the methodology. In a way, this approach is similar to the structure of the design processes described in chapter 2; analysis – creation – evaluation.



*Fig 3.1 The evolutionary progress of workshops through reflection and adjustments.*



This implies that there is an element of development throughout the data production period in regard to teaching this methodology. This development is discussed in chapter 6 where the methodology is reviewed. A chronological description of the progress is found in appendix C.

### ***Planning the activities***

As preparation, meticulous schematics of the expected events and timetable were made to provide an overview of expected activities and sequence of methods and techniques.

The timetable was not expected to be kept, as experienced at the first workshop, but provided a framework from which one could improvise.

The sequence of methods is strongly dependent on the work done by the participants and thus cannot be foreseen. However, the main events in the methodology can be used for navigation in the planning.

As the projects progressed, the planning of the workshops became more realistic in the sense that fewer activities were planned and adjustments in the sequence of methods were made on the basis of prior experiences.

### **Collection of data**

The workshops at the institutions were completed without prior collection of data and focused on collecting data during and immediately after the workshops. The business workshop contained data collection prior to, at the time of, and after the workshop. The intention was to provide data for analyzing the comments from the participants in their business context; however the main focus was still on collecting data during the workshop.

### ***Interviews***

The interviews of participants participating in the fourth workshop were semi-structured, and as a part of the postmodern constructivist paradigm of this thesis, they were qualitative interviews (Kvale 1996) seeking knowledge regarding the interviewee's life world and viewpoints on selected topics.

*An interchange of views between two persons conversing about a theme of mutual interest. The interviewer is either a miner - under the notion that there is knowledge out there waiting to be found - or he is a traveler, which leads to a tale to be told upon returning home.*

(Kvale, 1996)



The interview followed the framing of the qualitative interview as described by Kvale (1996), with a briefing, the possibility to ask questions and the mentioning of major learning points.

The questions were structured in themes with sub-questions. At each interview, there was focus on touching on all themes, but not necessarily all the questions within each theme. The questions regarded personal views on; design, concept development, experience, methods, vision and missions.

The interviews also allowed time and possibility for the interviewees to speak their minds and elaborate on related topics and themes that arose during the interview, opening up for the experiences and life world of the interviewee.

The criteria for verifying the interpretations during the interview and following up and clarifying the meanings of the answers for the interview (Briggs, 1986) were met, or at least attempted to be met.

The questions were very short and formulated in their full extent as the interview progressed, obtaining a more spontaneous character of conversation.

During the days of the interviews there were opportunities to do some small talk and eat lunch as part of establishing a personal rapport with the participants. The idea, besides the practical issues, was to get to know the life world of the participants in informal surroundings.

#### ***Evaluation from participants***

The evaluation from the participants regarding the methods employed and the workshop in general was collected mainly in two ways.

Carrying out the facilitation during the workshop revealed several problems and attitudes. The nature of facilitation in this context prerequisites the emphatic ability and forces the facilitator into a dialogue with the participants concerning their understanding of the situation, the use of the introduced techniques and the positive and negative feedback of the activities. Thus, the facilitation in itself provides verbal information subjected to interpretation of the facilitator and depending on the facilitators own experience and background, which will be dealt with separately in the next chapter.

The participants were asked for both written and verbal evaluation at the end of each workshop. First, they were given 10 minutes to write the positive and negative feedback on paper, and then there were plenum discussion where everybody could participate.

This pre-writing allowed for individual reflection before the plenum discussion and was collected by the facilitator afterwards.



Post evaluation was attempted with the first and the fourth workshop using questionnaires due to the scattered location of the participants.

The students proved rather undisciplined with a return of approx. 10%, and thus it was not attempted with the other workshops involving students.

At the other end of the scale, the participants from the company involved in the fourth workshop returned 100% of the questionnaires. Also a meeting with the same two representatives as in the planning phase was held. The purpose was to debrief and discuss the impact of the workshop and their views on the methods and their usefulness.

### ***Observation***

Throughout the workshops digital photos have been taken, documenting the sequence of activities and their physical results. The photos have provided a visual material for analysis and post documentation of the workshops.

In all the workshops, there have been numerous teams and the photos have been a crucial tool in documenting the individual progress of each team in the intense course of a workshop, where the facilitator was both organizer and observer.

The photos only document the material that can be observed visually; therefore the documentation is supported by notes made during the workshop.

The typical sequence of documentation has been scanning the activities of all the teams, documenting by photo and at the end of the tour, notes have been made of the observed behavior and mental state concerning learning and understanding of methods by the teams.

The impact on behavior of people being photographed can be high. It was however observed that this impact quickly faded. The participants grew accustomed to the camera very quickly. This can be contributed to two things: Firstly, the intense sequence of events and short deadlines for different exercises left little time for the participants to be concerned with being observed.

Secondly, the number of photos was very high (1-200 pictures pr. day), thus making it 'normal' behavior of the facilitator in this specific context.

Documentation of body language and behavior was done using the features of the small digital camera to take short video clips including sound. Especially during scenario plays, it was essential to capture a sequence of events and body language.



In the intense fourth workshop with only two teams, it was also used in some situations to capture conversations between the participants, without their knowledge. For ethical reasons it was later revealed, and they were surprised by the fact that the camera could film video clips, thus confirming their unawareness and consequently uninfluenced behavior in relation to the camera.

## **Analysis of data**

### ***Analysis of interview***

The knowledge produced in the interviews made with participants from the company was used to prepare and analyze the course of the workshop and the use and handling of methods.

As Kvale (1996) stated the knowledge derived from the qualitative interview is inter-relational and contextual. The knowledge produced exists as webs in the interchange of views and the meaning depends on the interpersonal context where it was produced. The analysis of the interviews has focused on the interpretation and analysis during the interviews. As Charles L. Briggs (1986) states in Learning how to ask:

*The ideal analysis / interpretation is 'as you go' during the interview.  
Therefore; the more analysis during interview, the better.*

Therefore, the interviewee was confronted with the assumptions and interpretations as much as possible during the interviews. The analysis was included in the brief summary made after each interview.

### ***Analysis of workshops***

The analysis of the workshops was executed in several steps. First, focusing on the actual course events and observation, and then focusing on the methods and use of the methodology as a system in the respective contexts.

The first step was producing the documentation of the sequence of events as they happened during the workshop. In this analysis, the photos and notes were compared and the course described in a separate document. At the same time, the photos were scanned and the most relevant photos, with the best examples were used as illustrations in the document. This descriptive document includes; comments from participants, observations, photos and link to video clips.





The second step was analyzing the use of the various methods introduced, the systemic understanding of the methodology and the cultural context in which they were used. This produced a new document containing a brief cultural analysis touching on the participant's educational/cultural context, their professional emphasis and focus, and their attitudes towards design.

This information was partly derived from observations, partly from material provided by the institutions.

The third step of analysis was analyzing the movements in the pyramid model, the sequences of methods and their outcome in relation to the intentions and expected results. In an attempt to condense the information further, schematics and icons were used to bring overview of the activities in the workshops. (See chapter 5)

The fourth step was a comparative analysis of the four workshops, comparing the outcome of techniques, level and quality of facilitation and level of learning with various sequences of movements and methods in the different workshops. (See chapter 6)

Analyzing the collected data involved a dialectic approach with similarities to the hermeneutic circle (Kvale, 1996) and which also is consistent within the overall constructivist paradigm of this thesis. The details were analyzed in relation to the whole in a continuous back and forth process.

### **Validation and generalization**

The direct verification of design methods is according to Buur (1989) not possible due to the stochastic nature of design and the numerous variables influencing the design process. Therefore, as described in Lerdahls thesis (Lerdahl, 2001), there are two alternative forms of verification; the logical verification and verification by acceptance:

#### *Logical verification:*

- *Consistency: there are no internal conflicts between individual elements in the theory*
- *Completeness: that all relevant phenomena observed previously, can be explained or rejected by the theory*
- *Coherence: well established and successful methods are in agreement with the theory*
- *Cases and specific design problems can be explained by means of the theory This approach has the drawback that confirmation of a theory will be by analysis, while actual design is a synthesis process, meaning that observations may be imprecise.*

#### *Verification by acceptance:*

- *Statements of the theory are acceptable to experienced practitioners (design consultants and employees in companies).*
- *Models and methods derived from the theory are acceptable to experienced practitioners.*



*This approach has the weakness that acceptance is influenced by pedagogical and rhetorical variables that are hard to control.*

This verification by acceptance has similarities to Briggs (1986) notion on pragmatic verification:

*Pragmatic validation goes further than communication; it represents a stronger knowledge claim than an agreement through a dialogue. Pragmatic validation rests on observations and interpretations, with a commitment to act on the interpretations: "Action speak louder than words".*

In this thesis, there is a focus on the pragmatic validation, i.e. the use and handling of the presented methods, the methodology and its purpose is observed and interpreted. The participant's statements, actions, handling of methods and techniques represent their acceptance and level of learning of the methodology.

The statements are a form of verification by acceptance, but as noted, this might be influenced by pedagogical variables. The explanations and theoretical assumptions put forward from the empirical data are subjected to logical verification concerning internal consistency and coherence in relation to existing theory and knowledge.

### **Reflection on research approach**

The Initial research question and choice of active approach:

*"Which integrated framework and methodology can support a design team in the development of a concept, criteria and specifications in a qualitative goal, based on vision, values and a Value Mission?"*

More specifically the research question focused on investigating the vision based approach, as described by Lerdahl, as the framework for handling the transformational relation between the values and the concept; the immaterial and material aspects of the vision for the product under design.

Investigating this transformation within the vision based framework and in a design team, is investigating a complex process of synthesis and negotiation.

The chosen approach of action research is closely related to the action and process-oriented aspects of the design activity. The type knowledge of in the inquiry of this thesis is concerned with design methodology; the detailed use and handling of a methodology hold the transform of values.



This includes a double loop learning perspective of learning the methods and techniques, their type of results as well as learning when to apply methods within the methodology in relation to the 'problem' of the design.

This complex process and the learning aspects hold many variables. Containing the inquiry in workshops was a way of minimizing these variables and an attempt of equalizing the environmental setup for the empirical activities.

At the same time, the workshops provided a stable framework for closely monitoring, observing and documenting the process and steps of progress using the methodology. This focus on progress and transformation corresponds to a dialectic qualitative research approach (Jensen, 1991); where the intermediate stages of development, the series of changes between the stages is under investigation. This dialectic approach corresponds to the constructivist paradigm of the social sciences and of this thesis.

Investigating this design methodology and process, where negotiation is a main aspect, as described in Routledge Encyclopedia of Philosophy (p.59 in this chapter) the social aspect is eminent. As Lerdahl points out in his thesis:

*Arbnor and Bjerke [1977, translated from p. 126] describe it in this way:  
"An observer of social activities can never stand on the outside of what he is studying. There is a dialectic necessity that he at the same time function as an actor that is both influencing and is influenced by what he is studying."*

Therefore, the action research approach where one is involved in the activity both corresponds to the dialectic aspect of the social science paradigm and the synthesizing, negotiating nature of the design process.

### ***The Researcher as Facilitator and Researcher***

Being a facilitator at the same time as a researcher is the idea of Action Research (Whyte, 1991), and it imposed the need for special skills of the researcher. As stated in Lerdahl's thesis, a quotation from Reason:

*There is a whole range of skills required for participative research, skills that are very different from those in orthodox research, and that include skills of self-awareness and self-reflexiveness, facilitative skills in interpersonal and groups settings, political skills, intellectual skills, and data management skills [Reason, 1994, p. 335].*

(Lerdahl, 2001)

Besides the participatory skills, the facilitator is required to have expert knowledge of the field.



In this thesis, it means that facilitating the workshop required both knowledge of the design process, the methodology of the vision based approach and the participatory skills.

The expert knowledge of the vision based approach and the methodology was obtained through the collaboration with Erik Lerdahl and the participation in the workshops he organized, both as a participant and as an assistant. This constituted a training period, with the opportunity to observe the teaching and course of a workshop. Whilst having a background as a trained industrial designer, the theoretical and practical experience with the design process was already present.

Being a facilitator imposes contradicting responsibilities; the responsibility to help and lead the participants to a useful result, e.g. they cannot be allowed to fail completely, and for that reason the facilitator has to act as a safety net.

There is also the responsibility to observe; document and note the progress and statements of the participants; reflect on the entire process and activities as an outsider. This also implies that the facilitator cannot influence the decisions of the design team directly by discussing their solutions and problems, but only guide and instruct the use of methods in relation to the process and progress.

Finally, there is also the responsibility to organize and teach, setting up the framework and provide sufficient information in order for the participants to engage the methodology and apply it on their design problem.

There might be contradictions between leading the participants to a useful result and support their process without interfering with their decisions concerning their problem.

### ***Teaching and observing***

Being the teacher as well as an observer might influence the observed. By structuring and setting up the workshop and methodology, there is a risk of focusing on the expected results of each activity. Setting up the framework for data collection and observing the activities and outcome imposes a strong responsibility to be aware of one's own filters when observing. This resembles the ladder of inference (Senge, 1992) where the observed and processed data is subjected to a filtering guided by the experiences and world view of the observing person. This implies that the data selected for mental processing and registration is subjected to a filtering that leads us to see what we expect to see or what we want to see.



When observing the activities of the participants, the observer should be open-minded and look for new impressions and other variables than those expected and planned in advance.

Being both the teacher of a methodology and the observer of the use and learning of the same methodology imposes a relation between the skills as a teacher and the level of learning for the participants.

The teaching and facilitation of the methodology is also subjected to a learning process. For each workshop, the explanations and guidance of the participants is subjected to reflection and improvement, introducing an unknown variable into the comparison of the workshops.

However, an intrinsic part of unfolding and analyzing the methodology is the ability to explain the idea and use of the methodology. This allowed for a continuous improvement of teaching as well an opportunity to test the new explanations resulting from the reflections and learning of the previous workshops, and simultaneously observe the impact on the learning and understanding of the methodology. This added to the process of analyzing and unfolding the framework of the vision based methodology and the transformation of values within this methodology.

This intrinsic relation between teaching and the use and learning of methods is a part of the expected complexity of the participatory approach.

### ***The research context of designing***

The stochastic nature (Buur, 1989), numerous variables and the unpredictability of the outcome renders the design process impossible to control completely. The design process focuses on synthesis and the result is not derived from a process of analysis, straightforward thinking and rationale.

Setting up the framework of the methodology therefore required the possibility to make ad hoc planning and adjustments. This condition made it impossible to make the course of each workshop identical in every detail, thus adding another variable to the comparison of the workshops.



## Highlight résumé

This chapter presented the chosen research paradigm and practical research approach of this thesis constituting the framework for producing and analyzing data.

The research is of qualitative nature investigating phenomena and learning of a detailed and complex methodology through Action Research under an overall constructivist paradigm. The analysis includes both the description of phenomena (Phenomenology) and the interpretation of the observed (Hermeneutics) in order to construct the unfolding of using the methodology.

The data was produced in 4 workshops teaching the methodology under investigation over a period of 8 months thus providing time for reflection, documentation and analysis between the workshops. Before embarking into the role of facilitator and teacher of this methodology there was a period of training and discussion with Erik Lerdahl. This provided practical insight into the methodology, as well as a perspective from a learning point of view.



### **4. The Value and Vision-based methodology**

In this chapter, the Value and Vision-based methodology will be presented as a model and generic system of methods related to the Pyramid Model and vision-based methodology presented in chapter 2, p.30.

A methodology consists of a body of methods, procedures and principles. This means that there is an overall structure where methods are employed using specific rules and principles to achieve the objectives. In this chapter, the value and vision-based methodology will be unfolded using the system definition from chapter 2, p.24; elements, structure and principles.

First, the elements will be outlined and presented, then the structure will be presented to link together the elements. Finally, the principles of the methodology will be presented as objectives, rules and guidelines.



### ***Introduction***

The value and vision-based approach presented in this thesis is based on the product definition in the pyramid model presented in Erik Lerdahl's thesis (Lerdahl 2001). The methodology is based on the framework and process progression as described in chapter 2, p30ff and from Erik Lerdahl's "Innovation Course", as it was presented and used at the Institute of Architecture & Design September 2001 and 2002.

An objective with this thesis is to unfold and describe the mechanisms and phenomena in the Value and Vision-Based methodology as a system. The methodology as a system; consisting of elements (methods and techniques), structure (theory) and principles (guidelines and objectives). A thorough description and guideline to this methodology is a contribution to opening the 'black box' of the design process, making it understandable as well as and useful for the participants.

The presentation contains elements and phenomena uncovered through the analysis of the empirical data. These phenomena and elements are important tools with regard to understanding the empirical examples of the process of using the methodology presented in chapter 5.

The methodology is based on the idea of iteration while seeking consistency between the content at different levels of abstraction. The iterations are not only done focusing on the problem at hand, but one is iterating between different levels of abstraction. These abstraction levels are the levels described in the pyramid model (Lerdahl 2001).

Through the use of various methods the participants are lead from one abstraction level to another. Sometimes, these moves are done with a clear connection between the levels, and other times these moves are done without a direct linking of the levels.

The main idea is of a dialectic nature. By switching between the abstract and the concrete part of the "problem" during the workshop, the participants are establishing an ever closer connection between the guiding philosophy and potential ideas.

Unfolding the methodology reveals it as an event driven process. Events are both abstract and concrete, but they are most important as milestones for the abstract thinking. These events establish the content of the abstract levels and function as guidelines for the generation and sorting of ideas.





## Elements in the Value and Vision-based methodology

### ***A defined problem***

In order for the methodology to function, there has to be a defined assignment; a category concerning the product or product archetype. This is the “design problem” that the methods deal with.’

Decisions and ideas are easier generated and judged if the persons using the methodology have some information about the problems connected to the product archetype and the use context. Therefore, a research phase is recommended before initiating the use of the methodology.

### **Methods**

The methods used in this methodology can be divided into three categories, namely problem-oriented, process-oriented and presentation methods.

#### ***Problem-oriented***

The problem-oriented methods are used to deal with the design problem, i.e. the product. The methods have various functions:

- Generate Ideas – creative techniques.
- Synthesize – compose, decide and generate.
- Analyze – condensate and abstract.
- Organize – judge and sort.
- Visualize – present or make tangible

See Appendix A, methods no.1-13, for detailed description.

#### ***Process-oriented***

These methods are process-related in the way that they use a physical activity to relieve the brain of the problem-oriented pressure. These exercises are used as breaks in intense periods. They also function as “ice-breakers” if the participants are not familiar with each other. Once you have crawled on the floor together you have a very different relationship than if you just came in the room and were seated together. This can reduce hierarchic respect and fear of making a fool of oneself by suggesting wild things (as needed in the process of generating ideas), because all participants just made “fools of themselves” from the beginning. See Appendix A, methods no.14-21, for detailed description.



### ***Presentation methods***

The presentation methods are used both as a means for communicating externally from the team and internally within the team. Being forced to visualize and demonstrate the abstract concepts, the teams are continuing their negotiating of the content, thus increasing their awareness and precision with regard to definitions. See Appendix A, methods no. 22-23, for detailed description.

### **Milestones**

The abstract milestones, Value Mission and Interaction Vision, are derived from the vision-based approach and Pyramid model presented in chapter 2, p36. Both Value Mission and Interaction Vision are described by means of keywords that are qualified and defined by metaphors, images and scenario plays.

#### ***Value Mission***

The Value Mission defines the set of values that the product is based upon; this is the answer to the question “why this product”. The mission is previously defined as the guiding thought, so the Value Mission for the product is therefore the guiding thought for the product expressed in terms of values.

#### ***Interaction Vision***

The Interaction Vision is the envisioned interaction between the product and user, as well as between users. This constitutes the role of the product as a social actor and is described by keywords of qualities and characteristics of that the role of the product in the social context where it is used. It is important to note that this Interaction Vision does not describe features of the product as such, only the *behavior* and personality of the product on a contextual level.

#### ***Product concept***

The concept is the milestone at the principal level. It resembles the system description presented in chapter 2, p.21. At this level, the solution can be described at a systemic level; the elements (components), a structure and principals of function, construction, use etc.

#### ***Solution***

The solution is the final milestone that represents the finished product as an answer to the design problem. During the process of the methodology the distinction between the product concept and detailed solution is not enforced in the early phases of concept development.

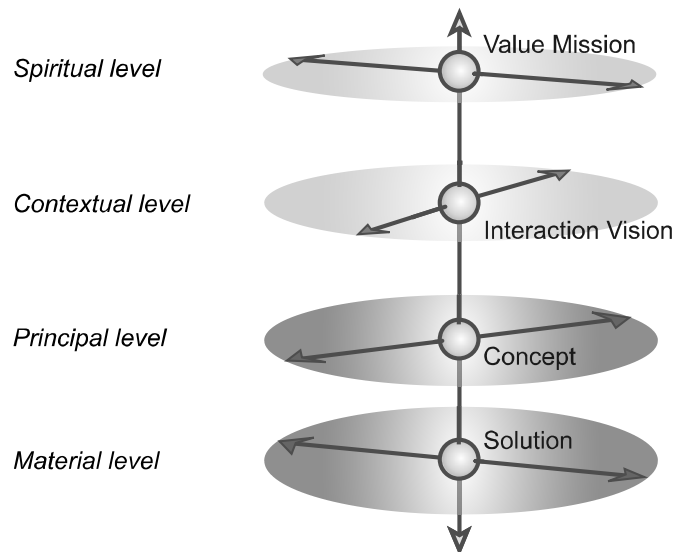
## Structure in the Value and Vision-based methodology

### **Four levels of abstraction**

The pyramid model was reviewed and presented in chapter 2, a short summary of the abstraction levels is presented here:

- The Spiritual - the intention of a product expressed through the underlying values and philosophy.
- The Contextual – the product story, social setting and interaction.
- The Principal – structures, functional and form principals.
- The Material level – production, materials, details and documentation.

The presented addition is the Movement Model (Fig.4.1), demonstrating the positioning of the milestones in relation to the four levels of abstraction.



*Fig. 4.1. The milestones are the corresponding anchor points for the four levels of abstraction during the process.*

The four milestones form the anchor points of the levels of abstraction during the process of using the methodology. The structure allows for the various methods to be employed both *on* a given level of abstraction and *between* two random levels. The horizontal arrows in fig. 4.1 indicate activities and methods used on the same level of abstraction, illustrated by the circular surfaces. The vertical arrow indicates activities and methods applied to two different levels of abstraction at the same time. The choice and combination of methods is described in the following section about principles.



## Principles in the Value and Vision-based methodology

### ***Vision-based approach***

The vision-based approach is described in chapter 2, p.31ff, which can be consulted for further details.

Summarizing the essence of the vision-based approach, there are principal issues of focus, design phase and paradigm.

The focus is on using the vision as a goal, instead of the specifications as a frame. Within this vision-based approach the activities shift from focusing on the abstract levels to focusing on the concrete levels. The shift is related to the progression in the design phases. The methodology can be used to generate *initial* concepts in the first phase, “Concept Development”, of Ulrich and Eppinger process model (1995). In later phases, e.g. “Detail Design”, the focus is on the concrete levels, dealing with the details of construction, use and materials.

The principal of the paradigm is related to the value-focused thinking, as described by Keeney (1992). Defining higher objectives as part of generating alternative solutions (choices) is related to establishing a vision and mission. This is used to express the guiding thought and the desired future state.

### **Objectives**

Due to the fact that parts of the methodology's principles are the objectives, they define the intention and goal of using the methodology, thus functioning as part of the guiding in combining methods within the methodology.

### ***Holistic consistency***

Through various exercises and techniques the objective is to make the content of the four levels of abstraction coherent. In the early stages of the phase of the concept development (Ulrich and Eppinger, 1995), the focus is on the upper levels. In later phases, such as the detailed design phase (Ulrich and Eppinger, 1995), the focus is on the lower levels of abstraction as the design process begins to include detailing the product.

The objective is to have a consistency between the content of the four levels of abstraction from the pyramid model (fig.2.9), so that the underlying values, the behavior of the product, its principals and details form a hole. This constitutes a holistic view on the design of a product.



### ***Shared perception by a team***

The last objectives are the teams' internal process of discussion that leads to a shared understanding of the vision, mission and the words used to describe it, i.e. a shared vision. This is a discipline in the learning organization.

The Value and Vision-based methodology provides the team with a *language* for the discussion and negotiation through the use of the four levels of abstraction from the pyramid model described in chapter 2. The methodology also provides the team with a *navigation tool*; a systematic approach to the previous, current and future activities. In this way, the team can benefit from a common understanding of the activities and thus improve the teamwork.

### ***Potential product ideas***

During the workshop, several sessions are held that generate a number of ideas. These ideas are often far-fetched and not possible to implement as such, but they can provide a basis of synthesis for conceptual ideas. At the end of the workshop, there might be a number of potential ideas consistent with the vision and mission.

### ***Designing the abstract guideline***

The methodology provides insight and produces material that describes the overall qualitative objective for the product (or service) to be developed. This is establishing a guideline, formed as the Value Mission (a set of value) and the Interaction Vision (how these values are expressed in their context). The mission and vision are related to the upper two levels in the pyramid; the values are the underlying philosophy behind the product, and the Interaction Vision describes the role of the product in the use context.

These elements form a qualitative goal that can guide detailing and subsequent product decisions.



## Principles of linking and moving

### ***Horizontal movement***

The horizontal movements describe a movement within the same level, i.e. working on a single level of abstraction.

On the abstract levels this would constitute a search for definitions and nuances. When finding abstract words and concepts, there are numerous nuances of the meaning of that specific word. A horizontal movement is searching for precision in the definition of that particular word through various methods and techniques on the same level of abstraction.

On the concrete levels, a horizontal movement would be generating ideas without any relation to the abstract levels.

This is random idea generation in relation to the chosen problem of the design process. The pool of ideas generated are not linked to the desired values or qualities, hence they can provide new insight and alternatives that were not already thought of in relation to these values or qualities.

### ***Vertical movement***

The vertical movements describe the linking of levels. Looking at the levels of abstraction in the pyramid model, one can enter at any level. Any next vertical step will be to link, either upwards or downwards in the levels of abstraction.

This vertical movement consists of either generating ideas based on the content from the abstract levels, or analyzing concrete ideas for their content on an abstract level.

Generating ideas based on the content of the abstract levels has an unpredictable outcome. Mainly in the sense that rapidly produced and sketched ideas usually contain both principal and material aspects in random proportions. Therefore, there is no guarantee that one can guide the generation of ideas to a specific level of abstraction; “principal” or “material”.

Analyzing ideas for their content on other abstraction levels is also unpredictable. The upward movement can be used as a form of calibration between the levels or as a source of content on the abstract levels.



### **Procedure and guideline**

The process of the methodology uses the pyramid model for basic understanding of the current level of abstraction using the different methods and techniques. From this understanding of the four levels, the methodology uses an iterative approach towards forming the content of the levels. The content is defined as the milestones; Value Mission, Interaction Vision, Product Concept and Solution.

The progression of the process is done through links between the levels of abstraction as well as focusing on the specific levels. This methodology operates with the vision-based approach, indicating that the focus is on what “*could be*” rather than on “*what is*”. As an apparatus of notation, an empty pyramid divided into four levels is used as a placeholder for noting the current values and qualities.

### ***Progression***

The progression of the methodology can be interpreted as a stop-and-go process. Each movement creates an outcome. Either this outcome is used in the abstract goal (the pyramid for the envisioned product), or it is placed in the pool of ideas. The outcome of a movement determines the next move. This analysis of the outcome is essential for the progression and is primarily done by the facilitator. As participants learn the system and can relate to the outcome, method and objective, they can begin to take over the task of analysis and determine their own sequence of movements. The analysis brings together several factors and parameters in order to determine the next appropriate step: the mental state of the participants, the outcome and its relation to the problem, the previous movements, the current understanding of the vision etc. This resembles the notion of the Blue Thinking Hat (de Bono, 199?) where one is thinking about the way of thinking. In the terminology of Schön (1983), this would constitute Reflection on action; reflecting on the methods employed in relation to the handling of the problem. This accounts to the phenomena of double loop learning (Argyris and Schön, 1994); correcting the way in which we think about the problem/action.

### ***Guidelines***

The guiding principle is: “Bring in content on a given level of abstraction, qualify it and then link to another level”.

The methodology is focused on rapid iterations to facilitate an understanding of what the product to be designed could be and what the team can agree upon as the goal. It requires that there is willingness to embark on unknown territory and make mistakes.

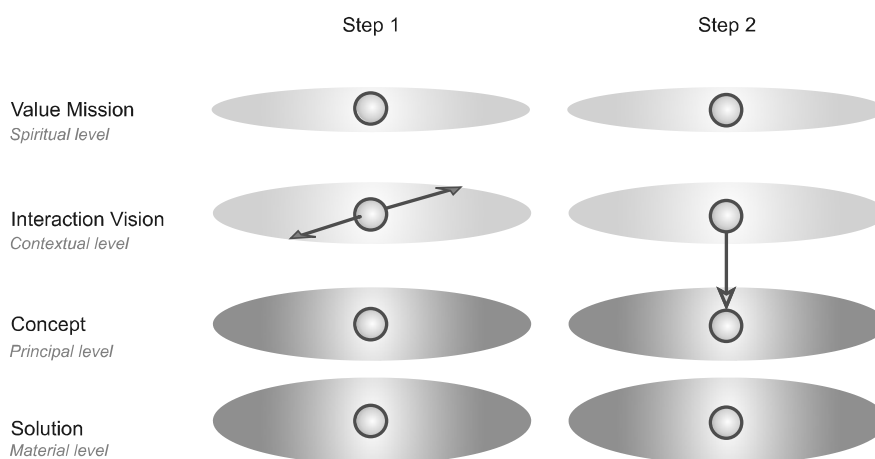
This is common to almost all creative work; it prerequisites the willingness to fail in a trial and error process in order to progress and succeed (Kotter & Heskett, 1992)

When looking at the four levels the upper two levels are abstract and the lower to levels are concrete. Content on the abstract levels are words, pictures and scenario plays describing abstract concepts. The content on the concrete level is product ideas, suggestions and solutions.

Bringing in content on an abstract level can be viewed as pointing into the sky and saying something about what can be imagined concerning the abstract, immaterial aspects of the product. This is not well-founded or even well-understood. Therefore, a process of qualification is needed. This means unfolding the possible interpretations of the word used and deciding on the *specific nuance* of the word that is *relevant* and *desired* concerning the product that is to be designed.

The latter is subjected to a negotiation because it is a part of the decision regarding the product's behavior and therefore a major design issue.

Once the relevant nuance is decided, the team can move on and link to another level; either analysis of the present consistency between the four levels of abstraction or generating new product ideas, suggestions or solutions related to the abstract content.



**Fig. 4.2.** Example of a sequence from the guideline: showing qualification of the words used in the Interaction Vision at the contextual level. Then linking the contextual and principal level by generating product concepts. The horizontal movement is a scanning process, searching for potential associations and nuances in order to determine the appropriate one.





## Value & Vision-based Methodology (4)

If one brings in content on a concrete level, it can be viewed as generating ideas or specifying some demands which the product should meet.

The demands can be derived from user needs or other requirements stemming from a research about the subject. Generating the ideas can be done with various creative methods. Once ideas are present, they can be subjected to a sorting and judging process filtering relevant ideas. From the limited pool of ideas the team can either analyze the current consistency between the levels or move upwards extracting values or qualities that will be *relevant* and *desired* in the product that they are designing.

In principle, these sequences can continue indefinitely, but at some point a content on the abstract level will crystallize itself. This crystallization process is supported by the abstract milestones; Value Mission and Interaction Vision. The most important rule to observe is the *continuous iterations* between the levels, especially towards the end of a concept development session. This will ensure a consistency between the content on the levels; the Value Mission, the Interaction Vision and the actual product concept.

In the following, the various combinations of linking will be outlined.

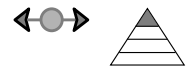


### Type of movements in the procedure

The rules of moving and linking the four levels of abstraction through the four milestones are presented as horizontal and vertical variants of movements.

#### 1. Horizontal movements at the spiritual level

Moving horizontally on this level is about finding, calibrating and deciding on a set of values that would constitute the *Value Mission* for the product. The Value Mission is the foundation for the product; the values upon which it is based. One can think of the Value Mission as the answer to the “why?” question; why is this product made, what is the intention and the reason d’être?



##### a) Scanning

If no values are present, the horizontal movement will be a wide scanning for potential values in the field of the design problem area; use context, culture, stakeholders etc. This is an open approach and can be carried out through mind mapping or discussion. (Method no.1 in Appendix A)

##### b) Qualifying

If a value is present, the horizontal movement will be about determining the exact nuance. Any keyword used has numerous interpretations, but when it is used as a part of describing a goal it needs to be exact. Therefore, the team must qualify its understanding of this word in this specific context. This will be done by using MBM mind maps, metaphors, visual images and scenario plays. (Methods no. 1, 10, 22 and 23 in Appendix A)

##### c) Choosing a set of values

The values in the Value Mission should describe the *desired* values for the envisioned product. The set of values should be inspiring and work properly together and not include obvious values. Choosing these values requires a process where the team analyzes the words that describe the values. This analysis looks for three things:

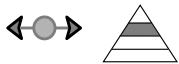
- Firstly, they should eliminate wrongly placed words such as demands (they will be fulfilled anyway), solutions (wrong level), and qualities (the next level).
- Secondly, they should discuss whether the values are significant to the product because a goal should be meaningful and point in a direction. Stating the obvious will not assist the team in creating a leading star, a vision.



- Finally, they should examine the difference between the values; a set of values should describe a field of tension.

If two values are too close and can be taken to mean almost the same thing, they will not help to describe the goal. A set of values that does not seem compatible and describes opposite meanings are strong and powerful and creates tension. Dilemmas can create strong visions and evoke feelings in the same manner as creative tension (Senge, 1992). It sketches a problem as well as a solution space; how can something be two apparently opposite things at the same time? This problem is intriguing.

After numerous iterations back to this level, the Value Mission might be so well understood that the team can formulate a sentence that summarizes the essence of the Value Mission.



### **2. Horizontal movements at the Contextual level**

Moving horizontally on the contextual level is about finding, calibrating and deciding on a set of qualities and characteristics that describes the product's behavior, which in the end constitutes the *Interaction Vision* for the product. This describes the desired and envisioned role of the product in the social context. One can think of this as designing a personality for the product. These movements on this level are similar to the movements on the Spiritual level.

#### a) Scanning

If no qualities are present, the horizontal movement will be a wide scanning of the field for potential qualities. This is an open approach and can be carried through by using mind mapping or discussion. (Method no. 1 in Appendix A)

#### b) Qualifying

If a quality is present, the horizontal movement will be about determining the exact nuance. Any word used has numerous interpretations, but when it is used as a part of describing a goal it needs to be exact. Therefore, the team must qualify its understanding of this word in this specific context. This will be executed by using MBM mind maps, metaphors, visual images and scenario plays. (Methods no. 1, 10, 22 and 23 in Appendix A)

#### c) Choosing a set of qualities

The qualities in the Interaction Vision should describe the desired qualities and behavior of the envisioned product. The set of qualities should be inspiring and work properly together and not include obvious qualities. Choosing the values requires a process where the team analyzes the words describing the values. This analysis looks for three things:

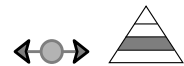


- First, they should eliminate wrongly placed words such as demands (they will be fulfilled anyway), solutions (wrong level), and values (the next level). It is a common mistake to describe the qualities as solutions or state demands in an attempt to describe the behavior of the product.
- Second, they should discuss whether the qualities are significant to the product, because a goal should be meaningful and point in a direction. Stating the obvious will not assist the team in creating a leading star, a vision.
- Finally, they should examine the difference between the qualities; a set of qualities should describe a unique, clear and strong mental image.

If two qualities are too close and can be taken to mean almost the same thing, they will not help to describe the goal. A set of qualities that does not seem compatible and describes opposite meanings are strong and powerful and creates tension. Dilemmas can create strong visions and evoke feelings. (Method no. 12 in Appendix A)

**3. Horizontal movement at the principal level**

Moving horizontally on this level is developing new concepts and principles for the product in relation to the overall problem area. The movements can be seen as a scanning process where the solution space is scanned with a starting point in the existing product and/or the existing problem.



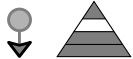
Several techniques of creative generation of ideas can be used here; Brain pool writing, forced relationship, sketching, modeling, etc. (Methods no. 5, 3 and 6 in Appendix A)

**4. Horizontal movement at the material level**

This is similar to moving on the principal level. The only difference is the level of details in the ideas. In practice, this distinction is not possible; most ideas are described by using both some principles and some materials.



Moving horizontally, both on the two concrete levels, holds many similarities with a traditional sketching process of an architect or designer.



### **1. Vertical movement from Spiritual level to concrete levels**

The vertical movement downwards from the Spiritual level to the concrete levels is an act of generating ideas and exemplifying the intangible abstract values.

The functionality is similar to the concept of technique Forced Relationship; (method no.3 in appendix A) generating ideas by forcing together two factors. There is a difference though; in this case the idea generated is supposed to contain elements of one or more values in the Value Mission.

By exemplifying the abstract notions into ideas and suggestions, they are made explicit and subjected to a process of interpretation. These examples give the team the possibility to calibrate its understanding and reflect upon the perception of the values. The ideas (sketched, written or verbally suggested) are mainly used as stepping stones to verify and build an understanding of the abstract goal.



### **2. Vertical movement from Contextual level to concrete levels**

This movement is similar to the previous. The movement constitutes a forced relationship (method no. 3 in appendix A) between the qualities of the Interaction Vision and the problem/product area.

The contextual level is closer to the principal level making it easier to relate the behavior of the product to principles of the product. Therefore, this movement is preferred over the movement from the spiritual level in the initial stages of using the methodology.



### **3. Vertical movement into the spiritual level from external information**

This movement constitutes a \*Start move'. When there is no content on the Spiritual level, one can start the search for values from the design problem area; use context, culture, stakeholders etc.

By unfolding the landscape of problems, the problems and their associations are made explicit and thus subjected to an analysis of their value content. Through a process of grouping, categorizing, synthesizing and abstracting the values are derived (methods no. 1, 2 and 14 in appendix A).

Another entrance is using the more concrete experiences of using the product. This can be done by analyzing the user needs, e.g. through mental visualization of the situation (method no.11 in appendix A)

The mental visualization is a powerful tool for getting in touch with the emotional side of using the product.



**4. Vertical movement from concrete levels to the spiritual level**

This movement is about analyzing and abstracting the already-generated ideas. The pool of ideas can be analyzed for its inherent values through a discussion session in the team. In order to minimize the workload, the analysis can be carried out after a sorting exercise where the ‘best’ ideas are selected (method no.8 in appendix A). Defining the ‘best’ ideas can be done by using the feelings; which ideas feel the ‘best’ in an attempt to make the team focus on the abstract, emotional side of the product.



Other criteria for sorting can be employed as well, depending on the character of the assignment, but in this initial stage the focus should be on the mission and vision rather than the specific ideas.

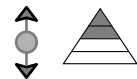
**5. Vertical movement from concrete levels to the contextual level**

This movement is similar to the previous move to the spiritual level. However, here it can be easier to analyze the ideas and suggestions for their behavior and contextual role. Therefore, this movement is preferred over the previous.



**6. Vertical movement between spiritual and contextual level**

Moving between these two levels is limited to calibration. The content of these levels can be very close and difficult to separate. Therefore, it is not advised to slide from one level to the other in order to develop new content.



The relation between the two levels can be exercised as calibration in the sense that the content already presented on the two levels can be analyzed for its internal relationship. The analysis is looking for consistency and overlap between the words used to describe the content at each level; the qualities in the contextual level should be able to activate the values in the desired way.

This analysis is carried through by means of a discussion session in the design team.



### **Highlight résumé**

This chapter presented the setup and objectives in using the value and vision-based methodology. The methodology is unfolded by using the important notions of horizontal and vertical movements. This refers to levels of abstraction in the Pyramid Model and the relation between these in the progression of the methodology.

The Value and Vision-based methodology that is described in this chapter differs from the original description of Erik Lerdahl's Vision Approach in chapter 2. The systemic qualities and linking between levels of abstraction were outlined in presenting the process and progress when using the methodology. This is an attempt to counter the main problem with the Pyramid model, namely the ambiguous perception of this conceptual mode as a *process* model.







### **5. Practicing the Value and Vision-Based Methodology**

This chapter will present four cases of practicing the methodology. The empirical data for this project are produced in three workshops at different educational institutions in Denmark and one workshop at a Danish production company designing and manufacturing medical devices and audio electronic devices. The workshops functioned as laboratories where the methodology and the subsequent phenomena and learning process were studied in a relatively controlled environment.

The methodology used in this thesis has been taught in the workshops, with slight adjustments in the use and presentation as the facilitator became more familiar with the phenomena and the pitfalls along the way. This will be elaborated on in chapter 6.

In workshops 1, 3 and 4, the workshops functioned both as methodology courses at the respective schools and as sessions for generating ideas directly related to the students' own projects.

In workshop 2, the workshop functioned as a concept development kick-off session, and data collection was furthermore supported by interviews, questionnaires and observation. The point of this particular workshop and collaboration with a company was to test the workshop methodology in the context of real business. This gave important feedback, especially with regard to multi-disciplinary teams and the relation to the rest of the development process.



## Introduction and overview of workshops

The setup presented here is used in the empirical data. The workshop setup is composed in order to *teach* a design team how to use the methodology and at the same time develop a “ready to use” *qualitative goal* and coherent *initial product concepts*. There are 3 main aspects of setup to consider when employing this methodology; the organizational framework, the overall relation to the design process and the facilitation of the methodology.

### **Organization**

In the empirical data, team work has been a prerequisite. This team based approach provides a forum for discussions, especially dealing with interpretations, nuances and meanings of abstract concepts. In general the team is a design team with a shared objective and commitment (Darsø, 2001) to create and develop new products and /or services. This is the basic requisite as used in the workshops. In the workshops the number of members in a team has varied from 3 to 7 persons. The ideal number is about 6 persons in order for the team to manage the discussions and negotiations. (Striim, 2000)

### **Design process**

The methodology has been used in the phase of initial product concepts in WS1, WS2 and WS4 with an emphasis on the development of the Value Mission and the Interaction Vision. In WS3 the practical implications of the study plan meant that the methodology was used in a revision and decision phase concerning already developed product concepts.

### **Facilitation**

The methodology requires a facilitator during the learning process. The facilitator is planning the event driven process prior to the workshop. However the specific sequence of events is slightly unpredictable before hand, due to a number of unknown factors concerning the progression in the learning process and the design related decisions during the workshops.

The sequence of techniques and methods is influenced by what the participants produce along the way. This varies with the ability to deal with abstract levels, the motivation and speed of generating ideas, etc. Therefore the facilitator is forced to make ad hoc decision based on feeling and sensing the participants learning process, as well as their concept development process. This is a complex task requiring the ability to empathize with the participant's feelings and abilities in the given situation, as well as following their progress with dealing their problem and support their use of the methods.



## Practicing the V-V-based Methodology (5)

### Overview

Before presenting the workshops where the Value and Vision-based methodology was practiced, an overview of the four workshops is presented. The schematic overview summarizes the values as they were presented in the Value Missions and Interaction Visions, the team organization and design task and the facilitation.

WS	Team & Task	Team org.	Values	Design phase	Methodology	Facilitator
WS1	1 "Waiting facilities in train stations"	5 male ID Eng. students	Value Mission: <i>Safety</i> <i>Confidence</i> <i>Identity</i>  Interaction Vision: <i>Simple</i> <i>Intuitive</i> <i>Adaptable – non locking</i>	Initial concept development.  Research ongoing	Vision based methodology.	Erik Lerdahl, organizer and facilitator.  Christian Tollestrup, assistant facilitator.
	2 "Commercial displays and system"	4 female ID Eng. students	Value Mission <i>Identity</i> <i>Flexibility</i> <i>Experience</i>  Interaction Vision: <i>Informative</i> <i>Motivating</i> <i>Demanding attention</i>			
	3 "Luggage"	1 male and 3 female ID Eng. students	Value Mission <i>Attention</i> <i>Belonging</i> <i>Safety</i>  Interaction Vision: <i>Flexible</i> <i>Free of worries</i> <i>Relational</i> <i>Easy to grasp</i>			
	4 "Train interior"	2 male and 2 female ID Eng. students	Value Mission <i>Freedom</i> <i>Flow</i> <i>Safety</i>  Interaction Vision: <i>Inner peace</i> <i>Flow</i> <i>Experience</i> <i>Flexibility</i>			



WS2	N "Pill Dispenser for Diabetics"	2 male product development engineer 1 female Industrial design trainee 1 male electronic engineer trainee	Value Mission N/A  Interaction Vision: <i>Safety</i> <i>Simplicity</i> <i>Pro active</i> <i>Motivation</i>	Initial concept development  Short research done.	Vision based methodology	Christian Tollestrup, organizer and facilitator.
	F "Pill Dispenser for osteopsathyrosis"	1 male product development engineer 1 male engineer experienced in usability 1 male Industrial Designer 1 male Business manager	Value Mission <i>Life quality</i> <i>Excellence</i> <i>Scientific</i>  Interaction Vision: <i>Attracts attention</i> <i>Creates safety</i> <i>Serious</i>			
WS3	BT "Sphygmomanometer"	2 male and 3 female BDE students	Value Mission <i>Trust</i> <i>Motivation</i>  Interaction Vision: <i>Insight</i> <i>Safety</i> <i>Easy /convenient</i> <i>Security</i> <i>Credibility</i>	Refining and synthesizing concepts.  Choosing feasible concepts for further development	Vision based methodology.  Increased focus on values (value landscape) and a more direct translation between concepts, qualities and values.	Christian Tollestrup, organizer and facilitator.
	F Fish "Food products and services"	3 male and 2 female BDE students	Value Mission <i>Easy</i> <i>Healthy</i> <i>Fast</i> <i>Flexible</i>  Interaction Vision: <i>Easy</i> <i>Healthy</i> <i>Fast</i> <i>Flexible</i>			
	S "Vacuum cleaner"	4 male BDE students	Value Mission <i>Innovation</i> <i>Prestige</i> <i>Honesty</i>  Interaction Vision: <i>Intelligence</i> <i>Status symbol</i> <i>Quiet</i>			



## Practicing the V-V-based Methodology (5)

	H "Hydroxide service system"	4 male BDE students	Value Mission N/A  Interaction Vision: <i>Flexibility</i>			
	BR "Fireplace"	2 male and 4 female BDE students	Value Mission <i>Cosines</i> <i>Individuality</i> <i>Innovative</i>  Interaction Vision: <i>Provoking</i> <i>Revolutionizing</i> <i>Intimate</i>			
	T "Mini tractor"	2 male and 3 female BDE students	Value Mission <i>Prestige</i> <i>Joy of working</i> <i>Freedom</i>  Interaction Vision: <i>Appealing</i> <i>Special tool</i> <i>Intuitive</i> <i>Flexible</i>			
WS4	G "Smoking devices"	2 male and 2 female ID students	Value Mission <i>Extraordinary</i> <i>Pleasure</i> <i>Accept</i>  Interaction Vision: <i>Considerate</i> <i>Accessible</i> <i>Attract attention</i> <i>Discrete</i>	Initial concept development  Short research done.	Vision based methodology  Increased focus on values (value landscape) and a more direct translation between concepts, qualities and values	Christian Tollestrup, organizer and facilitator.
	M "Smoking device"	1 male and 3 female ID students	Value Mission <i>Story</i> <i>Accept</i> <i>Respect</i>  Interaction Vision: <i>Gives time</i> <i>Simplify</i> <i>Sensuous</i>			



	<b>S</b> "Smoking device"	3 female students	ID	Value Mission <i>History</i> <i>Pleasure</i>  Interaction Vision: <i>Combinable</i> <i>Can be marked</i> <i>Clean</i>			
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## **Workshop 1 (WS1)**

*7<sup>th</sup> semester Industrial Design students at Department of Architecture & Design, Aalborg University, September 2002*

This 3-day workshop is a part of the curriculum for Industrial Design students on the 7<sup>th</sup> semester at “Architecture & Design”, Aalborg University. The workshop is entitled “Innovation course” and is held by Erik Lerdaahl, and Christian Tollestrup is participating in the workshop as an assistant and an observer.

### **Design and engineering context**

This subchapter will introduce the context of the participants in the workshop; this is based on the experience as a teacher employed in this institution and the curriculum for the education.

#### *The objective for the education*

In Danish terms, this education of combining engineering and architecture (or design) is relatively new. The objectives of the education are to integrate the engineering and aesthetic competences. Traditionally in Denmark, these competences are divided and the market for industrial design education in Denmark is either paired with the education of architects at the Architect schools or paired with the more Arts and craft-oriented schools. These places provide the students with little or no technical skills and have a strong emphasis on aesthetic aspects.

#### **Traditions**

The students work with problem and project-based learning (the learning paradigm at Aalborg University) and complete a large project each semester. Each semester, the students are to demonstrate a number of skills; technical, aesthetical, analytical, etc. and through the project these skills are integrated and synthesized into a design solution.

The projects are of increasing complexity from integrating aesthetics and technical aspects, accelerating to involve multiple stakeholders, system qualities, strategy and philosophy.

#### **Values**

The students exhibit these skills through the project and the most important concerns in evaluating and guiding the students is how they master the design process.



Each design process is described and evaluated in a rapport, and the learning is detectable by the reflections and methodology revealed in these process rapports.

### ***Team roles and hierarchy***

Students at Aalborg University are always working in teams; this enhances the team working skills and imitates the actual work situation in the 'real world'. The students are therefore accustomed to this situation and are able to work together and resolve their differences themselves.

### ***The role of Design***

Integrated Design is the tool for integrating and synthesizing. Integrated Design is a broad term and within this education it is not limited, nor is it concentrated on shaping and giving form. Design involves many aspects; giving form is merely the most visible one, since it is physically integrating the aspects. The design of the problem and the structure lie before the actual form, but they are even more important in designing the solution than the form.

The students are familiar with a variety of models and the design process is gradually increasing in complexity throughout the semesters.

From concentrating on integrating just technology and form, the 7<sup>th</sup> semester focuses on *system* design; structure, elements and principles. Thus, increasing the complexity of product design into system design where the product becomes just *one* element of many.

The students are, to some extent, familiar with different tools and methods that handle values, e.g. "Moodboard", a technique used to describe the meaning of a word by the use of pictures and photos. These words could be keywords for a design project. However, before this workshop, they have not dealt specifically with values, nor have they been taught specifically how to develop concepts.

### ***Team structure***

There are 4-5 students per team. The teams are already formed at the start of the semester by the students, so the teaming is not done specifically for this workshop.

There are 4 teams and a total of 21 students. One team is entirely male students and another team is entirely female students, the last two teams are mixed evenly.





### ***Competences***

The students have general design competencies of a technical and aesthetic nature and experience with the design process within an academic framework. They are accustomed to presenting orally, written and visually through a variety of tools. They make analysis on different levels, including borderline anthropological methods. They are used to working with both quantitative and qualitative aspects of a problem. They can sketch and model as a part of the synthesizing process.

### ***Background knowledge***

They are students and up till the current semester their contacts with the practicality of the industries have been through the use of companies as a sparring partner for some semester projects, especially in the research and problem definition phase.

### ***Motivation for participating***

The workshop is a part of the semester project but there are no sanctions for not attending. Consequently, the motivation for the students to attend is learning new methods and the possibility for a facilitation and assistance in the idea generating phase of their project.

### ***Experience with the subject of the design task***

The majority of students had done some research prior to the workshop. However, one team had limited research material. All of the students had been traveling on a train from London to Paris as a part of a field trip. On this field trip, all students were supposed to observe in order to identify problems and design opportunities.



## **The workshop setup and overview**

### ***The role of the assignment***

The assignment for this workshop is developing ideas for the students' own projects. The theme for the project is Transit in relation to trains. This workshop functions as a kickoff on developing a solution for the project.

The assignment is relatively undefined, meaning the each team can further specify their projects problem and character. Some will concentrate on designing the interior of the trains, while others will design furniture for the train stations. Others again will do something completely different.

### ***The process of the workshop***

The layout of the workshop is organized by Erik Lerdahl, and the three days are loosely planned in advance, making it possible to adjust throughout the workshop. The workshop process is event-driven and therefore two major abstract events are planned within the first two days: The "Value Mission" and the "Product qualities" (Vision of interaction). The rest of the exercises have to do with creative methods of generating ideas and physical exercises to promote the use of body language (and to lighten the atmosphere).

### ***Timetable and organization within the project / semester***

The workshop is taking place within the first month of the semester's main project. The first 2-3 weeks of the semester are for lectures and for doing research on the subject and the theme "Transit". Since the purpose of the workshop is to generate ideas the workshop is held before the teams 'lock on' certain ideas and solutions, but they have decided on a problem within the theme.

### ***Resources***

One large room is provided and the students can hang the material they generate in the workshop on the walls. Large pieces of paper, post-its, pencils and colored speed markers are the main tools. Students were asked to bring magazines from home as a picture resource.
































### ***Expectations of the result***

The expectation seen from the teachers' point of view is that the students generate 2-3 conceptual ideas that they can use for further development throughout the project. Erik Lerdahl also expects the students to define and use a vision for the project, a qualitative guideline for making and deciding on solutions.

## Overview of exercises

In the following, the process of the methodology will be outlined and unfolded in detail. First, a schematic overview is provided, then sequences of movements are presented and observations are discussed and analyzed.

This overview shows the sequence of exercises used in this workshop.

Step	Levels	Move	Method	Technique	Outcome	Facilitation
1				Clapping / Machine	Awakening and focus of participants	Facilitator participating
2				Introduction	Background knowledge of Pyramid model.	
3				Central Issues for the project	Awareness of central problems. Articulation of project theme in more detail.	Instruction on mind map by verbal explanation.
4				Brain Pool	Participants noting down all ideas.	Facilitator gives verbal introduction on brain pool technique.
5				Categorizing ideas	Some ideas are related to the central issues	
6				Mental visualization on the 'travel situation'	Participants more in touch with the emotional side of the projects issue.	Facilitator holding a séance where he tells a story to the audience while their eyes are closed. Acting as a storyteller.
7				Values	Exploring the values related to the project.	
8				Defining Value Mission	Condensing the values from the mind map by discussion. I.e.: focus.	Facilitator showing examples of teaming meaning.
9				Scenario plays	Challenge sharpens the awareness.	Exemplifying body language
10				Presentation by scenarios	Event: Milestone	Plenum discussion
11				Dilemmas	Creative tensions	
12				What if?	Creative tensions	Examples



13				Brain Pool	Ideas more or less corresponding to the Value Mission	
14				Analysis of values	Finds qualities to support the Value Mission	Heavy facilitation on examples and the purpose and the relation between the values.
15				MBM	The quality-words nuance is defined by a metaphor	Examples on how to do: what is a metaphor?
16				Machine	Focus and awakening and training performance	Facilitator participating
17				Qualifying vision	Calibrating understanding of nuance	
18				Qualifying vision	Calibrating understanding of nuance	Facilitators repeatedly explain about the function of "qualities".
19				Presenting vision by pictures and scenario plays	Milestone	
20				Brain pool on vision	Ideas consistent with qualities.	
21				F.R. on objects	Random ideas provide a larger pool of ideas, some might be useful.	Facilitators instructing verbally and giving examples
22				Sorting	Overview and focus on relevant ideas that can be synthesized.	
23				Presenting concepts/ ideas	Increased focus on relevant ideas.	Plenum discussion
24				Mirror/ Pencils/ Drawing in pairs/ Association exercise	Social interaction and awakening.	
25				Sketching on concepts	Independent work gives more ownership and time for self-reflection.	Facilitators stand by to answer questions and guide the teams towards new moves/methods.
26				Revising vision	Creating consistency between levels.	Facilitators commenting and asking probing questions about the relations of the content on various levels.
27				Final presentation		Plenum discussion



## The sequence of movements and observation

Based on the overview, *sequences* of movements are presented along with observations regarding the *outcome* and use of *methods*, i.e. tracking the values and how the participants handled the methods.

### Step 3-5:



#### **Sequence:**

The relation between the exploration of central issues and generating ideas is not directly related. The idea of a session for generating ideas is, as Erik Lerdahl expresses it: “You can let go of that which is articulated”, i.e. the ideas are now visualized through sketches and can be archived. Striim (2001, p.169) also supports the idea of getting the “old” ideas out of the head so they do not block for new ideas. During the research phase the participants start to form ideas of solutions in their heads. If these ideas are not ‘realized’ in sketches, they might unconsciously guide their thinking. The categorization was a way of scanning for links between the abstract and the concrete.

#### **Outcome**

The identified central issues are spread over several levels in the pyramid; some are emotional, some are practical problems. Within the four teams, the correlation between the *categories* of ideas and the *central issues* varied. Team 1 identified “cleaning”, Team 3 identified “Flexibility” and Team 4 identified “Flexibility” and “Flow” as both a central issue and a category. Team 2 did not have any correlation between central issues and ideas.

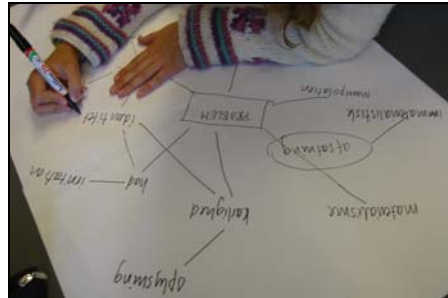
#### **Methods**

The use of the mind map was deliberately varied, some teams were encouraged to stand while filling out the mind map (III.5.1), and some was seated the whole time (III.5.2).

The seated teams which let one person do the writing had less success in separating the free associative phase from the analytical synthesizing phase. This resulted in a mind map that did not explore the boundaries of the subject.

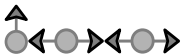


III. 5.1 Mind map from standing team. Rich with good variation. Notice the spread of colors; each member has been around the map with their own speed marker.



III. 5.2 Mind map from seated team. This is done by one person functioning as secretary. It is very rigid and has less flow and associations.

**Step 6-8:**



**Sequence**

The mental visualization sessions are a way of grasping the abstract emotional side of the project, i.e. the participants get in touch with their own feelings and emotions. This moves the thinking upwards from ideas and solutions to the intentions and emotions. Immediately afterwards, the participants explore the value landscape through mind mapping; this constitutes a horizontal movement. Then, the participants were forced to choose a few words expressing the values behind the desired solution and then define them through scenario plays, another horizontal movement. The first four sessions, 3-9, are introductory movements. This gives the participants an opportunity to develop material on both abstract (Values) and concrete (ideas) levels.

**Outcome**

Team 1 and 4 with central issues mostly expressed on a concrete level, now moved upwards and found more emotional aspects of their project. All teams had now found words that expressed something about the project as a *social actor* (i.e. the contextual level). All teams found new values through the horizontal movement; some of these values could be related to the central issues, and some were completely new.

**Methods**

This was the second time that the teams used mind maps, and this time everybody was asked to stand up during the session. This improved the richness of the mind maps in general.



## Practicing the V-V-based Methodology (5)

However, one team was persistently seeking consensus during the associative phase, inhibiting the flow, decreasing the number of associations and kept well within the boundaries of 'legal' associations, hence not exploring these boundaries.

### Step 9-10:



#### **Sequence**

This closes the value discussion by setting a milestone called the Value Mission. The Value Mission consists of three meaningful words. The exact nuance of each word is defined by a scenario play that is presented in plenum.

#### **Outcome**

Each team was able to express its values and communicate through a short scenario play. However, it was the impression that most plays were illustrating the concept of the words, rather than the exact nuance defined by the team. The values demonstrated that there were common denominators concerning *flexibility, identity* and *safety*. At this point, the values could be interpreted as being related to both the common experience of the study trip (safety) and the desire to design something smart and useful (Identity and flexibility) in this early stage of the design process.

#### **Methods**

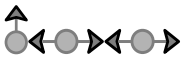
The scenario play was embraced by the participants. The empathy and vividness of the performance varied from team to team. Some participants still seemed a little shy and self-aware due to the fact that they were not accustomed to act and do "theatre".



*Ill 5.3 One of the more vivid scenario plays illustrating "Safety".*



### Step 11-13:



#### **Sequence**

The methods are preparation for a session of generating ideas. The dilemmas of the project are about creating creative tension. The “What IF” method is a way of dismantling the perception of the problem by breaking the framework through imagining removal of some of the barriers. This opens for a horizontal movement of generating ideas, with a very subtle subconscious link to the Value Mission.

#### **Outcome**

Many of the dilemmas discovered were the values from the Value Mission and their counter partners. The “What If?” developed by the teams was of a contextual nature. A team dealing with seating facilities in the station they stated “What if there were boxes everywhere?”

#### **Methods**

The development of the imaginary framework of “What If?” was an amusing event for most participants and functioned as a sort of play. However, the transformation of dilemmas and “what if?” to ideas was more of a struggle. At this point, the participants were beginning to show signs of fatigue.

### Step 14-15:



#### **Sequence**

Here is a downwards movement from the intentional level to the contextual level. Erik Lerdahl asks the question: “What product qualities (as a social actor) support the Value Mission?” This requires an abstract analysis of the values and translating them to desired qualities, describing the products behavior in a social context. This is followed by a horizontal movement trying to qualify the newfound qualities through the use of metaphors.

#### **Outcome**

The elicitation of qualities is done verbally through discussion in the teams and subsequently the metaphors are found through MBM. The phase of finding the qualities is full of frustration and an explicit need of assistance from the teams.





They are confused as to what the qualities could be, they ask for examples and assistance to find qualities for their own project in order to understand the background and purpose for the exercise. It is evident that all participants have trouble distinguishing between values and qualities.

The difference between the two is perceived as very subtle. The teams explore the possible nuances of the qualities chosen, but they are also showing signs of fatigue and the number of associations and metaphors is low.

### **Methods**

The processes of verbally analyzing the qualities that support the values, are very difficult, and even the facilitators are not able to explain it in a simple way. The use of mind map with metaphors is received very well; however the process is slow due to fatigue.

### Step 17-19:



### **Sequence**

These movements continue the (horizontal) qualification of the chosen words, now adding more methods and thereby triangulating the qualification process. Applying scenario plays and pictures should open the team's discussion and increase the common understanding of the nuances of the words used to describe the qualities. The presentation is sharpening the focus.

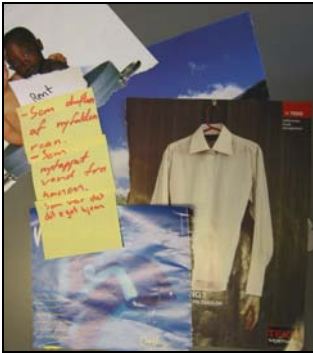
### **Outcome**

The participants focus on finding the pictures and combining them with the metaphors. They use several pictures to illustrate the same word, and in general they search for a picture related to the meaning of the word, not the meaning of the nuance of the word that is relevant for their specific vision. The definition of the qualities is still too broad to be precise, but the combination of metaphors and pictures increase the understanding and atmosphere (III.5.4).

### **Methods**

The teams brought various magazines that circulated between them, but in general the selection is limited, this is reflected in the choice and style of the pictures.

The scenario plays are now more clear and understandable than the first time and the majority of the teams seem more at home performing in front of each other (III.5.5).

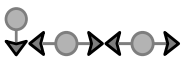


Ill. 5.4. Several pictures are used to illustrate “Clean”, but they do not tell the exact nuance of clean.



Ill. 5.5. The participants exhibit *more* insight and enthusiasm in communicating the meaning of their qualities.

Step 20-23:



**Sequence**

The qualities are used in a downward movement of generating ideas that is consistent to the vision for the desired qualities. This explores the potential of the selected qualities through “realization” on the concrete level.

The Forced Relationship (F.R.) method is used to break monotony and increase the pool of ideas and is furthermore an individual horizontal movement without connection to the abstract levels. The following sorting of all ideas is a horizontal movement on a concrete level in order to gain overview of the type of ideas. The presentation is used as a milestone and marks the end of the day.

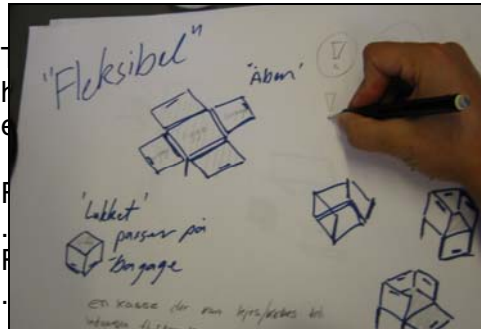
**Outcome**

In general, many ideas were created with direct link to one specific quality in the vision through the Brain pool. The ideas were occasionally noted as headlines on the paper (Ill.5.6) by team 1.

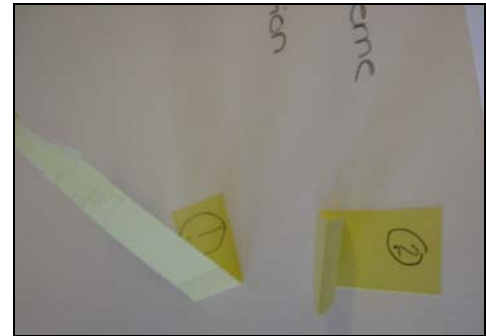
The F.R. method was not equally successful in producing ideas; team 2 did not develop many through this method, and team 4 only let themselves inspire of the functionality aspect of the objects. The sorting of ideas resulted in the teams being able to present 3-6 main ideas at the end of the day. Almost all ideas had some relation to the vision for qualities or the Value Mission.



## Practicing the V-V-based Methodology (5)



Ill. 5.6. An idea on the quality "Flexible" for seating facilities.



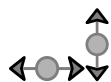
Ill. 5.7. Secret voting system.

### Methods

The Brain pool technique seemed quite successful and resulted in numerous ideas functioning as the main tool for producing ideas. The participants now seemed at ease with this method. In contrast, the F.R. method was not received equally well by all teams. Team 2 completely misunderstood the intention of the exercise. Others needed assistance in interpreting objects on the different levels of abstraction. Although the entire system was about seeing different levels of abstraction in products, it was not evident that one could be inspired by the structure or the purpose of a product.

The sorting and judging of the ideas generated up to this point was handled differently by the teams. Team 1 and 4 went through the entire pile of papers with ideas and discussed and judged them in plenum seeking consensus; team 3 did the same but gave them individual grades. Team 2 kept the judging secret and spent much time preparing voting notes, not focusing on the project but on the 'democratic' process. (Ill.5.7)

### Step 25-27:



### Sequence

This part of the process is less guided and the participants are in a process of synthesizing the generated ideas on the basis of the sorting process and the relation to the vision (qualities). In this phase, a vertical revision is encouraged in order to create consistency between the levels and prepare the presentation.

The final presentation is a milestone where the Value Mission and the vision (qualities) are presented with corresponding concepts and solutions. The solutions and concepts are only used for understanding how the mission and vision could be realized, illustrated through rough sketches.

### Outcome

The teams now followed very different paths;

Team 3 had an extensive sketching session and developed both new scenario plays for the qualities in the vision, and simultaneously they revised the content of this vision.

Team 2 stalled completely and could not decide on any concepts, nor were they willing to point out any desired qualities before they had a list of specifications to meet.

The two remaining teams both synthesized ideas to concepts and revised their vision. The final presentation had focus on the vision for the product qualities and was supported by ideas (except from the team that stalled). All teams came up with a vision expressed in words, metaphors and pictures.



III. 5.8. Team 1 made an effort to revise the vision completely.

### Methods

The independent sketching time was in general without interference from the facilitators. Many participants seemed reluctant to revise the vision at first and the facilitators repeatedly encouraged them to do so. This intervention was mainly done by questioning the relevance and understanding of the selected words, metaphors and pictures.



### **Comments from participants**

A summary of the comments made by the participants, both in writing and verbally, described their overall perception of the workshop. The comments concerned the workshop setup and structure as well as the methods used in the workshop.

#### ***Workshop:***

Facilitation: The participants had an ambiguous relation to the intense facilitation; some were irritated over the constant interruptions, others expressed that being guided was a positive thing when one was going through chaos.

The intense course and short deadlines of the workshop also gave ambiguous responses:

*"Too stressful program – being 'on' all the time means that the creativity drains from your body."* And at the other end of the scale:

*"It is a good thing to be bombarded with impressions when working in teams"*

In general, the participants expressed confusion as to what the actual course of event was. They did not have time and energy to note the sequence of methods. The compact workshop presented new methods, terms and techniques as well as required them to handle the problem of their projects. Many expressed confusion about the vision and mission; the distinction between values and qualities.

Despite the confusion, they were positive towards the systemic approach and methods that dealt with the abstract aspects of the project in order to calibrate their common goal. They felt the workshop gave them inspiring material for their project to work with the rest of the semester.

#### ***Methods***

MBM mind map:

Comment in the evaluation of the workshop: *"It was progressing in an incredibly slow pace, maybe because we were too critical towards new words and thus we were contemplating them for too long, instead of maintaining a dynamic flow."*

Metaphors:

As commented on by several participants, the use of metaphors was perceived as a very strong tool:



*“My favorite tool from yesterday was the switching back and forth between words and metaphors. It seems to be able to start a never ending stream of words. It is important to me that one distinguishes between allowing ideas to flow freely and when to reflect and choose...I come to a stop if too many rational things are discussed during the séance.”*

*“It is all about not being stuck with idea (word) and thus avoiding innovation. This is avoided by dismantling the ideas (words) and describing them with other words and metaphors. In this way, we obtain a qualified description of the idea and of the values that the solution should contain or give.”*

They also played a role in the understanding of the practical implications of the word through analyzing the generated ideas:

*“It is inherent in one of the ideas (word) that we had as a starting point, namely ‘Individual’. However, at the same time we had the idea of ‘Security’ and we found the reason for being reluctant to this idea (solution) was that it would create insecurity. More freedom also gives a higher degree of uncertainty and insecurity. We realized this by comparing the qualities that we found interesting in our sketches with the metaphors and words from our temporary vision.”*



### Summary of workshop

This summary will evaluate the use of abstract milestones representing values and the development of these through horizontal and vertical movements.

#### ***Abstract milestones: mission and vision***

This workshop finished by focusing on the Interaction Vision, giving this event the most weight and decreasing the importance of the Value Mission. Therefore, the students presented a value system describing the interaction, not the mission. The understanding of the different levels were critical after the development of the Value Mission and moving on to the Interaction Vision, or as it was introduced; “product qualities”. Product qualities were explained as the qualities and characteristics that supported the Value Mission, i.e. the way in which the Value Mission would be carried out by the product.

This explanation was repeated several times by both facilitators, and required on hand examples of their own product before an understanding started to crystallize.

This indicates a learning issue concerning the understanding of the content on the abstraction level when forced to practice the methodology. This notion of confusion is supported by the comments of the participants.

During the development of the Interaction Vision several teams exhibited insecurity in relation to what type of words that were associated with the second level of the pyramid, where the role of the product as a social actor was defined. The typical mistake was to put words of a “product specification” type, a demand, together with more value-based words. Though the distinction between a specification and a quality might seem subtle, the students had a hard time focusing on the fact that the qualities and characteristics were related to the description of the product as a social actor, not a physical object.

Except for the team that never reached a conclusion (Team 2), the teams seemed to gain a bearing after the first presentation of the Interaction Vision. Team 3 was able to identify two valid concepts immediately after the first presentation. Team 1 and 4 revised their vision on the last day, but team 1 had a good grip on the vision already at their first presentation.

#### ***Horizontal movements***

The qualification of the meaning of the words used to represent the values was done using several methods; metaphors, pictures and scenario plays.



The student found the mind map with metaphors extremely helpful in determining the way in which they perceived a value-based word. Moreover, the use of pictures was helpful, but there was a catch.

This particular tool required an extended amount of pictures; otherwise there was a tendency to pick the closest one. This meant that if pictures were scarce or similar in type, the team would pick any picture remotely related to the word. If that was the case, they were missing the point of qualifying by showing a picture accentuating a particular aspect of that word.

The mind map of the MBM type was introduced to the participants at a time where many participants were becoming tired, which meant that the effort varied. Some students did however comment on the usefulness of the MBM mind map tool in the evaluation of the workshop.

The all male team 1 seemed to achieve a lot of meaning from the scenario plays. They were willing to test their own limits and exhibit themselves, and they were the only team presenting a scenario play at the final presentation (the scenario play was optional). There seemed to be a subtle difference between the teams with a good grip on the vision (1&3) and the teams that were less focused and uncertain about the system (2&4). The self-confident teams were also the teams that used the scenario plays in a serious, but playful manner.

Team 2 & 4 seemed more shy and rigid in their performance, very self-aware, focusing on the stage fright and the fact that they were performing in front of an audience. They did not focus on the play and the nuances in how they interpreted the words.

Team 1 & 3 seemed to be able to let go of the self-awareness and at the same time be able to use their bodies as tools, they were more explorative and focused on the message.

As the students stated; the scenario play is a powerful tool in making the abstract tangible.

The teams that were able to focus on the play and use it as a tool were also most confident with regard to their vision. There might be a relation between the confidence level concerning the vision and the understanding of the system and the ability to act out the vision. If one is not confident about the content, then it might very well influence the way that the content is presented, especially through body language in scenario plays, which can be a very personal thing to do.

It is hard to tell whether the pictures, metaphors, scenarios or the words were the most powerful tool in deciding on qualitative criteria.





The students own comments concerned all tools. One student noted that the pictures help them boost the process when it was added to the words and the metaphors. However, at the same time it made them able to avoid touching on some central aspects. It is a double edged knife.

The scenario plays were referred to as a tool that made something very abstract into something very concrete and much easier to discuss.

This seems to support the notion that it is the combination of methods rather than a single method that helps bring out the qualitative criteria. These criteria are developed and revised throughout the workshop.

### ***Vertical movements***

One of the key aspects of this system is the switching back and forth between working with abstract events and working with concrete ideas and solutions. The interesting point is whether the participants are able to transform abstract terms into specific ideas? And from the concrete to the abstract levels; are the participants able to derive abstract values and criteria from specific ideas and solutions?

The upward movement occurred several times but in an indirectly manner. The first upward movement was from the mental visualization to the mind map of values leading to the Value Mission. The participants were prepared on a concrete level by making a mind map of central issues and listing these along with a number of ideas derived from a Brain pool. The upward movement is indirect in the sense that the activities are not directly linked; the preparation is subconscious through the previous activities. The relation between the values derived and the issues listed are eminent giving the string of activities a subtle coherence in the mind of the participants.

The second upward movement is actually not a single movement, but a series of revisions of the vision during the generation of ideas on the last day.

The downward movement represents a direct link and occurs on the second day where the participants are asked to make a Brain pool with their vision in mind.

Team 1 & 3 took the vision seriously. This goes for this exercise as well. These teams were most active in referring to the vision during the brain pool session. Team 1 even used some of the words from the vision poster as headlines on the sketches. The other teams did not refer to the vision poster during the session; however, this does not mean that they did not have the vision in mind when they generated ideas.



***Tracking values in the final product***

In the final evaluation of the semester project approximately four months later, all teams included some material from the workshop. However, the student did not at that point distinguish between vision and values. Some teams actually formulated, what they called, a philosophy instead. It did however not seem to matter to the students whether they were describing a quality or describing an underlying value. What did matter was that there was a value system behind the product, the complexity of the system was irrelevant in a presentation. It seemed more useful to the students to focus on a few words of great value to the product than to describe a complex system, with several levels and many words and concepts to be handled simultaneously.



### Highlights from WS 1

The notions mentioned here are the most important in relation to the scope of the thesis concerning the practicing and learning of the methodology level.

#### ***Values and methodology***

- **Linking of levels**  
The instructed linking of the levels of abstraction was indirect at most vertical movements and the progression of the methodology, especially the Interaction Vision, was difficult to grasp, which is also indicated in the comments from the participants. Attempting to link the Value Mission and the Interaction Vision through a downward movement failed. The participants did not grasp that relation. This is also evident in the fact that the participants confused the content of the four levels in the pyramid model. They mixed specifications and requirements with values and qualities.
- **Posters as placeholders for mission and vision**  
Posters were used as placeholders for the Value Mission and the Interaction Vision, thus dividing them into two different entities. The participants tended to neglect the Value Mission. Once presented the first day they focused on the Interaction Vision. This eliminated revision between the Value Mission and the Interaction Vision.
- **Qualification of keywords**  
When using metaphors and pictures, the participants tended to focus on illustrating the keywords of the Value Mission and the Interaction Vision, instead of focusing on defining the nuance of the keyword as they desired it to be.

The source of pictures available had some influence on the choice of pictures and images, along with indiscriminate use of too many pictures; the nuance was not described with precision.

The use of metaphors through MBM mind maps was welcomed as a way of describing and finding the meaning of words. Some even expressed a flow experience (Chikszentmihalyi, 1990) using this method. However, it required facilitators to intervene before the focus shifted towards describing what could be. It was also observed that they used product examples and features in negotiating the metaphors.



The participants expressed positive attitudes towards scenario plays, which proved to constitute a useful tool in making the abstract tangible. However, most teams were reluctant to use the method until the last minute and only one team it during the final presentation.

- Ideas and visualization

The participants sketched their ideas and only commented on them with very few words and notes. This increased the workload of sorting and judging the ideas, because they had to rethink the intentions of each idea when reviewed. Facilitators countered the problem by encouraging co-sketching on the same paper, which proved to be an improvement in the teamwork for at least one team.

***Learning and methodology***

- Specification versus vision

A major issue for some of the participants was the lack of specifications. Some expressed the methodology to be a shift in paradigm in relation to previous experiences. The team that did not succeed with an Interaction Vision, expressed lack of knowledge regarding the use and requirements for their product; they wanted to know what problem to solve. Although they expressed a difference in approach, there is also a matter of the amount of research prior to using the methodology; this team had done little research.

- Facilitation

The facilitators re-instructed - on a team basis - much of the information and instructions given in plenum. This could indicate that difficult or a large amount of information and aspects should be learned within a short time frame, which was supported by the participants' expressions concerning confusion and lack of overview of progress and process, both during and after the workshop. However, they expressed that being facilitated when using such a complex methodology was a good thing.

Facilitators also intervened in their attempt to assist the separation between free associations and analysis phases in the mind map methods. The participants seemed more than willing to seek consensus and negotiate during the phase of free association. This sabotaged the point of the method that was to find the "boundaries" of the possible nuances.



## Practicing the V-V-based Methodology (5)

- Final project

It was interesting to note that after four months of continuous work with the project a product “philosophy” prevailed through one or two words, without distinguishing between vision and mission.

The complex structure of Value Mission and Interaction Vision build in the workshop is not directly used. This could indicate that in communicating and implementing the Value Mission and Interaction Vision, there was a process of selecting and testing the most relevant keywords.





### **Workshop 2 (WS2)**

*2 project teams from B&O Medicom, Weekend cottage, Jutland  
December 2002*

#### **The company context**

B&O Medicom is a medium size company designing and manufacturing products within two main areas related to medicine. B&O Medicom designs and produces medical equipment for therapies (e.g. Novo Pen) and audio equipment (Digital stethoscope). This is called IDA (Intelligent Drug administration) and IAD (Intelligent Acoustic Diagnostics).

Within the equipment for therapies the objective for B&OM is to add values for the customer and the producer of the therapy, so that the combination of equipment and therapy is valuable for the user. At the same time, the combination should present a medical acceptable solution for other stakeholders, such as authorities, doctors and vendors.

The products are not B&O branded products, instead they are branded with whatever therapy they are combined with. This gives B&O Medicom multiple roles. In one aspect, they function as a design studio with several specific competencies regarding medical equipment. In another aspect, they are a production facility, producing products that they design themselves or that another design studio has designed.

This company was chosen because the products manufactured are situated in an interesting field of stakeholders producing a complex value landscape; health authorities (rules and approval), Doctors (prescribing the therapy), Therapy manufacturing company (client), Mother Company (B&O) and end-user (customer).

#### ***Traditions***

B&O Medicom has a tradition for cross-disciplinary teams working together from the early phases of a project. At present time, B&O Medicom is going through a transition period from a more traditional R&D department with different competencies represented to a more matrix and project-oriented structure. However, this transition is not influencing this workshop where the participants are recruited from the R&D department.



### **Values**

The values that guide B&O Medicom are the same as the B&O values:

*“Courage to constantly question the ordinary in search of surprising, long lasting experiences.*

At B&O Medicom these values guide the choices and design process, although the product is not B&O brand, there still is this indefinable B&O quality that should be obtained in the products. At the same time, the products are supposed to be cheap, easy to produce and to be connected with other strong brands.

### **Team roles and hierarchy**

In relation to this workshop it is interesting to observe whether the participants make decisions in collaboration and whether they can work together in teams. All participants are accustomed to work in teams and decisions are usually made through discussions.

In the workshop, each team will be able to consult with a business manager in order to assure certain validity in relation to the actual needs and demands from the customers that supply the therapy.

Remarkably, no difference appeared in the weight of the opinions, the professionals totally accepted the students' opinions. This might be due to the casual atmosphere of living in a weekend cottage together. Another reason could be the approach of looking at values or maybe the fact that the participants were used to focus on the user and their habits thereby having a more humble attitude, curiosity and willingness to listen and learn.

### **The role of Design**

Design is viewed as an integrated part of the product development process and as a strong tool for expression and style. For B&O Medicom the development of medical equipment is a serious business, and there needs to be a possibility for B&O Medicom to add value to a given therapy before they get involved.

As stated by the company itself ([www.bang-olufsen](http://www.bang-olufsen)) and by the participants during interviews, the user is very involved in the design process. B&O Medicom has a tradition for involving the end-users in the process in order to collect information and feedback. There are also strong links to other types of stakeholders, like nurses and doctors involved with various types of patients. These contacts ensure a form of precision and validity in the value that B&O Medicom can add to a therapy via a product.





The company has an internal product development department consisting of industrial designers and engineers with various specialties ranging from human factors to production. On some projects, external design studios are hired for inspiration and expertise. The development model and process is not available for publication.

### ***Team structure,***

The two teams were put together by PFA who knew all the participants and therefore could combine their competencies. The competencies represent knowledge of: product design, construction, production, business, product development and participatory design. In this case, it is necessary to distinguish between disciplines and educations; some of the engineers picked for the team were actually functioning as HCI specialists (Human-computer-interaction) and designers. Therefore, it was PFA, the senior designer (engineer) and project manager, who composed the teams due to his experience with the people available.

### Team F:

- SYJ: Civil engineer specialized in working with the early product development phases. A theoretical basis in integrated design as defined at DTU; coupling business, construction and production in the same process. Several years of practical experience at the company.
- HWO: Civil engineer original specialized in electronic and acoustics, currently working with the usability aspects of the interaction with the products – mainly software. Member of an interest organization that also provides the practical and theoretical framework. More than 10 years experience within the company.
- NTJ: Industrial Designer specialized in product concept development, educated at Aarhus School of Architecture. Tacit design process with focus on the overall working method. 3 years of experience at the company.
- CHG: Cand.Nivot specialized in international marketing. Function as the clients' advocate combining qualitative aspects with quantitative, i.e.; brand, behavior and use are combined with cost and production. Experienced in branding and using values as guidelines. (Only attended the workshop the first two days, due to time pressure and other tasks)



Team N:

- PFA: Civil Engineer from DTU, experienced in concept and product development and functioned as the anchor person in these processes. Several years of experience and functioned as the company's representative and chief in this context.
- JRU: Civil engineer specialized in product development working with business aspects and specifications for new products. With as basis on needs the focus is on integrating function, form and user needs. The methods include sketches, modeling and brainstorming. More than 10 years of experience within the company.
- THM: Industrial Design trainee from Aarhus School of Architecture. Still exploring the concept of design; searching for definitions and explanations. In an iterative design process, the user needs are the pivot point. Currently focusing on user behavior and the research phase. Uses key words describing feelings and emotions as a part of stating the objective for a project. 4<sup>th</sup> year student.
- KEN: Electronic engineer trainee from the School of engineering in Aarhus. No prior practical or theoretical experience in concept development, but curious and open-minded towards learning new methods.

***Background knowledge***

Except for the trainees the participants had experiences with similar product development processes. B&O Medicom had previously arranged different types of workshops that were also held in weekend cottages. The latest workshop that they carried out focused on "the story" of the product, a focus not that different from this workshop focusing on values. The story level is also included in the pyramid model.

For these participants, the context for the workshop was familiar and some of the content (story) was partly familiar. Some methods were also known (mind map, storyboard) but the pyramid model and the structure was new to everyone.

***Motivation for participating***

The motivation for the participants was developing concepts that were to be presented for the managing director at the end of the workshop. This was an intended pressure arranged by PFA to ensure the participants were motivated and enthusiastic. Additional motives were the learning factor and the social bonding for the entire team.



### **The workshop setup and overview**

#### ***The role of the assignment***

The workshop functioned as a kickoff regarding two new products for new therapies, so the participants were expected to deliver concept ideas to be further developed after the workshop.

The entire workshop was also about learning new methods, an activity B&O Medicom has done before, e.g. a “story” workshop with Lego, focusing on the story of the product

The products to be designed were within IDA, Intelligent Drug Administration. In this case, both therapies are pills that are to be dispensed to the end-user at given intervals.

Reflecting upon the differences in the products that the two teams were working with, the most significant differences were the physical positioning of the product. Team F’s product was to be used at home on a weekly basis and Team N’s product was meant for everyday use and should be portable.

#### ***The process of the workshop***

The workshop was event-driven based on the workshop at A&D held by Lerdahl in September 2002. There were modifications concerning the Value Mission due to the complex value landscape of the products produced by B&O Medicom. Since each product involved multiple stakeholders with very different objectives, this workshop had more focus on developing the Value Mission. The participants were asked to work on the value system for each stakeholder and together with the main issues involved for each therapy they should develop a Value Mission. This was different from the original Lerdahl workshop (WS 1), where the Value Mission was exclusively based on problems observed and the feelings of the participants.

The values from the stakeholders were derived from marketing material and from the personal experiences of the participants. In this workshop, the values for the stakeholders were the values presented by the companies themselves in their own material and the participants were allowed to interpret these values.

There could be a distinction between the values that a company wants to express, and the values that they live by, i.e. their actions that can be interpreted. This distinction was not made in this workshop, since the objective is to derive a Value Mission from different stakeholders, not derive the values from a certain stakeholder; the focus was on the synthesis, not the derivation of values.



***Timetable and organization within the project / semester***

The workshop was held after 2-3 weeks of research. The research was not done on full time, since the participants were working on other projects during the time leading up to the workshop. The research included knowledge about the drug therapy involved and the company that produces the drug.

The participants were asked to find material that described the values, visions and missions of the drug therapy companies.

***Resources***

A weekend cottage at the North Sea, with food and drinks, provided for the workshop by B&OM. The participants brought paper, pencils, laptops and existing pill-dispenser products.

***The planning of the workshop***

Three months prior to the workshop's introductory meetings were held and the setup and role of the workshop were outlined. The company's representative PFA and a concept developer NTJ were presented with documentation of WS 1 as a part of outlining the workshop approach, purpose and prerequisites. PFA and NTJ presented a design project. This two-way communication ensured a calibration of expectations between the parties.























As a part of preparing the workshop, interviews were conducted with the known participants in the months prior to the workshop. These interviews were conducted to obtain knowledge on the participants' background and life world. This information was part of preparing for the workshop; establishing a personal rapport with the participants increases the effect of the facilitation because it requires empathy. This empathy is easier when the participants' background and personality is known.



## Practicing the V-V-based Methodology (5)

### Overview of exercises

First, a schematic overview is provided, then sequences of movements are presented and observations are discussed and analyzed. The table shows the sequence of methods introduced and organized by Christian Tollestrup. Some of the methods are on the teams' own initiative (marked OWN):

Step	Level	Move	Method	Content	Outcome	Facilitation
1				Introduction	Background knowledge	
2				Clapping game Body sculpture	Exploring the value landscape.	Instructing by example.
3				"Problem" mind map	Overview of central issues	Encouragement to stand up.
4				Presentation of main problems	Mutual inspiration	Discussion in plenum
5				Storyboard on a normal day for the user	Contextual understanding. Attempt to ground the project in the context	No specific instruction in technique. The teams find their own approach.
6				Presentation of storyboard	Mutual inspiration.	Discussion in plenum
7				Brain pool writing	Articulating ideas with problems and user in mind	Pep-talk and support for speeding up the process.
8				Machine	Warm up.	
9				Eliciting qualities of customer.	Value words	The teams take different approaches
10				Moodboard on the Customer	Visual qualification of value words.	Instruction and encouragement to be precise.
11				Mind map on: User, Doctor and B&O Medicom	Identification of the set of values for each stakeholder, as the teams perceive them.	Encouragement and re-instruction on separating phases.
12				Preparation on interviews	Teams prepare questions and consult their research materials.	No facilitation
13				Interview with Doctor	Clarification of the user situation for both teams regarding medical issues.	No facilitation













14				2 Pencils	Warm up.	
15				scenario plays	Definition of value words.	Demonstrates examples.
16				Formulating Value Mission	One team maps the relations between stakeholders.	No facilitation
17				Presentation of Value Mission via poster and scenario play	Milestone	Plenum discussion
18				Negative brainstorm	Ideas	Responding to the participants' request for methods for generating ideas.
19				Association exercise	Gaining momentum and flow.	
20				Mind map on "vision"	Starting point for "qualities".	
21				MBM mind map on qualities	Qualification of newfound qualities	Facilitator support Team F with interpretation and examples
22				Metaphors put on a preliminary vision poster	Visualization and base for new Post-It's containing quality words	
23				Field trip to a user and interview with a nurse	Clarification of the user situation and context	No facilitation
24				Define user needs	Precision of contextual base for solutions on several levels.	Respond to request by Team N; Missing user needs to generate ideas.
25				Work on vision; metaphors and words	Continuous qualification process	Facilitator continues to support interpretations and metaphors.
26				Clapping game	Warm up and focus	
27				Preparation of presenting the vision (discussion)	Understanding the wanted product behavior discussing feature examples.	
28				Presentation of the vision	Milestone and response through interpretations of plays.	
29				Discussing features	Ideas through discussing features and behavior of the product.	Facilitator encourages revising vision according to outcome of discussion.



# Practicing the V-V-based Methodology (5)

30				New scenario (Team N)	Revising the scenario according to new information and vision.	The team takes the initiative itself
31				Forced relationship	New ideas.	Facilitator supports with exemplification and interpretation of objects
32				Walk on the beach	Break of the monotony by a social event	Respond to request of participants.
33				Concept development: Models Sketches	Concrete ideas with relation to the vision and the user needs.	The development of concepts is now a team decision. Facilitator maintains support in using methods.
34				Idea sorting and categorization (Team F)	Overview of ideas. Categorization.	Facilitator provides grading system. The team takes an individual approach to categorization.
35				Concept development. Models Sketches	Visualization and mock-up building.	No facilitation
36				Idea sorting and categorization (Team N)	Overview of ideas; all are judged to be "good".	Facilitator provides grading system
37				Concept development: Models Sketches	Concretizing ideas.	
38				Revision of vision on the basis of current ideas	Coherence in the levels.	Facilitator asks questions regarding consistency and relevance of words on the vision poster. Support with interpretations and examples.
39				Scenario for the use of the product (Team N)	Searching for decision guideline on an alarm feature through looking at the user context.	No facilitation, the team takes the initiative.
40				Initiative to test their ideas on the other team.	Seeking advice and response for features and their present solution.	No facilitation
41				Producing slideshows for tomorrow's presentation (Team F)	Overview of their 'story' the coherence between the elements and levels.	No facilitation
42				Concept flexibility Modeling (Team N)	Overview of the idea and its systemic qualities.	No facilitation
43				Research on existing products,	Inspiration	No facilitation
44				Presenting status of projects	Milestone and overview of the work to be done before final presentation	



45				Team N sketching / discussion	Calibration of ideas relevant to their vision.	No facilitation
46				Team F drawing product on computer.	Finalizing the description of their main idea.	No facilitation
47				Modeling	A physical model for presentation.	No facilitation
48				Presentation via slideshow		Response by the managing director. Plenum discussion.

The sequence was organized by the facilitator, but the participants made comments during the process and gave feedback in order for the facilitator to adjust activities according to the state of the teams.

It turned out to be a problem to keep the schedule; the teams were having long discussions and seem reluctant to quit a 'good discussion'. This influenced the overall activities in the way that it provided less time for generating ideas.

As the process progressed, the teams were less guided in the actual method and giving tasks with a longer deadline, leaving the specific choice of method to the team.

The facilitator then focused on guiding the teams through their revisions of their visions.





## The sequence of movements and observation

Based on the overview, sequences of movements are presented along with observations regarding the use and outcome of methods.

### Step 3-7:

External of pyramid; preparation + ◀●▶

#### **Sequence**

Investigating the problems related to the problem (this being the disease and medication) and building a scenario for of the users' day was about grounding the projects in the use-context. Thereby, the teams had visual material presenting problems and use. These preparing exercises then led to a session of generating ideas in order to articulate any ideas produced by the research material and knowledge derived from the problems and scenarios.

#### **Outcome**

The teams had brought research material on the medical treatment for which they were to design a product, and they consulted this during the production of the mind map. The mind maps are relatively rich and dense, demonstrating many associations and related issues as well as engagement of the participants. Producing the “problem mind map” also brings forth some elements of the user profile.



III.5.30. Team F

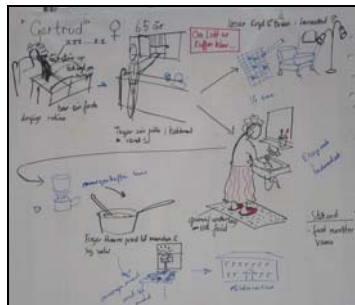


III.5.31. Team N

The scenario building further elaborates on the user profile and the teams present the scenario in different ways; one is guided by the process and uses post-its (III.5.32), the other uses the pharmaceutical company's material and cartoon like scenarios for two types of users (III.5.32):



III.5.31. Post-It version



III.5.32. Cartoon version

The ideas generated by the Brain Pool technique were few during the 20 minute session.

**Methods**

The mind map method is introduced with an encouragement to stand during the process; team F follows the request, the others do not. The difference in the density of the mind maps is not particular large, but there is a small margin of more associations in the map produced by team F.

The teams approach the scenario method differently:

Team N uses post-Its as a sketching tool and every member is participating in the same type of activity. Team F consults the research material and one person is drawing the scenario while they all discuss the content.

The Brain pool technique did not seem to engage the participants as they started very slowly, causing the facilitator to reflect on whether the introduction of this technique might have been to short or poorly explained.

Step 9-11



**Sequence**

At this point, the objective was to outline the value landscape of the stakeholders for each product. This was done by mapping each stakeholder starting with the client for the teams, namely the pharmaceutical company and qualifying this stakeholders value with photos.



### **Outcome**

The elicitation of values is derived differently by the two teams. Team F searches its material for statements from the pharmaceutical company and translates these statements to values. Team N produces a mind map and chooses the values from this map through discussion.

The moodboard of the clients uses several photos for each value making them imprecise, and team N has in addition chosen 6 values, hence making the overall impression of the client's values less accessible – there is not enough focus.

The mind maps of the remaining stakeholders are carried out throughout the day and evening and contain no surprises in the chosen values. The doctor focuses on values such as “scientific”, the user on “Quality of life” and the team itself; its own company contains words from the official philosophy.

### **Methods**

Team F; Eliciting values from statements is done solely by the business manager, using his personal experience with the company he dares to interpret their statements and philosophy. At this point, they are confused as to whether they should define the values as they perceive them, or as the ideally should be perceived, i.e. intended by the company. The facilitator instructs the team to focus on the company's intended signals, i.e. the ideal perception.

The mind maps of team N tend to be analytical and they seem to seek consensus during the associative phase, which limits the number of associations. On the other hand, their discussions regarding the abstract values and qualities are excellent, demonstrating confidence in dealing with these matters.

### Step 12-13



### **Sequence**

The teams are seeking information and response on their assumptions. The teams check their assumptions on the patients' attitudes towards the diseases and medication related to the pharmaceutical products. This is done by interviewing a practicing doctor that comes to visit the teams at the weekend cottage.

Step 15-17



**Sequence**

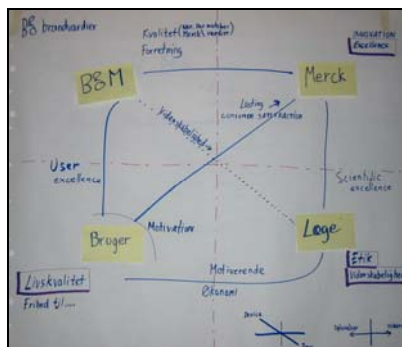
The teams are synthesizing the Value Mission from the set of values of the stakeholders and qualifying these by scenario plays, also used in presenting their Value Mission.

**Outcome**

Team N decides on the Value Mission based on a single mind map and discussion; they focus on the end-users' lifestyle and the scientific aspect. Team F's Value Mission is derived from a relation map and incorporates life quality and scientific value. The presentation through scenario plays is excellent and the other team is asked to guess the value illustrated, providing more nuances to the play and reflection for the presenting team in relation to nuances of their values:



III.5.33. Enthusiastic performance.



III.5.34 Value relations.

**Methods**

Team F takes the initiative to visualize the relations between the stakeholders in order to gain overview of the value landscape (III.5.34). This proves to be a tool that works for the team, and they can discuss and debate the Value Mission for their product on the basis of the map. This leads to an excellent and logic consistency between the stakeholders and the Value Mission for the product.

Performing the scenario plays demonstrates enthusiasm for this method (III.5.33) and the participants are thorough and they approach this method with an attitude of serious play.



## Practicing the V-V-based Methodology (5)

Step 18-22:



### **Sequence**

These movements are about bringing the participants down through the pyramids levels using negative brainstorming for generating random ideas. This is followed by commencing on building the vision poster and qualifying it by metaphors.

### **Outcome**

The participants were difficult to bring back to the principal and material level of more concrete ideas. They generated very few ideas in the negative brainstorm. The qualities of the vision were elicited with mind maps and qualified with metaphors.

Team F is the fastest and moves on quickly to qualify their interaction qualities but struggle to find relevant qualities.

Team N is less satisfied with its Value Mission and decides to start qualifying these words through thorough discussions taking a lot of time. When team N reaches the point of defining the vision, it transfers the value to the vision poster and does not grasp the distinction between the two levels.

The vision poster is build with post-its; team F organizes the words in columns in an attempt to systemize the words (III.5.35). Team N builds a star shaped map, clustering the words and metaphors (III.5.36):



III.5.35



III.5.36



### **Methods**

The teams do not respond well to the negative brainstorming session and therefore state that they have been dealing with the abstract elements so long that it is hard to be concrete.

The vision is derived in different ways; team F follows the suggestion from the facilitator and begins with a mind map. Team N misunderstands the distinction between vision and Value Mission and reuses the words of the Value Mission – this is not corrected by the facilitator that let the team proceed to investigate the impact of this confusion. It is also noted that product examples and features for a solution are discussed simultaneously with the metaphors describing the nuances of the qualities and values.

### Step 23-28



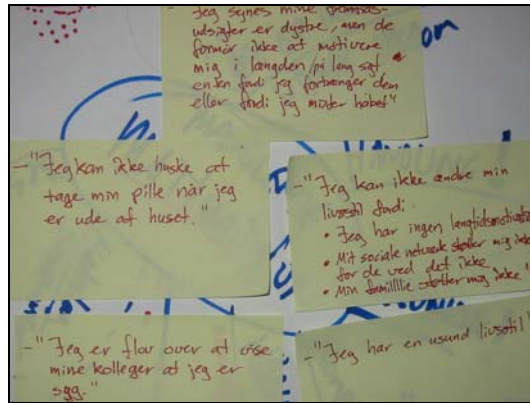
### **Sequence**

The teams are researching for more information through contact with the users and in responding to the request for user needs, the teams are asked to define the user needs. This constitutes horizontal movements clarifying the basis for ideas. Then, the participants link to the top level of continuous qualification and revision of the vision through, now familiar methods, metaphors and scenario plays. The vision is then presented.

### **Outcome**

The focus on the user seems to bring the participants back on safe grounds and they can summarize the user needs in three sentences. Interestingly, these needs are related to different levels in the pyramid; the social role of the product and the more concrete features of the product.

During the qualification process the teams produce many metaphors and have competent discussions on the products behavior. At this point, they can relate these social qualities to the information obtained through interviews; this qualifies the discussion even further. Team N has fictitious written user statements on post-its (III.5.37), which summarize the information about the user's attitudes towards the treatment and their disease.



III.5.37. Fictitious user statements

The presentation of the vision demonstrates that both teams now have strong metaphors expressing the qualities of their product. Team F strongest point is one of the qualities for its product being “passive” like a Christmas stocking. Team N strongest point is the product is “Motivating” like “your best friend”.

### **Methods**

The definition of user needs is done individually and team N summarizes the information in statements, where as team F summarizes them in three sentences expressing relatively precise needs.

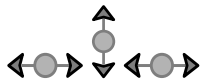
Team N requires little intervention when discussing the social role of the product and seems confident in discussing qualities as descriptions for the behavior of the product.

In team F, the progress is slow and they are assisted by the facilitator, supporting the team in analyzing their qualities and metaphors, asking questions of consistency.

Both teams use concrete features in the discussion as stepping stones for deciding on qualities. Thereby, they demonstrate more confidence in the system and furthermore that the use of concrete product behavior and features is a means for deciding on qualities.



Step 29-31



**Sequence**

The teams are encouraged to sort their ideas, but one chooses to generate ideas and the other to generate a new scenario based on its new vision, thus vertically revising the pyramid. In order to produce more ideas to challenge the already existing ideas, the teams are presented with a forced relationship exercise.

**Outcome**

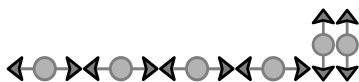
The participants are not entirely manageable and take their own initiatives. Team F uses a Brain pool for generating ideas and team N revises its scenario according to its user needs and vision.

The forced relationship exercise is done with objects that the participants were asked to bring to the workshop. This exercise does not produce many ideas.

**Methods**

The forced relationship method requires re-instruction halfway through with the facilitator giving examples of inspiration on several levels; systemic, aesthetic, structural, philosophy etc.

Step 33-39:



**Sequence**

This series of movement is primarily kept on the concrete levels, generating ideas, sketching concepts and finally revising scenario and vision.

**Outcome**

The teams are now on their own with regard to managing the process of developing concepts themselves, with a few interruptions from the facilitator. The facilitator decides to tone down the facilitation of the movements and focus on guiding and supporting the use of methods.

Sorting the ideas is done in different ways; team N is not able to judge any of its ideas as poor and thus does not reduce the number of ideas.





## Practicing the V-V-based Methodology (5)

Team F begins an elaborate categorizing process and gains an overview of its ideas. The categories are divided into piles that relate to the vision and those that do not.

The participants now work independently with developing concepts through models, mock-up of the user situation and sketching.

Team F comes up with its main idea rather quickly by mocking up the user situation - that was inspired by the visit to the user earlier that day – and starts playing small scenarios illustrating the usage of the product (III.5.38). This leads them to quick decisions.



*III.5.38. The red box functions as a cupboard; the “glass” is the dispenser product.*

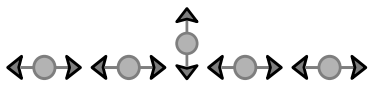
Team F finishes the revision of the vision poster after the main idea is found. The process requires the facilitator to ask the questions of relevance and support the discussion by interpreting statements from the team.

Team N develops various ideas through sketching and modeling. Its main focus is on the alarm feature which is the source of a vivid discussion. This leads to another revision of the scenario for the use of the product.

### **Methods**

The sketching is done independently and without intervention from the facilitator that focuses on supporting the ongoing revision of the vision. The analysis and interpretation of words and metaphors is difficult for team F that requires assistance in the process of trimming the vision and making it precise. The facilitator is very careful not to judge the qualities used and influence the choices, but focus on probing the team for their relevance and the definition of their nuance (the metaphors).

Step 40-48



**Sequence**

The final movements are focused on developing the concepts and revising the pyramids levels. The very final activities are focused on the preparation of material for presentation.

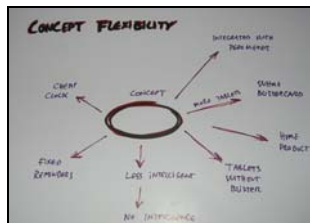
**Outcome**

Team N takes the initiative to start an informal round of presenting its main idea. This is triggered by a discussion within team N about the alarm feature and the team cannot decide on the way of designing these features. Both teams exchange views on each others ideas.

The sketching process continues with team F focusing on detailing its idea and designing different variations. Team N sketches ideas and seeks inspiration from competing products (III.5.40). It also produces a road map of flexibility of its concept (III.5.41). Some of the sketches produced are variations of the same overall concept and the team tries to illustrate the road map by different ideas. It also produces an organized mind map over the possible configuration of the features discussed (III.5.42).



III.5.40. Inspiration



III.5.41. Road map

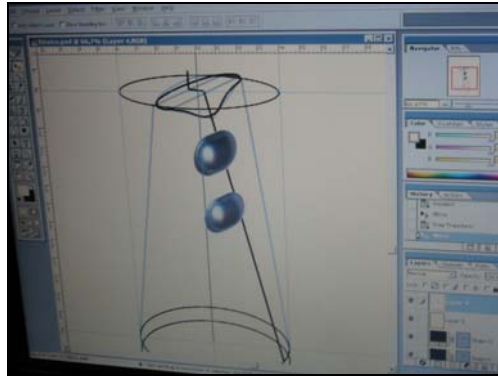


III.5.42. Configurations

In the final stages, more visual sketches are produced by both teams, especially by the designers (III.5.43 and 5.44),



## Practicing the V-V-based Methodology (5)



*III.5.43 Team F*



*III.5.44 Team N*

The final presentation is produced as a PowerPoint slideshow and the managing director of the department is attending the presentation adding pressure to the participants and their performance (III.5.45).



*III.5.45 The final presentation*

The presentation strategies vary:

Team N; decides to present the disease, the main problem and the corresponding concept idea first. Then, the team members show their variation, each of them with their own connotations of value words. Finally, they present the vision and concept flexibility and future work.

This approach is focused on explaining the problem, the corresponding solution and then revealing the vision as underlying support and explanation for the previously presented. The Value Mission is not present, because they used the values as qualities.



Team F approaches the presentation with a different order: Again, the first issue is the disease and treatment. However, then it introduced the Value Mission using its relation map followed by the vision and the qualities supporting this vision. The team finally presented the concept idea and variation in features.

This approach is presenting the logic in the levels; the problem (what is wrong), the mission (the purpose of the solution), the vision (the way it should be solved) and the idea (the solution itself).



### **Comments from the participants**

The evaluation from the participants, both at the end of the intervention and after 2 months back in the daily routine (this means the notes and comments + the questionnaire).

#### ***Immediately after the workshop:***

At the end of the workshop, there was a discussion regarding the weight of the motivating factors, since some participants had difficulties dealing with both learning and performing, i.e. developing good concepts. This revealed a somewhat contradictory environment for the participants; during the workshop there was an emphasis from the facilitator on the methods and the process, which were the objectives for the facilitation. However, at the end of the workshop, there was a pressure for reaching a good concept and achieving more validation regarding the decisions made under the workshop. Especially the values for the stakeholders were regarded as “made up” by the teams and the lack of user involvement and feedback on ideas. This feedback was a part of the normal process. However, as commented on by Paul Erik Fabricius, the decisions made were adequately supported and the concepts satisfying when compared to other processes at the same stage.

In general, none of the participants felt comfortable navigating the system on their own after just one workshop. Several comments were made during the evaluation session regarding the use of facilitation as a positive aspect of having this kind of workshop at the end of the workshop.

A few participants found the pyramid model useful as a reference model for thinking.

All participants expressed an increased awareness of values and the use of values as a way of formulating the goal. Especially the participants normally functioning as designers were aware of this possibility.

One of the civil engineers evaluated the entire workshop and the way in which the system was presented at this particular workshop as “uncertain”. This meant that the milestones (Value Mission and vision) were based on insufficient information and guessing. In addition, the business area of producing medical equipment was not suited for a value-based design approach. The relation between vision/mission and the specification was in this view contradictory, and they were competing “documents” for describing the goal.



The overall impression of the facilitator is that the majority of the participants found the value-based approach to be another way of defining needs and the goal for the product. They could use the result (mission and/or vision) as a guideline for the concept, and the product ideas were acceptable compared to the time available.

***2 months later***

Approximately two months after the workshop a questionnaire was emailed to the participants (Appendix D). About 90% of them were returned. The answers clearly indicated that it had been a positive experience and opened new horizons. However, none of the participants felt confident enough to use the entire methodology on their own. Only the use of metaphors to increase precision seems to have been more or less implemented. The answers highlight the following issues; confusion, awareness and the origin of values.

The participants are still confused about the terminology used in the workshop and cannot distinguish between Value Mission and vision. The confusion includes the actual course of events. It was affirmed that more visual guidance and anchoring of the activities to the pyramid would have assisted the participants in gaining an overview. In short, there were many elements to learn and the facilitation could have assisted by presenting an overview during the course of events.

On the other side, all participants speak about an increased awareness of values. They are however not agreeing upon the relevance of these values. Some comment that it is not relevant to the field of the company, because the medical equipment business is too serious to only focus on hard facts, business and security. Others are more positive towards the use of these values and see them as 'just another tool' in the design process.

The origin of values is an ambiguous phenomenon. Some participants comment on the validity of the abstract milestones, others feel that it is a question of research; the more research the higher the pressure for developing a valid product concept. The comments put forward by participants reveal a basic disagreement among them in the validity of developing concepts; the specification based and the specification and quality based.

Other participants do not deem this methodology any less valid than any other approaches to developing a concept; it will always include some guessing. Others find this methodology too insecure, the mission and vision is not 'real' only something that the participants came up with. The latter is expressed from a specification point of view where all decisions should be validated by facts or specific needs.



## Summary of workshop

This summary will evaluate the use of abstract milestones representing values and the development of these through horizontal and vertical movements.

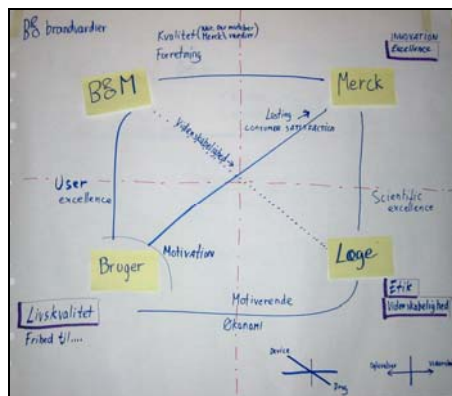
### **Abstract milestones in the process: mission and vision**

At first glance, the qualitative criteria for Team F seemed to be originating from the user experience from the field trip. Its primary tool for designing was modeling and all in all the team seemed to be more comfortable with tangible objects and problems.

However, developing the Value Mission proved to be an interesting and valuable experience for this team.

Without any encouragement or guidance the team made a map of the value-based relations between the stakeholders for the product. This was done because the team was confused with all the abstract words and could therefore be seen as an attempt to make the Value Mission more tangible.

The relation map indicated both the values for each stakeholder, originating from the previous mind maps, and the values that connected each of the stakeholders.



III.5.46 Team F's Value Mission poster

As one can see at the left bottom of the poster, the team also tried to indicate the dilemmas or tensions between which the product should navigate.

These tensions are derived from the relation map and the graphics indicate from where they originate.

This relation map gave the team an overview of the value landscape for the product and was used with that purpose for the rest of the workshop. This map also proved to be very persuasive and efficient during the presentation of the workshop result.

The development of the qualitative criteria such as qualities and characteristics was very different. This work was done with a large amount of facilitation and guidance. Through this facilitation the team did reach a vision described with three words and three metaphors. The breakthrough came with a metaphor “The Christmas stocking” that described the way in which the device would get the attention of the user (III.5.47). This metaphor was enthusiastically illustrated by the scenario play that the team performed at the presentation of their vision.



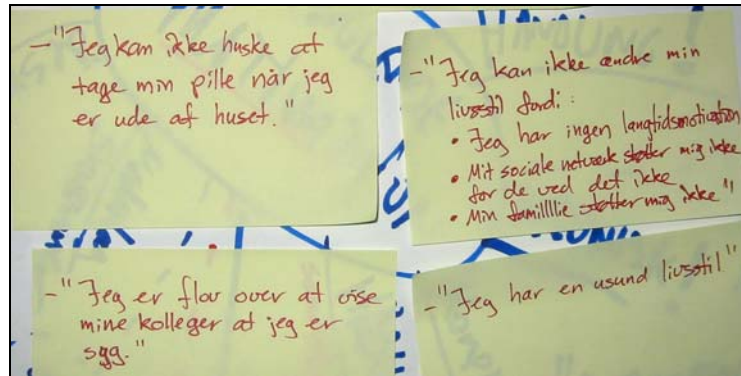
III.5.47 Team F's Vision poster

The other team spent more time and effort trimming the vision and was mainly self-dependent during this process.

This team used the words from the Value Mission in the work with the vision. Although it was not the intended approach, the team explored these words extensively and found additional words and metaphors. After the first mind map, they had four words describing their vision.

After interviews with both a doctor and a nurse, they collected the information and made another mind map of the main issues concerning the use of the product and medicine. Focusing on the main issues for the problems facing the user seemed to give the team a breakthrough in the way that they now could relate their vision to actual concerns of the user. The team made these concerns tangible in the form of statements from fictitious user to illustrate the values desired in the final product (III.5.48):





III.5.48 Fictitious statements

This leads the team to a process of revising its vision, especially the aspect of “discretion”. The team discusses intensively the role of its product as either a tool for the users to “come out of the closet” and acknowledge the fact that they have a self-inflicted disease or the product could be a sort of toy or imitation of another product, helping the user to hide the medicine.

They decide to go with the “pro-active” characteristic, complementing the other quality “motivation”. The team does however keep an open mind and state so that it is always possible for them to go back if they get a better idea for a product. This team also delivers an enthusiastic scenario play.

### Vision

Both teams were very good at revising the vision during the workshop. The revision was mainly triggered by the user experience and the interviews revealing the issues regarding the diseases and the use of the medicine. Since both teams were developing some sort of dispenser of tablets that should be taken with certain intervals, they shared similar concerns regarding the aspects of interaction between user and product. This alarm issue was in both cases a main focus for the discussion of the products’ behavior and the origin of the continuously revisions of the vision.



III.5.49 Team N



III.5.50 Team F



Both teams used post-its as a way of keeping a constant and easy revision that continuously reflected the goal for the product (III.5.49 and 5.50).

Mission:

Team F used its relation map on a regular basis referring to its Value Mission during discussions and decisions. The poster was placed on the wall next to the team's worksite in the room.

Team N also had the Value Mission poster hanging on the wall, but since they transferred the words to the vision poster using them as a vision instead, the Value Mission got lost in the work. This is also reflected in the final presentation by the team; only the vision is presented. At the final presentation the team received several comments pointing to the fact that the products presented could be made by anyone and that the team forgot the values of its other stakeholders focusing on the user's values instead.

#### ***Horizontal movements***

All participants seemed to have had a successful experience using the metaphors as a tool for clarification. The tool functioned as a way of reaching a shared understanding of value-based keywords used by the team.

For Team F the qualification that determined the nuances of the words was a hard process. Team N seemed more at home with this type of discussion and used several hours and many post-it during this part of the workshop process.

The difference between the teams lied in the way in which the abstract content was handled not in the focus; both teams had focus on the behavior of the product being a significant part of its characteristics. However, Team F used specific suggestions and ideas, although only verbalized, as a way of reaching the qualities and characteristics, i.e. the role of the product. They referred to the keywords on the poster during this process and some of the team members performed small scenario plays for different keywords.

This process gave the shared understanding a push forward and the team developed their leading metaphor, the Christmas stocking.

Team N had a more abstract discussion, focusing on the meaning and interpretation of the words put on to the post-its, maintaining the discussion on a horizontal plane with the use of product examples as metaphors, i.e. the features and examples were related to the values in the same way as the metaphors, thus not distinguishing between metaphors and product example.



The discussion referred to the social context and implications for the user and led this team on to defining their mission: motivating the user in a pro-active way.

Metaphors play a crucial role in this process, and although the team used post-its in order to revise the poster easily, they hesitate to remove the metaphors once they are put on the poster. It is not until the final stages of their discussion that some metaphors are removed, so that a single keyword not would be presented by contradictory metaphors.

### ***Vertical movements***

In planning the workshop several vertical links between the abstraction levels were intended, however the slow progression and the participant pushing deadlines reduced the number of links from abstract to concrete levels and back.

The most successful tension would be the relation between the interviews and user experiences and the revision of the visions.

The development of concepts and ideas in line with the visions varied between the teams. Team F had a very conceptual design, but a very clear link between values, vision and idea. Team N had a more generic concept with several ideas, but a less clear link between values and idea. The concept however was in line with the vision.

These tensions, perhaps less strong but more long-term tensions, were used very subtle during most of the sketching. The intended vertical links became journeys with several stops along the way.

### **Problem finding**

Seen from the facilitator's point of view, it was more like a progression than a break. They were slowly building up knowledge step by step using each method.

However, to the participants it felt more like a break. At the third day, they requested methods of finding "user needs" in order to generate ideas.

There was not a specific exercise to flesh out the points from the previous sessions and interviews, thus the mind map on user needs came after the request. This seemed to solidify the problems at hand, especially for Team F that had already found their solution on a conceptual level.

Interestingly enough, though Team N was discussing values and abstract notions without any problems, the team seemed to have a hard time deciding on anything, hence the request for user needs.



PFA stated: “I can’t make ideas without user needs”, indicating a personal preference and value system centered on the user when designing products.

Idea:

Team F had a hard time defining and qualifying qualities and values for its product. However, after the product took shape in form of a physical model the team was able to get into more specific discussions about the characteristics for the product, continuously checking the team’s solutions with its experience with the user visited on day 2. The process of developing the physical model was a combination of enactment, discussion and prototyping.

This team seemed more able to design a specific prototype based on the members’ experience with a user. The team also developed user characters very early in the workshop during the scenario building:

Team N had a different way of reaching its main idea. This team had many discussions about the feelings of the user and the social aspects concerning them. They focused on the role of the product as some sort of “personal trainer” bringing motivation and a healthy lifestyle to the user.

The team’s ideas for the specific product was as mentioned earlier created at a late stage of the workshop. Throughout the workshop they had a sketchy idea of a tablet dispenser/container. In these early stages, the team was more concerned with the features of the alarm than the form and structure. The features were very closely linked with the characteristics of the product. Since part of the role of the product was to be motivating, the structure and behavior of the alarm was very important to this team.



### Highlights from WS 2

The notions mentioned here are the most important in relation to the scope of the thesis concerning the practicing and learning of the methodology level.

#### **Values and methodology**

- **Linking levels**  
The instructed linking of the levels of abstraction were indirect at most vertical movements and the progression of the methodology. The teams followed different paths towards the end of the workshop. One team forgot the Value Mission completely and only used the Interaction Vision. The other team successfully linked the Value Mission and Interaction Vision. This might have been influenced by their choice of placeholders:
- **Posters as placeholders for mission and vision**  
The team that focused on the Interaction Vision used the poster as the placeholder for the Interaction Vision and Value Mission and placed them separately. The team that used the Value Mission made a schematic illustrating the relations between values, qualities and metaphors. The schematic approach included a map of the Value Mission illustrating the relations between stakeholders, and highlighting the values that the product should represent. This provided them with an overview and logic for the Value Mission that they used in their final presentation.
- **Qualification**  
The participants were focused on being unique in their choice of keywords without the facilitator's intervention. Scenario plays were welcomed and these participants used them actively as a sketching tool from day two. They were also positive towards metaphors and related methods as a tool for being precise in communication. Both teams confused the specification and requirements for values and qualities in the course of the first days; however the use of scenario plays seemed to guide the teams to what type of keywords that were appropriate.

However, there was a discrepancy in the amount of facilitation required to handle the abstract metaphors. The schematic team (F) had little success in obtaining a free flow in associations and as a result required continuous assistance, whereas the other team (N) seemed comfortable discussing the roles and behavior of the product. In this discussion, it was noted that the team used other products as examples on metaphors and occasionally they used features to negotiate the appropriate metaphor.



This difference could indicate that maybe the schematic approach inhibited the free flow of association and discussion. However, there were too many unknown factors of personal competencies, chemistry, etc. that could not be excluded, and thus no further conclusions were made.

- Ideas and visualization  
Ideas were sketched and modeled which made them very tangible to the teams. They generated ideas both individually and together, taking the appropriate time to communicate and discuss. This provided the entire team with an overview of the ideas.

#### ***Learning and methodology***

- Specification versus vision  
The participants were divided in the question of the validity of the methodology. An engineer argued that there was an ambiguous relation between vision and specification; “they produced competing documents.” Furthermore, the entire approach rested on “uncertain milestones” and “value were not relevant in the medical device business”.  
This was countered by other participants that disagreed and argued that all concept development involved guessing. The designers saw no revolution in the methodology’s intention, only in the systematic structured approach.  
However, it illustrated that there was a compatibility issue between specifications and vision in the practical application.  
- Ironically, the most skeptic person performed well in the discussion of the role and behavior of the product.
- Facilitation  
The facilitators re-instructed - on a team basis - much of the information and instructions given in plenum. This could indicate that difficult or a large amount of information and aspects should be learned within a short time frame, which was supported by the participants’ expressions concerning confusion and lack of overview of progress and process, both during and after the workshop. In this relation, it should be noted that the participants ignored the handout written instructions throughout the workshop. It is furthermore observed that the participants gained bearing on the second day and gradually took control of their process.

The participants expressed positive attitude towards the methods and process, and they were especially positive towards being facilitated through the use of the methodology.



### **Workshop 3 (WS 3)**

*4<sup>th</sup> semester students at Department for Business Development Engineering, Herning Handels- og Ingeniørhøjskole, February 2003*

#### **Business and engineering context**

This subchapter will introduce the context of the participants in the workshop. This is based on observations and experience by teaching the same methodology one year prior to this workshop at the same institution. Furthermore, objectives from the curriculum are used.

#### ***HIH workshop***

This four-day workshop was held at “Herning Handels- og Ingeniørhøjskole” (HIH) by Christian Tollestrup assisted by Michael Damkjær, a student from Architecture & Design, AAU. The participants were students attending the Business Development Engineer specialty on the 4<sup>th</sup> semester.

The workshop was not done in successive days like the others. It was a 1+1+2 structure. The first 2 days focused on learning the system through an exercise, the other two days were about using the system on the students’ own projects.

#### ***The objective for the education***

The students are not supposed to become designers, but they are expected to work together with designers and other types of engineers. Therefore, they are presented with design tasks on this 4<sup>th</sup> semester in order to learn about design and what designers do.

The objective for a Business Development Engineer is, as the name implies, to develop business. Therefore, the design of a product includes the design of the business aspect and the way in which the product adds to the value chain for the stakeholders.

#### ***Traditions***

Traditionally, the students work together with different companies during each project. Sometimes these projects can contain secret aspects and innovations. The project setup involved the companies as both a source of information and as a client for the students. Some projects are carried into effect afterwards and the objective for some students is to develop a business with personal involvement. As an extra motivating factor the result of the work produced during the project belongs to the students.



### ***Values***

In the description of this education, the students are expected to be a kind of generalist who collects and synthesizes the information from other involved in the development. This kind of generalist view can also be found in the description of designers. There is however a different emphasis in that these students focus on the business as the result and the product as a tool. The designer focuses more on the user and sees the product as a tool.

### ***Team roles and hierarchy***

The students normally work in teams during the projects, but in these teams one member is assigned as a project manager. This managing role is taken very seriously by some students. The tasks include planning and allocating resources.

### ***The role of Design***

In short, design is viewed as a way of making business. The role of this workshop is, to some extent, to introduce design as more than just styling an object.

### ***Team structure***

The students usually work in teams, and some of the teams select a project manager who, to a certain extent, has a coordinating role and who delegates the task to be performed between the team members. This indicates a hierarchic structure within the teams that in some way resembles a project team in a company. The number of members in a team is approximately 5-6 persons, which corresponds to the recommended number (Striim, 2001).

### ***Competencies***

The students' main competencies are integrating business and design solutions in a process. When reading the specifications for the education there are similarities with design students when it comes to the self-perception, both from AAA and AAU. This revolves around an integrating competence with the role as a coordinator and manager, translating the other team members' contribution. However, the BDE student is more oriented towards the market, the company's interests and the business aspects.

The title "Business Development Engineer" is an indicator of the core competence. The students have little knowledge of construction and their sketching capability is poor.





### ***Background knowledge***

This is the only semester where the students are dealing directly with the design process. To the students this is a 'sample' of what industrial design is about. They are not supposed to be able to perform the discipline, but they are obtaining knowledge about the design process and what designers do.

### ***Motivation for participating***

Motivation for participating is a required part of their education, but there are no direct sanctions for not participating.

### ***Experience with the subject of the project***

Most of the products and services to be designed are of a scale and complexity where the students themselves can be end-users. However, there are two medical-related projects, where the students work together with third parties possessing more in-depth knowledge of the field.

## **The workshop setup and overview**

### ***The role of the assignment***

The workshop presented the students with two assignments. The first assignment was fictive and atypical to the students.

The other assignment was to use the system within their own projects as a way of developing a guideline for choosing between and further develop their concepts.

The first assignment was formulated by the teachers.

They were asked to design a Spa made by Novo Nordisk. The students normally do not relate to building anything else but products. The idea was for them to design services that were appropriate for the client, Novo.

The second assignment was the project that they already had commenced; the semester projects.

The projects for the students varied in complexity, systemic aspect, object size and character (some were services) and there were no evident common denominator.

### ***The process of the workshop***

As mentioned, the workshop was not held in consecutive days. The first two days were about introducing the system.



Day 1  
Theoretical basis  
Developing a Value Mission

Day 2  
Developing a vision  
Presenting vision and concepts

Day 3  
Presenting their projects  
Describing their concepts with the Pyramid model  
Developing a vision

Day 4  
Developing vision  
Developing concepts  
Presenting result

***Timetable and organization within the project / semester***

During the planning of the workshop the idea was to place the workshop after a research phase. However, it turned out that the students had already done a course on generating ideas during the previous month. The students were therefore less motivated with regard to starting a new session of generating ideas.

It was the intention that the workshop would work as a kickoff for the semester project, but instead the workshop was used to focus on which of the five concepts that each team had developed was to be pursued for further development.

**Resources**

A large room (the class room) and large sheets of paper were provided. The students provided magazines from home as a source of visual images.

***Expectations of the result***





























The teachers expected the workshop to result in a vision for each team to use as a guideline for further development. This vision could be supported by 2-3 concepts and a description for these concepts using the pyramid model.



## Practicing the V-V-based Methodology (5)

### Overview of exercises

First, a schematic overview is provided, then sequences of movements are presented and observations are discussed and analyzed. The table shows the sequence of methods introduced and organized by Christian Tollestrup:

Step	Level	Move	Method	Content	Outcome	Facilitation
1				Introduction; exercise project	Background knowledge	
2				Needs of stakeholders	Exploring the value landscape	Demonstrating mind map technique and exemplifying values
3				Relation map between stakeholders	Overview of relations between stakeholder's values. Defining the actual landscape.	Instruction verbally and supporting teams in starting up.
4				Defining Value Mission	Focus on the product.	
5				Presenting Value Mission	Event, milestone	Plenum discussion
6				Introduction to vision	Information on upcoming activities.	
7				Qualifying values through metaphors	Calibration of understanding.	Exemplifying metaphors and supporting start-up process for each team. Participating partially through examples.
8				Qualifying values by photos	Calibration and visualizing the abstract.	Instructing participants to be precise
9				Association exercise	Warming up the associative flow.	
10				F.R. on 3 values	Understanding the values in the concrete context + ideas for next step.	
11				Analyzing ideas for qualities projects	Eliciting qualities	Heavy facilitation in the abstraction process.
12				Vision and ideas	Milestone	Plenum discussion
13				Next step: Own project		Instruction and debate on participants' situation



14				MBM	Redefining already found words	Facilitating on a team basis, hence individual progress and process. In general heavy support.
15				Sketching ideas	Pool of ideas relevant to the problem.	
16				Analyzing ideas	New qualities	
17				Qualifying words with metaphors	Calibration and shared vision	
18				Qualifying words with pictures	Precision	
19				Sketching	Synthesizing ideas	
20				Preparing presentation	Communication material	
21				Final presentation		Plenum discussion

## Sequence of movements and observation

Based on the overview, sequences of movements are presented along with observations regarding the use and outcome of methods.

### Step 2-4:



#### Sequence

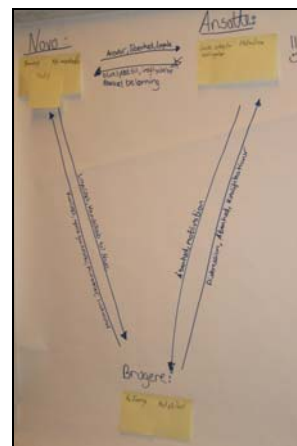
The process begins at the highest level of abstraction and stays there until the Value Mission is reached. The first horizontal movement is about determining the set of values and needs for each stakeholder in the product; three stakeholders and two maps for per stakeholder, i.e. six moves. The second move is the creation of a relation map, expressing the relations between the stakeholders' values and needs on an abstract level. This move is experimental and this is the first time it is done in a workshop. The last move is determining the Value Mission for the product by analyzing the relation map and synthesizing the Value Mission from the map.

#### Outcome

All participants, including facilitators, are uncertain of what the outcome will be. Some teams are very interested in the mind map method and create dense and rich maps (III.5.9).



III. 5.9. A rich mind map



III.5.10 "Value relation map"

The relation maps (III.5.10) included the values and needs identified through the mind maps for each stakeholder. The relations between the stakeholders were difficult to fill and ended up repeating some for each stakeholder or stating the obvious relations between them, such as the economic relation between supplier and buyer.



The Value Mission was presented together with the three most important needs to be met and was consequently called the “Need mission”. Though this involvement of needs was an attempt to combine the concrete needs with the values, the content showed that the results in terms of words were surprisingly similar. Therefore, the facilitators decided to discard the needs as soon as possible.

### **Method**

The teams use different approaches to the mind map method. All teams were encouraged to stand up during the process. However, not everyone did; some stood next to a flip over, some next to their table and some used the secretary approach. The facilitators provided no further instructions concerning how to structure and analyze the mind map; this was done independently by the teams.

The relation map was no success; none of the participants came up with any words that were not already elicited from the mind maps of the stakeholders. Either the method was redundant, or the participants were not able to synthesize on the basis of the map. Furthermore, the method was not explained clearly, and there was confusion as to what would constitute a relation.

### Step 7-8



### **Sequence**

These moves were about determining the nuance of the selected words on the intention level. For that purpose the participants used metaphors and pictures found in magazines that they had brought with them. These moves are preparation or idea generation for exact values.

### **Outcome**

The main focus is on the pictures. The participants are not familiar with the moodboard method, and therefore it has no bearing as to what the outcome would be when applying a method of that type. This results in collage type posters with far too many pictures and very little precision in communication (Ill. 5.11). The metaphors are a little more precise, but they drown in the ocean of pictures:



*III.5.11. A collage type moodboard.*

### **Methods**

The participants are not very critical when selecting the pictures. They take all the pictures which they can find and which relate to the value and put them on the poster, hence the ocean. However, they seem to act as though it is a social event; they laugh and have fun, but the fun seems less focused on the project and more of enjoyment character.

Again, the style and atmosphere of the pictures are determined by the source, the clearest example is this team that only brought business newspapers (III.5.12):



*III.5.12. The pinkish paper and style of business influence the atmosphere and nuance of the values.*

This renders the method somewhat pointless, since the teams did not get any closer to determining the nuance of the values.

The nuance is more precisely formulated through metaphors, but the process of formulating and finding those requires much facilitation.

Step 10-11

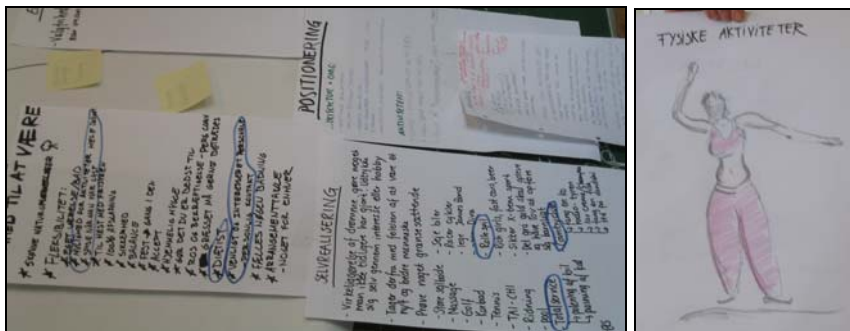


**Sequence**

Now the movements shift from horizontal to vertical. This provides an opportunity to generate ideas and to analyze the ideas for their qualities and thereby rounding up the training exercise.

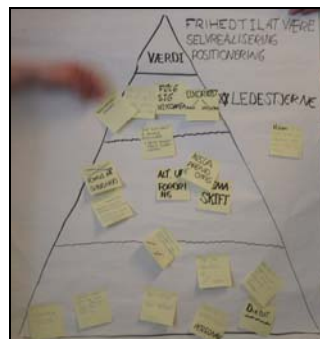
**Outcome**

The ideas are primarily written and only state their function, not a specific way or application. This might be contributed to the fact that the ideas are services to be provided. However, it gives the impression of distance to the project. Only one team sketches, and in this team only one person is doing the drawing (III.5.13).



III.5.13 List of ideas, not easily accessible and a single sketch.

The qualities are written on post-its and placed on a large scale drawing of a pyramid (III.5.14), providing the participants with a focal point of collecting their project information. This pyramid is used in the final presentation of the training project.



III.5.14 Pyramid as placeholder for post-its with key words





## Practicing the V-V-based Methodology (5)

### Step 14-15:



#### **Sequence**

These steps are two horizontal movements in sequence, both without a direct relation. The first move is about defining words that the teams are already using to describe their products. The second move is about generating ideas on the basis of the problem.

#### **Outcome**

The number of ideas is low and the reason for this might easily be contributed to the fact that the participants have been generating over 500 ideas for their project in the last month.

For those teams that already have words of connotations that they use to describe their products, the qualification process is challenging. This gives rise to plenty of discussions and requires facilitation to sort out the differences within some teams.

#### **Methods**

The participants have difficulties in getting the MBM mind maps flowing; some teams misunderstand the instructions and require re-instruction and support to get started in the process.

At this point, some teams express some insight into what the entire methodology is about; the exploration of words demonstrates the vast number of possible interpretations. Also the combination of words expressing the qualities and describing a field of tensions is commented on. Especially one team, designing a fireplace, chooses the following combination of qualities; intimate, provocative and innovative. The latter word is intrinsic when developing a new product and the team is not able to define the nuance, but the first two qualities seem opposing and create tension. This tension is inspiring and provokes images and ideas.

### Step 16-18:



#### **Sequence**

These steps are about analyzing the generated ideas for their qualities, and subsequently qualify them with metaphors and pictures. The scanning of ideas requires the ability to do the abstraction and analyze the idea for its structure, imagining the product as a social actor and empathizing with the situation.



**Outcome**

The teams reuse their old ideas for the analysis but the words found are on various levels and some words could be interpreted as demands or solutions. The metaphors are more easily created for most teams, demonstrating an increased competence the second time the method is applied. Especially the team designing a fireplace comes to a new understanding when the team members decide on the metaphors for their qualities. They are actually not agreeing on the metaphors for “provocative”, which demonstrate that they are now aware of the design decision they are making.

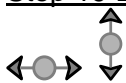
Additionally, the over-use of pictures is reduced for most teams; this is also encouraged by the facilitators during the last presentation.

**Methods**

The analysis of the ideas for qualities does not come easily, the facilitators are very involved in this process supporting and steering the participants. Many of the words suggested by the participants are demands or specifications related to the lower levels of the pyramid. The participants express confusion and some are even hostile towards the method, criticizing it for not being ‘as they normally do’. The facilitators have the impression that the participants are more comfortable handling specifications and solutions, than the abstract aspects.

However, a team dealing with software sees the potential in designing the behavior of the system through the qualities.

Step 19-21:



**Sequence**

In the final hours of the workshop, the participants prepare their presentation. This includes preparing ideas for presentation, making the posters and revising the pyramid levels in an effort to create consistency. The presentations of the result focus on the vision and not their concept ideas.

**Outcome**

The material used for the final presentation reflects the emphasis on the vision. The ideas presented are not easily accessible. Instead they are again mostly short-written descriptions.

However, the posters are more precise this time (III.5.15), with a decreased number of pictures and more emphasis on the metaphors in the presentation speech.



III. 5.15. Vision poster.

The team dealing with software demonstrates confidence and enjoyment using the mind maps and metaphors. Therefore, the facilitators challenge this team to do a scenario play as the only one. They do this scenario play and are very precise in their communication. In addition, they surprise the facilitators by distributing a song that they had written (as well as preparing the scenario play), expressing the feelings, values and qualities connected to their product and problem – very convincing (III.5.16)!

The whiteboard contains a pyramid diagram with the following text:

- Top:** Tind - 'Som at blive på plads - et tryk'
- Second:** Motivation - 'som at få samarbejde'
- Third:** Indsigt, Sikkerhed, Nemt & bekvemt, Tryghed, Troværdighed
- Fourth:** Usynlig teknik, Sikker dialog mellem patient og behandler, Sikker interaktion mellem patient og apparat, Intuitiv betjening, Patienten har indsigt i egen sygdom
- Bottom:** Den lille hjælper, Følge med i egen sygdomshistorik, Tilbagebetaling fra egen lomme, Apparatet er sikkert og pålideligt, Behøver man en lomme, Flere produkter i en, Bredt udvalg af relaterede produkter

Next to the pyramid is a star with an eye in the center and the text: **SOM AT BRUSE SIN TELEFON**

The song sheet for **ZEPHYR** reads:

Ved **ZEPHYR**'s fremlæggelse d. 25/  
Melodi: Det er hammer hammer fedt

Jeg er jo blevet tress  
Har altid haft lidt stress  
Mit blodtryk er forhøjet  
Min kone er misfornøjet  
Min læge er lidt teknisk  
Jeg syn's det er lidt hektisk  
Jeg har fået en måler til mit tryk.

Det er hammer hammer fedt  
Jeg måler lige om lidt  
Jeg trykker lige her  
Det er jo ik så svært  
Bare tryk på knappen  
Og så på med lappen  
Telemedicin det er et hit

III.5.16. This team was very confident with the methodology and had more understanding of the levels and the separation of the content of these levels. They also wrote a song dealing with their subject on a contextual level.

### Methods

Preparing the presentation material is done without facilitation. On the other hand, the facilitators assist some of the teams in the revision of the pyramid. This facilitation is focused on helping with the analysis of the words that they filled into the levels of the pyramid; sorting out the demands and self-evident qualities.



It is interesting to note that the team dealing with the software is most positive towards the methodology and does the scenario play with great enthusiasm. The combination of persons in the team certainly play a role, since they were able to write a song (they wrote a short poem for the first presentation in the first section) and play the scenario with such empathy. However, they also experience a frustrating phase of their project waiting for other stakeholders' information, and at the same time they do not have a physical product idea that can materialize and represent their project. The vision was therefore done with great care and the scenario play could materialize one aspect of their project.



### Comments from participants

The participants commented on the methodology at the end of the workshop. They expressed a general confusion and incompatibility with their own perception of the design process. However, all teams, except team T, expressed some degree of learning. Again, the main point was about the metaphors as a tool of communication.

The participants' teacher who witnessed the final presentation stated that the methodology brought the students to a higher level of innovation and abstraction than would otherwise have been the case.

Comments were put forward by a teacher attending the presentation stating that this methodology provided them with more a vivid imagination and a higher level of innovation; "They were less *grounded* than before".

### Summary of workshop

This summary will present the use of abstract milestones representing values and the development of these through horizontal and vertical movements.

#### ***Abstract milestones in the process: mission and vision***

As was expected by the facilitators, the participants had difficulties in distinguishing between values and qualities. Some teams focused on the values, others on the qualities. The main effort was therefore concentrated on shifting between abstract and concrete activity, rather than sliding down through the pyramid.

The MBM method is most revealing in terms of understanding the idea of the system; the experience of exploring the nuances in keywords already perceived as precise and clear seems to trick a reflection process. The idea of dealing with the abstract goal crystallizes at this point.

In general, it was observed that the students were more comfortable stating demands and specifications than setting goals and visions.

The source of qualities is another story. The participants' ability to analyze ideas for their inherent qualities as a social actor was limited and required intensive help from the facilitators. The elicitation of the qualities is therefore somewhat contributed to the facilitators, not the participants (or the methodology).



As the discussion with the team T demonstrated, many participants had difficulty in understanding the different approach of making a vision, not a list of specifications. There was a misunderstanding in the role of this methodology. It was seen as a replacement methodology, not as a supplementary approach.

The role of the Value Mission was not explicit in this workshop. The mission and the vision were put into the pyramid's two levels of abstraction.

#### ***Horizontal movement***

In this particular workshop, the facilitators did not introduce, nor use, the concept of scenario plays.

However, team "BT" was very good in their determination of nuances, and seemed to understand this point of the role of the product. It might be related the interaction focus in the team's project, namely the software interface for their gadget. They were the only team to do a scenario play demonstrating the role and qualities of the interface. The team did so with much enthusiasm and success.

The same team also made a poem for each of the exercises. Two of the girls, on their own initiative, wrote a small poem/song to describe their product, the situation for the user and the context. They did this in a very successful manner, succeeding in communicating feelings, experiences and values.

For the facilitators the benefit of the MBM method was made even clearer and they were able to explain the use and outcome of this method.

The idea of being able to define the nuance of a word took much facilitation and discussion. It should be considered that neither of the facilitators provided good examples for this method, nor for the entire process.

Nonetheless, the introduction of the method provided all except one team with further insight into the benefits of the system.

The facilitators helped the participants to use the method by giving examples of variations of their specific quality. This helped most of the teams to grasp the idea of the method. In general, the participants had more difficulties in distinguishing between the phase of free association and the phase of analysis and seeking consensus, than doing an ordinary mind map.

The identification of qualities required the assistances of facilitators for all teams. There was however a huge discrepancy between the amount of facilitation and understanding the system.



Team T repeatedly announced that it did not understand the system, and none of the information at the workshop coincided with their previous design knowledge. In particular, two persons were very much against learning anything from this workshop, especially since it required navigation through a chaotic universe of abstract and non-factual elements. They required much facilitation, but they fell in the same pitfall over and over again defining ideas and specifications as qualities.

In general, the teams started seeing the idea and use of qualities for the role of the product when they started qualifying the words by the use of metaphors. Team B found insight from the combination of qualities when they suggested “Intimate” and “Provocative” as qualities. The facilitator encouraged them to further define and qualify these words, because the apparent contradiction in terms was very good in the sense of creating ideas and visions.

### ***Vertical movements***

This workshop consisted of two sections. The first section was intended to introduce the moves in a more separate way, a slow step by step approach. This is reflected by little vertical iteration in the first section.

The second section was about applying the method to the projects that the teams were already working on. Most of the teams were already focused on a concept and were not prepared to open up the project again, which meant that the iteration between target group, stakeholders and ideas seemed pointless.

Team V was prepared to bypass its previous exercises in generating ideas, since the team did not feel that they had reached a satisfying concept yet. The other teams were in a confused state with regard to their project, embodied in the fact that they did not know in which direction to go and they were therefore prepared to search for solutions for parts of their project. Some teams were open-minded and not satisfied with the present state of the project.

The facilitators guided the teams through this entire workshop, mainly due to time pressure, thereby making sure that the teams reached some sort of result. The facilitators played a significant role in choosing activities and determining the right level for specific words and discussions.

The definitions of the concepts used in this workshop were not completely understood by the participants. The facilitators referred to the different levels of the pyramid without using a consistent language, but instead using characteristics, qualities and role respectively to refer to the same level of abstraction. This inconsistency from the facilitators probably caused further delays in the learning process for the participants.



### Highlights from WS 3

The notions mentioned here are the most important in relation to the scope of the thesis concerning the practicing and learning of the methodology level.

#### **Values and methodology**

- **Linking of levels**  
The linking of the levels of abstraction was attempted to be more direct in the vertical movements and the progression of the methodology. The instructions focused on filling in content sequentially on the levels of abstraction. Towards the end of the workshop, the teams followed different paths, making the progression vary from team to team.
- **Placeholder for mission and vision**  
Together with a more direct linking the teams used an empty pyramid as placeholder for the Value Mission and the Interaction Vision. This physical co-existence made them aware of the relation between Value Mission and Interaction Vision. Post-its or blackboards were used in order to allow development and change in the keywords.
- **Qualification of keywords**  
When using metaphors and pictures, the participants tended to focus on illustrating the keywords of the Value Mission and Interaction Vision, instead of focusing on defining the *nuance* of the keyword as they desired it to be. This focus was not easily shifted and in general the teams experienced slow progression in using mind maps and finding metaphors. Product examples and features were predominant in the negotiation of metaphors.

The source of pictures available had influence on the choice of pictures and images, along with the indiscriminate use of too many pictures; the nuance was not described with precision. The teams were not accustomed to use each other for feedback and presentations, thus not accustomed to visualize their ideas and material. This was further illustrated when some teams delegated the job of illustrating the values to individuals, thus missing the point of shared understanding.

The source of keywords was a Relation map illustrating stakeholder relations. However, the keywords chosen were very evident (not unique) and mostly related to the user.





The team designing software was the only team using scenario plays. The lack of physical product might have bypassed the otherwise predominant focus on features, solutions and specifications exhibited by the participants in general.

- Ideas and visualization  
The participants were not accustomed to visualizing their ideas, most of them were written as keywords and features.

### ***Learning and methodology***

- Specifications versus vision-based approach  
The workshop demonstrated conflicting paradigms of design: requirements and specification in rational approach versus vision and values in a non-factual approach, where there was no right answer. Not all teams opposed the methodology directly, however on many occasions the facilitators and participants experienced communication problems due to the difference in taxonomy and valor (Dahl, 1997) and the different paradigms. The difference in approach was also reflected in the comments that pointed towards the possible use of some of the methods, but the comments were otherwise skeptic with regard to the non-factual methods and abstract goals.

Another issue of reluctance was the product concept already presented to the team at the beginning of the workshop. There was an indication that suggested that the more pleased the team was with its concept, the less willing it was to use the methodology and 'start over'. There had been no actual investigation into this aspect, so no further conclusion would be made regarding this aspect.

- Methods  
In the learning process of understanding the content and intention of the Value Mission and Interaction Vision, two methods proved interesting. The metaphors gave the participants easy access to the start dealing with the nuances. This might be related to their written ideas; they were focused on the verbal aspects.

The other method was the constellation of keywords. Especially one team derived apparently conflicting keywords, however through the explanations and assistance of the facilitator, the team began seeing the creative tension and gained some bearing of the product role.

- Facilitation  
The facilitators re-instructed - on a team basis - much of the information and instructions given in plenum.



This could indicate that difficult or a large amount of information and aspects should be learned within a short time frame, which is supported by the participants' expressions concerning confusion and lack of overview of progress and process, both during and after the workshop. The written instructions of methods were more or less ignored or misunderstood.

An attempt to overcome the difference in taxonomy was to test several terms, however too many different words for the same basic concept might very well have caused delays in the learning process.



### **Workshop 4 (WS 4)**

*4 year students from the department for Industrial Design,  
Aarhus School of Architecture, April 2003*

#### **Design context**

This subchapter will introduce the context of the participants in the workshop. This is based on the experience attained as a student in this institution, previous meetings with the teachers, and the curriculum for the education.

#### ***AAA - ID workshop***

This was a three-day workshop planned and performed during a short stay at the department for Industrial Design, Aarhus School of Architecture. Planning and discussions were carried out in collaboration with Birgitte Jensen and Visiting Professor Jørgen Rasmussen.

#### ***The objective for the education***

The Industrial Design education at the School of Architecture in Aarhus is carried out within a Scandinavian tradition. The education is under the Ministry of Culture, not the Ministry of Education.

The objectives for the education are to educate the design students in accordance with a practical approach rather than a theoretical approach. This is done through a large number of projects carried out individually by the students. In this way, the students obtain practical skills and experience with the design process that is regarded as the key competence of a designer from this school. The role of the designer is to be the generalist that is able to combine information from other participants and synthesize this information into the design.

#### ***Traditions***

The practical aspect is supported by collaborating with companies in some of the projects (just as this one used for the workshop). The students are also encouraged to work as trainees in companies and design studios.

The projects are categorized through thematic criteria, such as “Transport assignment”, “Branding assignment” etc.

#### ***Values***

Although there is a verbal emphasis on the integration of technical aspects within the education, there are very little practical information and courses dealing with serious constructional and technical issues.



There is an underlying sense of being the user's advocate and the design process contains several black boxes compared to an engineering approach, such as Ulrich & Eppinger. Intelligent technical solutions (on a more structural and conceptual level) are however applauded and encouraged.

The styling aspect of the design has for a long period been regarded as less valuable than designing from a holistic point of view, including the technical, structural and user aspects.

#### ***Organization of work***

Almost all projects are carried out individually in order to support and develop the students as a designer, rather than a project manager working within a team.

#### ***The role of Design***

Since the objective of this education is educating designers, the design process (or work method) is the absolute focal point and a goal in itself.

In this context, the designer is trying to solve the "actual problem", i.e. the user's basic need, which is not necessarily the same as the apparent problem and it might not even be expressed by the user.

This could maybe be related to the Fifth Discipline of systemic thinking, which is about not focusing on the apparent symptom, but instead is about searching for the underlying cause and problem. An example of inquiry methods in a design context is IDEO's "try asking why 5 times" method of inquiry. The research generally consists of observing and investigating the *use* of the product in question as the focal point and inspiration for ideas.

The traditional way of designing does not necessarily include a specific and focused use of values. The values are expressed as connotations used for presenting and 'selling' the project. Another use of values is more implicit and carried within a tradition of user-centered design. The students are focused on the user and the use of the product; hence there is an implicit set of values behind the design and the design process. Even though the idea of the design process is to integrate function, aesthetics and construction, the optimization is implicitly centered on the use of the product.

#### ***Team structure***

The teams for this workshop consisted of 3-4 students. The teams were formed on the first day by the students themselves. There were three teams with a total of 11 students. One team was all female, the rest were mixed.



### ***Education***

All students in the workshop were in their 4<sup>th</sup> year and attending the Industrial Design specialty at the Aarhus School of Architecture.

### ***Competencies***

The students have general design competencies of an aesthetic and technical nature (less than A&D students), and they have experience with the design process from many projects, both short and long. They are accustomed to visual and oral presentation of their projects, based on 3D modeling, sketches, visual aids and animation.

Several students have real life experience in the design process gained through internships at design studios and companies.

They possess tacit knowledge of analysis, research and user contact and are accustomed to work with an open-ended approach, navigating chaos through the 'work method': an experience with the design process and its phases.

### ***Motivation for participating***

The sponsoring company gives three prizes for the best projects. Otherwise the students are encouraged to learn new methods and they express a desire to learn the methodology, supported by the theory.

### ***Experience with the subject***

No more than 2 out of the 12 students are smoking cigarettes, so the majority of the students have no personal relation to the subject of smoking coarse tobacco. However, all students can describe the prejudice about people smoking tobacco and as the visit to the company shows, they are correct in their description of the typical pipe tobacco smoker.

They can however identify with the feeling and values involved in the scenario of being at a café and expressing your personal identity through your brand of tobacco (cigarettes). This mechanism is compared to the use of mobile phones where you can also express your identity through the cover, the brand and your habits of using the phone in public.



## **The workshop setup and overview**

### ***The role of the assignment***

The assignment was a two-week “Branding project” for a specific company sponsoring prizes for the best projects. The chance of the winning project becoming a real product further motivated the students to participate actively and enthusiastically.

The workshop was functioning as kickoff concerning their projects where they could deal with the more abstract aspects of the project with regard to values and branding and simultaneously set up product concepts.

The assignment was to develop “smoking tools for coarse tobacco”. The sponsoring company only manufactured the tobacco, so the students should actually design a tool for “processing” the company’s product (smoking) and branding their existing product through this new tool product.

The design briefly (Appendix E) emphasized the importance of this project to include the scenario where the tobacco and tools would be used as an important factor. This meant that the project should include a physical object in relation to a new way (habit) of smoking coarse tobacco. This way of formulating the assignment should open for other solutions than traditional tobacco pipes, since the idea for the company was to develop a new market, i.e. getting people smoking cigarettes to smoke coarse tobacco.

The assignment had ethical implications which the workshop did not address specifically. The emphasis was on learning and using the methodology.

### ***The process of the workshop***

The workshop was a 2½ day workshop, planned using vents in form of presentations of milestones as was the case with earlier workshops. The day before the workshop, the students spend a day visiting the company and seeing the factory where the tobacco was produced.

Before the workshop I had been in contact with the sponsoring company in order to guide and help them to present the value system, philosophy and identity of their company in their material to the students.

This briefing was planned at an earlier meeting between Professor Jørgen Rasmussen, a marketing person from the company and me.

The workshop ended with a presentation of vision & values and scenario plays at the end of the first week. I attended the final presentation for the company at the end of the other week in order to compare the final proposals to the visions developed in the workshop.



By request of the facilitator, the students teamed up in groups of 4-5 persons during the workshop. Being in a team gave them an opportunity to discuss the abstract concepts and learn about the system and its benefits within a team. Afterwards, the individual projects would be done with an overlap in the visions. I was interested to see whether the common vision was traceable in the individual projects.

### ***Timetable and organization within the project / semester***

The semester is organized as several smaller projects, this “Branding Project” being one of them. This project was a two-week sponsor project, meaning that a company made relevant information about the subject available to the participating students. The company paid a smaller fee to the participating class but was not guaranteed any good or usable results, partially because of the time available, and partially because the designers were students, not professionals.

### ***Resources***

We had one presentation room available for lectures and presentations. The teams used the adjacent rooms for their discussions and work. The work produced was put on boards on the wall generating an atmosphere and giving them an overview of ideas and mind maps.

### ***Expectations of the result***

The students were asked to present a vision for the social qualities of the product expressed through scenario plays, words, metaphors and pictures. In addition, they should mention the underlying values and present 1-3 ideas that were consistent with their vision.



**Overview of exercises**

First, a schematic overview is provided, then sequences of movements are presented and observations are discussed and analyzed. The table shows the sequence of methods introduced and organized by Christian Tollestrup:

Step	Level	Move	Method	Content	Outcome	Facilitation
1				Introduction	Background knowledge	
2				Stakeholders values	Exploring the value landscape.	Instructing by example.
3				Relation map between stakeholders	Relevant value landscape.	Instructing by example. Continuous support
4				Value Mission	Focus	
5				Association exercise	Warming up association flow.	
6				MBM on values	Defining relevant nuance of values.	Showing example, outlining outcome of exercise.
7				Photos for qualifying nuances	Visualizing and defining nuances	Verbal instruction
8				Defining Value Mission	Revision	
9				Presenting Value Mission	Milestone	Plenum discussion
10				Vision introduction	Information on next step.	
11				Clapping / Body Sculpture	Social interaction and training performance.	Participating
12				Brain pool	Articulating ideas, exploring concrete solution space.	
13				Sorting ideas	Overview	





# Practicing the V-V-based Methodology (5)

14				Analyzing ideas	Eliciting qualities	Exemplifying abstraction process. And supporting the teams in their analysis.
15				MBM on qualities	Defining the nuance of qualities	Exemplifying metaphors
16				Status on vision	Milestone	Plenum discussion
17				Mirror	Social interaction	
18				MBM on qualities	Continuous definition	
19				Sketching concepts	Synthesizing concepts	
20				Revising vision and mission	Consistency	Supporting teams in their analysis.
21				Preparing vision presentation	Communication material	
22				Doing scenario plays	Further definition and new discussions	
23				Final presentation		Plenum discussion



### Sequence of movements and outcome

Based on the overview, sequences of movements are presented along with observation regarding the use and outcome of methods.

Step 2-4:



#### Sequence

The process begins at the highest level of abstraction and stays there until the Value Mission is reached. The first horizontal movement is about determining the set of values and needs for each stakeholder in the product; three stakeholders and two maps for pr. stakeholder, i.e. six moves. The second move is the creation of a relation map that illustrates the relations between the stakeholders values and needs on an abstract level. This move is experimental and this is the second time it has been done in a workshop. The last move is determining the Value Mission for the product by analyzing the relation map and synthesizing the Value Mission from the map.

#### Outcome

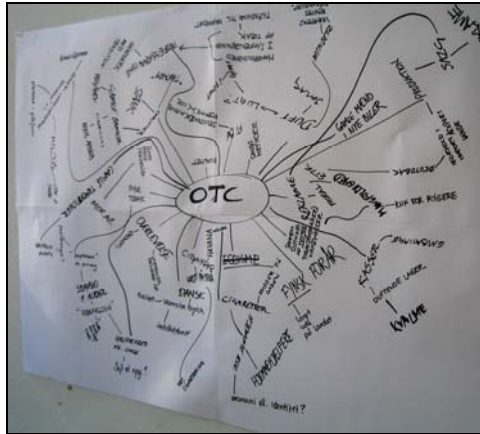
The participants express confidence in staying on the high abstraction level and not generating any ideas. The facilitator asks them to express their feelings towards generating ideas, and they reply that they are not confident enough with their project to generate any ideas at the present time.

The relation map produces new questions towards the selection of stakeholders. Since the project does not contain specific stakeholders in the venue aspect at this point in time, should the vendor of the project be the *existing* vendor and limiting their solution options for *new* vendors. Or should it be a *future* vendor and hence already deciding on the venue aspect before deciding on the Value Mission and product concept?

The decision is that the existing vendor should be used. The relation map produced exhibited the same tendencies as previous experiences at workshop 2. The relations are abbreviations of the individual maps for the stakeholders and hence not producing any new information. However the mind maps are rich (III.5.17).

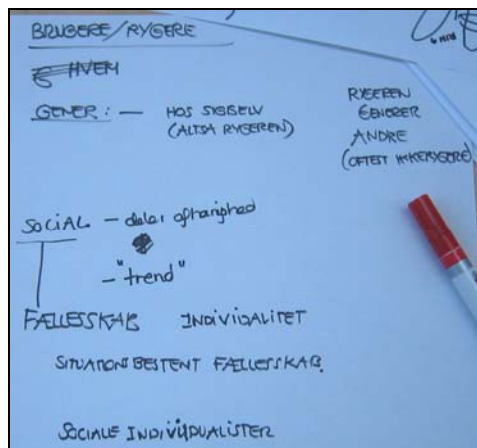


## Practicing the V-V-based Methodology (5)



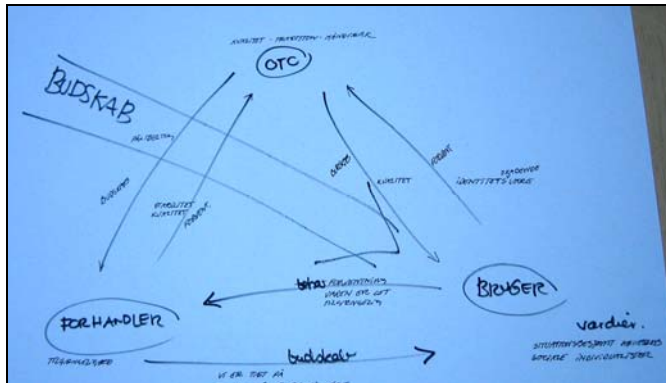
III. 5.17

Some of the relation maps provide some new formulations of the values for the stakeholders. This map synthesizes the user's values as 'situated community' and 'social individuals'. This Information is not present in the mind maps for the user. Team S generates a piece of paper concerning the user need and problem and derives the values from this (III.5.18).



III.5.18 User needs

The relation maps also show a focus on the message being sent to the user, implying that this is the primary function, hence also the Value Mission for the product (III.5.19).



III.5.19. The message (for the product) is towards the user, neglecting other stakeholders.

**Methods**

The mind maps are rather rich and the participants has little difficulty in separating the free association phase from the analytical synthesis phase. Despite the confusion about the relation map and the stakeholders, the teams are successful in developing the Value Mission. The function of the relation map is reduced to a noting mechanism, a physical place for visually expressing the relations. It does not seem to generate new information or insight.

Step 6-8:



**Sequence**

Moving directly to the qualification of the Value Mission is done in an effort to set the milestone and responding to the participants' wellbeing in the abstract sphere. Theses moves introduce the metaphors and photos as tools for defining nuances.

**Outcome**

The teams produce various amounts of metaphors and require facilitation in the startup process. The mind maps vary from a more notary nature with only metaphors and no new words (III.5.20) to a rich multifaceted map with both metaphors and new words (III.5.21):





In team G, the participants already starts to disagree in the synthesis phase, demonstrating that they can feel that the interpretations of the values are not right for them and not consistent with their view of the project. This indicates that they grasp the function of the method, which is defining important keywords precisely, because they mean something as a guideline or theme for the project.

Using photos as a tool for qualifying a word come about easily, as the participants already are familiar with using moodboard as a tool for visually expressing emotions. Moreover, they are accustomed to be precise in these visual expressions. The facilitator only has to stress the point that they should not illustrate the metaphors but the nuances, and they comply immediately.

The facilitator notes that during the discussions in the teams they use concrete products idea to exemplify and discuss values and metaphors.

Step 12-18:

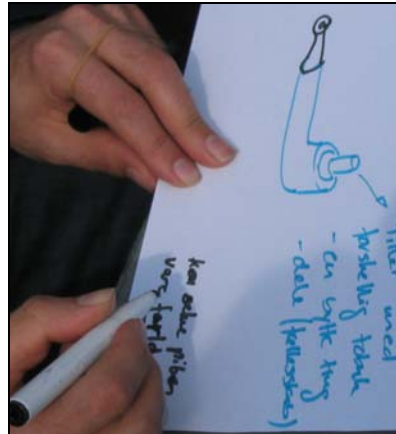


### **Sequence**

These moves constitute an upward movement using ideas as stepping stones for finding qualities to be qualified. The method is generating random ideas as a source for a subjective approach to finding qualities relevant for the product and then defining them by metaphors. The analysis of the ideas is subjective and depends on what the participants read from an idea in terms of structure, social impact etc. A way of shortening this process is by reducing the pool through sorting the ideas and keeping the ideas that “feel most right”. This focus on intuition rather than specifications and features, the feelings are connected to the social role of the product rather than the concrete aspects of functions.

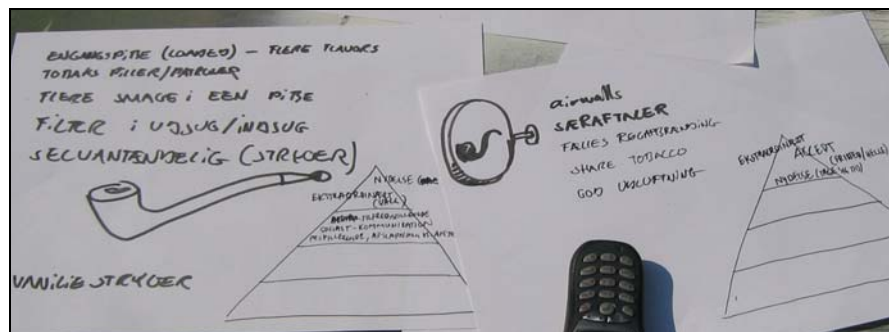
### **Outcome**

The brain pool session generates a number of product ideas. The participants sketch the ideas with clarity and additional small notes to explain (III.5.23). The sketching is not too detailed, but detailed enough to give information about the idea.



III.5.23

Team G completely misunderstands the point of the sorting and analysis exercise and describes two main ideas with separate set of values and qualities (III.5.24):



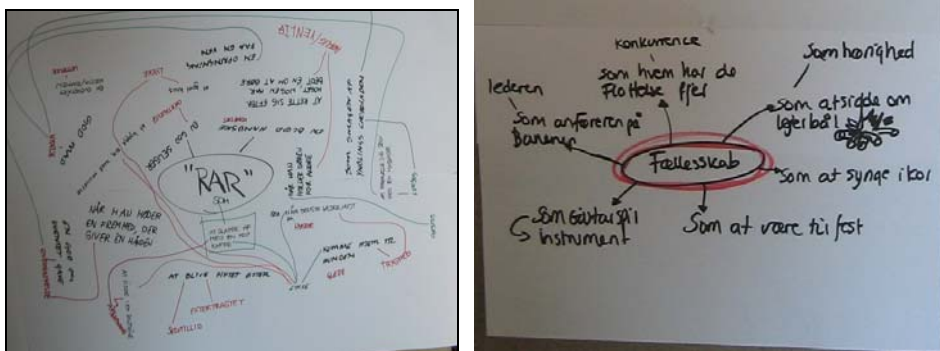
III.5.24

The sorting of ideas is done in plenum with individual grades by team S and G, respectively, and presents no difficulty. Team M grades the ideas in plenum.

The analysis of the generated ideas presents a problem for the participants. One of the problems is illustrated in the above example and shows that the participants tend to focus on the idea as the important part and thus let go of the Value Mission.

The other problem is understanding the content of the different levels in the pyramid. In general, the elicited list of qualities also contains demands and specifications, in addition to the qualities.

The MBM mind maps are now more rich and complex (III.5.26). Team G is very confident using this method and produces rich maps and has a vivid discussion in the analytical phase. Team S is making few associations and does not decide on any specific nuance, and required re-instruction in the method and its purpose.



III.5.26. Rich map and poor map.

### Methods

This period requires much assistance from the facilitator and re-instructing in the entire systemic approach, as well as the individual methods.

The tendency towards focusing on the idea rather than the abstract values is most evident within the team that most easily agrees. The teams with the rich maps and vivid discussions are the only ones focusing on these abstract words as the most important.

The analysis of the ideas is particularly difficult and the facilitator intervenes with supporting analysis of their ideas and helps shorten and revise the chosen words.

All teams are assisted:

Team M is especially assisted in the revision of the quality list; remove demands, specification, solutions and self-evident words.

Team G is briefly re-instructed in method and system; focus on the vision and Value Mission for the *future* product, not the concrete ideas.

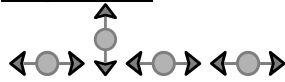
Team S is not able to decide on nuances and is thoroughly re-instructed in both system and method; use the ideas as stepping stones and decide on the nuances of the value and quality words so that they are precise.





## Practicing the V-V-based Methodology (5)

Step 19-23:



### **Sequence**

The final movements focus on revising the consistency between the levels in the pyramid. The sketching is about synthesizing ideas to concepts consistent with the Value Mission and especially the vision for the qualities of the product. The scenario play represents the final leg in the triangulation of the definitions of these qualities before the final presentation.

### **Outcome**

These final steps are performed individually by the teams. The revision of the content on the levels of the pyramid is in focus. Team M is still assisted by the facilitator in this phase and the consistency between the levels is analyzed as the philosophy that is the “what, to be attained” and the role and qualities as the “how, to do that” (III.5.27).



*III.5.27. Revision on the pyramid's content.*

Team G is enjoying itself during the qualification and preparation process. It maintains a high degree of precision with short and precise metaphors and powerful photos:

Team S has chosen words and photos with much less precision. The quality words are demands and specifications for the product, and some of the photos are illustrating the metaphors, not the nuance of the quality word (III.5.28).



III.5.28. Visual representations of the metaphor



III.5.29. Example from team G; minimal but precise.

**Methods**

The teams are not confident using the system, and the facilitator must re-instruct and assist on numerous occasions. The focus on vision is not clear to all teams. The words chosen are not special enough; they tend to be of a more general nature describing demands and obvious requirements, not focusing on developing a vision that sets apart the product from competitors.

The scenario plays are carried out in the last moment before the presentation, and therefore function more as summarizing the definition than a sketching tool for defining the nuance.



## Practicing the V-V-based Methodology (5)

Team G tries to convince the facilitator that doing the scenario play is 'overkill', and after they are convinced to do so, they want to show the opposite of their qualities through the scenario play. They end up making a very elaborate play as a single story, demonstrating the negative version of their qualities. The communication value is rather low due to the imprecision, but they comment on the internal value of the method; the discussion during the design of the play clarified their thoughts and understanding.

At the final presentation the participants are able to discuss and argue the visions, the methods and the material presented. Their comments demonstrate insight into the idea of a qualitative goal.

They are able to elaborate on the relation between their Value Mission and the vision, giving the impression of a qualitative goal with consistency in the description.

The number of ideas presented is very low and consistent with the facilitator's focus on the abstract aspects; vision and mission, during the workshop.



## Comments from participants

### ***Positive aspects***

In general, they gave a positive feedback on working in teams during the workshop. They could support each other and use the discussions.

In general, they were very pleased to be presented with a new approach and new methods.

They perceive this methodology as a structured and systematic working process that introduces awareness of the goal in abstract terms; “One finds out where one wants to go”.

“Good methods for challenging words and concepts, one already perceived as very precisely formulated.”

“This system offers a way of dealing with the values before designing, instead of inventing slick and juice ‘sales words’ after the idea is developed.”

### ***Negative aspects***

It was difficult to separate the levels in the pyramid in praxis.

They wanted more documentation during the process; description of process and definitions; “It was difficult to grasp the process during the workshop”.

They wanted more examples on concepts and processes to increase learning.



### Summary of workshop

This summary will present the use of abstract milestones representing values and the development of these through horizontal and vertical movements.

#### ***Abstract milestones in the process: mission and vision***

As expected, the students had difficulty distinguishing between the value level and the quality level. The facilitator tried to be consistent by using the terms “value” and “role” referring to the role of the product as a social actor. This proved to be the hardest level to fill out, since qualities and value could overlap and use the same words for a specific value as for a specific quality.

The system level describing the solution as an idea of structure, principles and elements was also difficult to understand. However, this uncertainty had no practical implication since the generation of ideas usually will be somewhere between the level of system and the level of material.

Once the Value Mission was developed at the first day, it was relatively unused for the rest of the workshop. The facilitator spent some time with one team discussing their values in relation to their qualities. (The same team had difficulty deciding on their qualities.)

This facilitation resulted in a shuffling of words between the levels, but was initiated and facilitated by the facilitator.

The difficulty in finding and defining the underlying values, as well as the vision, could be contributed to the fact that they were to design a tool for another product. This product, the tobacco, also contained a story (origin, purity, etc.) and they expressed difficulty distinguishing between the values of the tobacco and the values of the smoking device.

The students tended to focus on ideas as the central element and described the vision for a concrete idea! Despite the fact that it was explained several times by the facilitator, it took a long time for the students to see the point of the vision as describing the overall goal, the guiding star.

The use of terms from the Pyramid model, especially the abstract terms “Value Mission”, “vision”, “product qualities and characteristics” and “values”.

In general, there existed inconsistency in the words used to describe values and qualities, the students mixed them with specifications (ideas) and demands.



The facilitator did not point out that this was describing a guiding star and therefore self-evident things should not be present in the vision, thereby leaving out anything obvious, including demands and specifications. The facilitator did however point out that the vision was to describe a *wish* and the definition of values, specification and qualities was included in the lectures.

### ***Horizontal movements***

In general, the qualities came into the game on the second day, but one team had a very difficult time analyzing ideas for qualities. Furthermore, they had an even harder time deciding on desired qualities. The difficulty in deciding as a team might very well be caused by an actual disagreement on the social role of the product.

It is interesting to notice that in this phase of identifying the qualities, the students focused on the user and the scenario for the use of the product – other stakeholders were not discussed at this point in time.

The main tool for the development was MBM mind map. The use of ideas as basis for analyzing qualities failed in general. The ideas were perceived as functional and concrete ideas, and they were taking the drawing for face value.

The facilitator did not make distinct points on developing and describing qualities as a field of tension. It was mentioned several times that the teams should address the qualities as desired qualities of the future product seen as a social actor.

These qualification processes with metaphors and pictures were quite lively, giving the team the opportunity to discuss and make funny examples. The students expressed the benefit of being even more precise in communicating the meaning of a word than they were able to prior to the workshop.

The pitfall of using pictures is that participants tend to choose pictures describing the metaphors, rather than stressing the nuance of the word implied by the metaphor.

The scenario plays tended to be more of an example on the word, rather than expressing the exact nuance. The team started the scenario play process very late. One team took a new approach, making a manuscript of an entire story connecting the four qualities.

Although the team should have demonstrated the difference between describing in a positive and a negative way, it failed to do so, leaving the question unanswered. However, it seemed obvious to the facilitator that the negative could be used in the discussion, but not when presenting the quality, since there could be many different negatives to the same positive.



### ***Vertical movements***

One of the key aspects of this system is the switching back and forth between working with abstract events and concrete ideas and solutions. The interesting point was whether the participants were able to transform abstract terms into specific product ideas. And from the concrete to the abstract levels; were the participants able to derive abstract values and criteria from specific ideas and solutions?

Due to a strict time limitation the students only had one idea generating session, the rest of the workshop was focused on describing the top two levels in the pyramid. Since the workshop did not include more than one idea generating session, the shift from the abstract to the concrete was not done specifically. The students would use the second week of the assignment to design their individual product concepts – making the link from vision to product.

During the workshop they missed the point on using ideas as a tool for analyzing qualities. Only one student commented on this function, the rest focused on the ideas, until facilitator steered them away and back to the more general qualities.

It should be noted that the students had no problems in staying abstract for an entire day.

### ***Tracking values in the final product proposal***

The final projects were presented after only one week of individual work. The participants only worked in the teams during the concept development workshop.

The presentations by the students included all the values and qualities. Some individual projects deviated a little from the common mission and vision from the workshop, but this was expected. Observing and analyzing the final product concepts revealed that the individual work in general had focused on one or two values and qualities in the product concept. The link was very clearly interpreted from the concepts by heuristic evaluation for their relation to the vision and mission.



## Highlights from WS4

The notions mentioned here are the most important in relation to the scope of the thesis concerning the practicing and learning of the methodology level.

### **Values and methodology issues**

- **Linking of levels**  
The linking of the levels of abstraction was attempted to be more direct in the vertical movements and the progression of the methodology. The instructions focused on filling in content sequentially on the levels of abstraction and then revise the consistency. Towards the end of the workshop, the teams followed different paths. However, they all focused on the revision of consistency.
- **Placeholder for mission and vision**  
Together with a more direct linking the teams used an empty pyramid as placeholder for the Value Mission and the Interaction Vision. This physical co-existence made them aware of the relation between Value Mission and Interaction Vision. However, one team revealed a strong product focus when they, due to a misunderstanding of the instruction, made a pyramid for each of their product ideas. Thereby, they missed the point of having a shared goal for all their design activity. One can speculate whether this was related to their lack of team experience. However, this aspect was not investigated further and therefore no further conclusions were made.
- **Qualification of keywords**  
When using metaphors and pictures, the participants slightly tended to focus on illustrating the keywords of the Value Mission and Interaction Vision, instead of focusing on defining the *nuance* of the keyword as they desired it to be. The shift towards what could be was assisted by MBM mind maps, targeted at what could be, instead of describing what is. When the team started to disagree upon a nuance of a keyword, it could indicate that they grasped the function of the method, which was defining important keywords precisely, because they meant something as a guideline or theme for the project.

Metaphors were a well-received method of opening the possibilities of interpretation, and the teams used product features as well as other types of products in their negotiation. However, despite the positive attitude, they exhibited the expected problems of separating the associate phase from the analytic phase, thus stopping the flow of association.





## Practicing the V-V-based Methodology (5)

The use of pictures was restricted to one picture per keyword, which forced the teams to decide upon the nuance. They complied with ease demonstrating skills in visual communication.

Interestingly, some teams failed to see that idea of describing *one* nuance of a keyword with *one* metaphor. This could support the notion that these designers were very visual-oriented.

Scenario plays were only used for the final presentation and many participants expressed reluctance towards this method using excuses such as shyness or “it is useless for us”.

- Values  
The relation map revealed that the teams focused on the user of the product as the source of values for the product. This could indicate support to the notion that the designer of this institution was the “user’s advocate”.
- Ideas and visualization  
Ideas are sketches with notes and the students are accustomed to present visual material to each other at presentations.

### ***Learning and methodology issues***

- Vision-based approach  
The participants commented on the methodology as being “*structured*” with “*honest use of connotations*” that constitutes a sense of direction; “*one finds out where one wants to go*”.

The participants’ positive attitude towards the methodology as structured, and their expressed desire to learn methodology and theory, should be seen in relation to their normal design process approach containing several black boxes.

They did not find the vision-based approach and related methods to be a significant shift in paradigm. This was supported by the fact that the entire first day was focused on values, maintaining a high level of abstraction without the participants losing focus or concentration.



They found it useful to apply the connotations as a starting point for generating product concepts, instead of inventing connotations that fitted the finished product. The idea of creating a vision was discovered by a team when they started disagreeing about the role of their product.

The confusion of specifications, solutions and values observed in the workshop is also supported by comments made by the participants. They expressed difficulty in separating the content of the four levels of abstraction and requested examples of both value types and various movements.

- **Facilitation**

The facilitators re-instructed - on a team basis - much of the information and instructions given in plenum. This could indicate that difficult or large amount of information and aspects should be learned within a short time frame, which is supported by the participants' expressions concerning confusion and lack of overview of progress and process, both during and after the workshop.

The upward movements of analyzing ideas for values required extensive facilitation by providing hands-on examples using the teams' own idea.

- **Traceable values**

Although the participants continued the project by carrying out individual work after the teamwork in the workshop, the values were traceable. Almost all values derived by the team were used in the presentations of the individuals. Some had highlighted or made a slight twist on one or two values which they considered to be the most important. The product concepts themselves were clearly inspired by the Value Mission and Interaction Vision.



## Practicing the V-V-based Methodology (5)



## Highlight résumé

This chapter described the four workshops, their contextual aspects, the process of sequences and movements, the evaluation worked out by the participants, and provided a summary of the use of the methodology. For each workshop, highlighted observations were presented. These highlights are summarized in the schematic below:

Topic	Issue	Observations and tendencies	Possible indications
Values and methodology	Placeholders for values	Observed tendency to neglect Value Mission when posters were used as placeholders for Value Mission as Interaction Vision.	The physical separation together with the <i>vision</i> focus of the methodology influences this situation.
		Increases awareness of the internal relationship between these two milestones when a pyramid functioned as placeholder for Value Mission and Interaction Vision	The physical co-existence makes the relationship present and relevant at all times. The pyramid model illustrates their internal relations.
	The validity of values	The origin and validity of values were questioned, especially by product development engineer and business development engineers.	The non-verifiable aspects can be difficult to accept if they oppose a normal practice of specifying and verifying every aspect of the product development.
		"Visions and specifications generate competing documents", expressed by engineer	There is a compatibility issue with existing specification approach when practicing this methodology.
		Industrial Designers saw no problems in using values and connotations	It is part of Industrial design practice to use connotations for non-factual goals and aspects.
		User-related values prevailed in the Value Mission in most workshops.	Many designers and product developers focus on the use-context and use situation.
		Only one team in the company workshop used other stakeholders' values.	The business manager that was part of the team influenced the broader focus in the Value Mission.  The team used a relation map outlining the stakeholders relations in terms of values
	Linking levels of abstraction	In workshops using posters as placeholders the linking between the content of the levels were indirect.	The influence of the facilitator and the desire to systemize and explain the methodology might have influenced the increase in explicit linking.
		In workshops using empty pyramid models as placeholders the linking between the content of the levels were more explicit	
	Qualification of nuance of the keywords	Tendency to let the keywords explain "what is" instead of "what could be".	The mental shift towards vision is a slow process. When a team disagrees upon the nuance, they are in the process of shifting.
		Metaphors are an easy way of starting to find nuances.	Metaphor is a method used by everybody and is easy to demonstrate and understand.



## Practicing the V-V-based Methodology (5)

		Product features of their own product and other types of products are used to negotiate and explain metaphors.	The distinction between metaphors and products is insignificant in practice. The participants used the means available to ensure that they were understood.
		MBM mind map and mind maps in general can create flow experience when the team refrains from consensus, analysis and negotiation. Many teams did not succeed in this.	In practice, it requires an open mind towards exploring what could be. This indicates that it is related to the mental mind shift towards a vision-based approach.
		Source and number of pictures influence the precision of which the nuance is defined. With one picture per keywords the team is forced to negotiate the nuance.	It is important to be critical in this selection process and restrictions might assist the precision.
		Scenario plays tended to be the last qualification method. However, it was viewed to be appropriate for making the abstract tangible.	Shyness and personal inhibitions might cause the delay in use.  The scenario requires coordination within the team and leads to further discussion and increased shared understanding.
		Conflicting keywords provides inspiring tension.	The constellation of keywords is important to make the vision useful as a goal.
		Ideas for product and concepts	Most ideas are sketched and supplemented with notes. However, in WS 3 they tended to write ideas.
Learning and methodology	Re-instruction	Information and instructions provided in plenum required repetition and re-instruction on a team basis	Complex information that is not suitable for plenum communication.
		Hands-on re-instruction in how to use the methods, by providing examples using the participants own values/product concepts.	The practical use of methods requires exemplification and demonstration.
	Terminology	Facilitators used inconsistent terminology; many words were used to describe the same basic concept. Example: Interaction Vision, Product role, qualities, story.	The participants could not grasp the variance in an unfamiliar methodology.  Facilitators neglected this potential issue.
	Methodology	In general participants expressed confusion about the entire methodology, the content of levels of abstraction and the type of word used to describe	It indicates a complex learning process with many elements.  The information level and follow-up information from the participants might have been too low.
	Facilitation	Expressed positive attitude towards being facilitated through the methodology, especially in WS 2.	The learning process requires constant assistance.
		Expressed request for more examples on use of the methodology and possible abstract milestones	Insufficient information provided from facilitators.





### **6. Evaluating the Value and Vision-Based methodology**

In this chapter, the empirical data from the workshops presented in the previous section will be related to the generic system description from the first section.

First, we will examine the differences and similarities between the empirical workshops in order to outline the context of the practical use of the methodology.

Then, the observed phenomena and use in relation to the various movements and methods will be related to the generic description of the methodology, revealing practical issues concerning the value transformation.

Finally, a learning perspective will be employed to understand the implications of learning the complexity of the methodology.



## Comparing workshops

In order to place the comments and evaluation of the workshops in the appropriate context, the workshops will be compared by using the same parameters that are employed in the unfolding and analysis of the individual workshops. It should be noted that the differences outlined in this chapter are generalized. Within the workshops, the many variations of different teams are observed. This was elaborated on in the previous section.

### **Contextual issues**

Let us first summarize the contexts:

- WS 1: Educational context of Design and engineering.
- WS 2: Business context of Product Design
- WS 3: Educational context of Business Development Engineering with a relation to design.
- WS 4: Educational context of Design.

The most interesting difference between the workshops concerning the contextual issues is; the business versus the educational context. Workshops 1, 3 and 4 are to be found in the educational context, whereas WS 2 is a business context. It should however be noted that although workshop 2 was held with a company, there are educational aspects of this workshop. There were two competing objectives; the objective of reaching a concept and the objective to learn a new methodology.

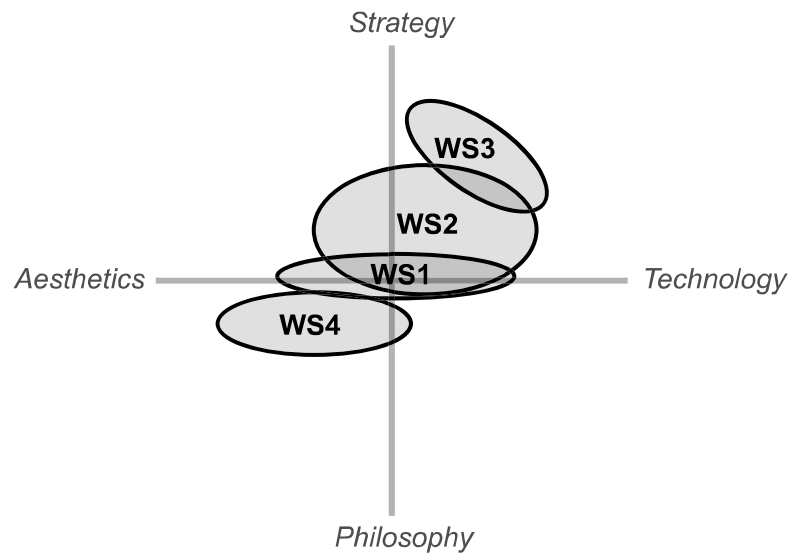
This double objective is a common theme for all workshops; the most obvious factor that really distinguishes the fourth workshop is the *seriousness* of the approach. They needed to reach a result (a product concept) during the workshop in order to present this for the management. This imperative had an impact on the motivation and effort which was reflected in the amount of time spent; they worked from morning to midnight.

The other differences concern the type and objectives of the educations which can be analyzed using the Compass by Stockholm (2003) as seen in fig.6.1. The model outlines a navigational framework between various aspects of design. It is meant to be value-free; however, one should consider that the integrated design process is placed in the middle. The model presented in fig.6.1 is the simple version using only two axes. This represents two fields in a dialectic tension. The horizontal axis is “aesthetics” and “technology”; the tension between *form* and *matter*. The other axis is “strategy” and “philosophy”; the tension between *how* and *why* (or implementation and background).





## Evaluating the V-V-based Methodology (6)



*Fig 6.1. The roughly estimated focus of the participants' educational or business context.*

The compass is used in this thesis as a tool for analyzing relations between the participants' context concerning their focal point and their main axes of operation in relation to design.

- In this compass, WS 1's context is focused on the A-T axis with a beginning implementation of the S-P axis (fig.6.1). The students move from product design to including spiritual issues. In relation to the A-T axis, they are aiming at including the T aspect on an extended rule-of-thumb basis.
- WS 2's business context with regard to developing technical sound end-user products suggests a focus on the S and T-Axis with important areas into the A aspect. The P axis is covered by the mother company but is not explicitly used in product development.
- WS 3's educational context is mostly covering the S-T aspect due to the focus on developing business; products are a bi-activity in this process.
- WS 4's educational context is focused on the A aspect with less defined areas on the P axis. The T-aspect is not explicitly covered in any way.



### **Participants**

The variation in participants is linked to the type of education; only WS 2 contains a cross-disciplinary aspect.

First, it should be noted that the difference between mono-disciplinary and multi-disciplinary teams does not have noticeable impact on the aspects investigated in this thesis; use and learning of the methodology in relation to value transformation.

There was a variation in context for the mono-disciplinary workshops that influenced the use, perception and learning of the methodology.

- In WS 1, it was observed that they tended to search for requirements to meet. In general, they expressed confusion about the reversed way of designing in relation to their previous experience.
- In WS 2, the values were neglected by one team after the initial development, whereas the other team was able to use them explicitly. The participants requested specific user needs as a basis for developing ideas. This indicates a priority and focus on meeting the requirements of the user as the focal point for any product development.
- In WS 3, it was observed that several participants tended to search for requirements to be met by the design. They seemed unwilling to let go of the specification approach and alternatively use the imagination to envision the future product. In other words, they focused on what was instead of what could be. They expressed doubt and confusion about this “abstract” approach to design; where there was no right answer.
- In WS 4, it was noted that the participants were comfortable in the abstract roam but as they generated the first ideas, they tended to lock on the idea as the most important, setting the development of vision and mission aside. It indicated a priority of the product idea as the most important.

### **Setup**

In relation to the framework for setting up the workshop, there are two points worth mentioning; intensity and the assignment.

In respect of intensity there are several aspects. The first is succession.



WS 1, 2 and 4 were 3-4 day workshops held in succession. It was not possible to have WS 3 in the same manner, and for that reason the workshop was split into separate 3 sections.

The abrupt WS 3 meant that the intensity was lost and the participants required re-entry into the workshop mode at the beginning of each section. This re-entry necessitated resources and it was not possible to regain momentum in the process, resulting in a slow process and lack of product concepts at the end of the workshop.

The second aspect of intensity is the social framework.

WS 2 was held in a secluded weekend cottage (normal procedure for the company) and the participants stayed together for the duration of the workshop. This provided the opportunity for continuous discussions and relaxed atmosphere even though they worked for 16-17 hours a day. The atmosphere allowed for the facilitator to have many informal discussions with the participants getting to know their life worlds. This was not the case in the other workshops.

The third aspect of intensity is the use of deadlines and number of exercises:

- WS 1 was organized by Erik Lerdahl and had strict and short deadlines, with about 26 exercises and 4 presentations in 2½ days.
- WS 2 was organized by Christian Tollestrup and the participants ignored many deadlines and were absorbed by the exercises. There were about 38 exercises and 7 presentations during this workshop.
- WS 3 was organized by Christian Tollestrup and Michael Damkjær with strict deadlines, but it was longer than WS 1. There were about 15 exercises and 3 presentations in 4 days.
- WS 4 was organized by Christian Tollestrup and had only few common deadlines, differentiating the teams. There were 18 exercises and 3 presentations in 3 days.

In relation to the number of exercises WS 1 holds, the highest average of 10 exercises a day. This does not automatically make this workshop the hardest for the participants (WS 2 was longer in duration) but it indicates that WS 1 was the most abrupt workshop. The intensity can also be contributed to the fact that workshop content was planned for a 4 day workshop, but the time available was only 2½ days.



With regard to the assignment there are many similarities between the workshops, but WS 3 is different in relation to the placement of the workshop in the process of the entire project period.

In WS 1, 2 and 4, the participants used the workshop as a kickoff to a project that was to be continued after the workshop.

The participants in WS 3 had already worked with generating concept ideas for their project. This resulted in a different approach; the first half of the workshop used an assignment given by the organizers and the second half focused on eliciting a vision from their already-created concepts. WS 3 therefore demonstrates an alternative use of the methodology in regard to entry point.

### **Facilitation**

A very interesting aspect in relation to the participants' learning process is the instruction and guidance they received concerning the methodology.

#### Preparation

All participants had the opportunity to study chapter 4 in Lerdahls thesis regarding the pyramid model, thus making preparations for the terminology. WS 2 required more pre-information, the company wanted to know specifically what the expected result could be and how it was reached. For this purpose, previous material documenting events and activities in WS 1 were presented.

#### Information level "in action"

In WS 1 and WS 2 the participants were informed on a "need-to-know basis", i.e. they were not told about the following steps. Nor were they specifically assisted in relating the current activity to the levels of abstraction. This was commented on by the participants, e.g. they wanted more information on activities in relation to the theory (pyramid model).

This was adjusted in WS 3 and 4; the participants were more consistently informed about the current level of abstraction. The current activity was related to the previous activity and level of abstraction, and furthermore potential future activity was outlined.

#### Guidance

In all workshops, the facilitators refrained from directly interfering with decisions regarding the design. The facilitation was focused on the process and use of methods.



## Evaluating the V-V-based Methodology (6)

Besides the just mentioned difference in information level there is also a variance how explicit the movement's connection between levels were made by the facilitator.

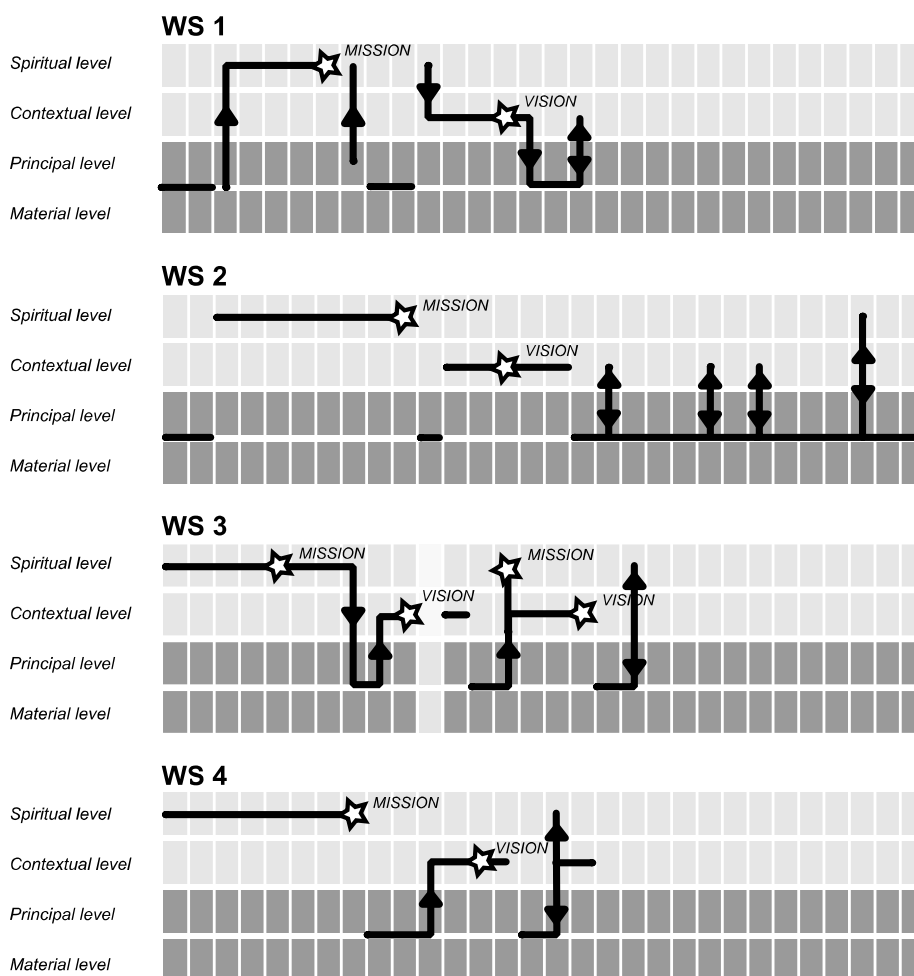
In WS 1 organized by Lerdahl the connection between the levels was more loosely compared to the other workshops.

The loose connection is to be understood as an implicit relation between the abstract and concrete levels. The linking was not specifically targeted at transforming content on one level into content at another. The implicit linking relies on the previous activity on another level to be in the "back of the mind" of the participants, thus influencing the activity on the current level in an implicit way. Exemplified by many random idea generation sessions; here ideas are generated only using a creative technique with an implicit relation to the overall problem. Only few movements were explicitly meant to connect the content of the levels.

In WS 2 there were some tendencies to make implicit connections rather than explicit. In WS 3 and 4 almost all movements were explicit.

### Sequence of movements

There are variations in the sequence of movements in the 4 workshops, but they all follow the same scheme in relation to the milestones. The sketch of the process is; first develop a Value Mission, then an Interaction Vision and finally develop potential product concepts.



*Fig. 6.2. Movements on the levels of abstraction for each exercise in the workshops. Broken lines indicating no explicit linking were made. Continuous lines indicate same level of abstraction, performing horizontal movements in sequence. A star is a milestone; Interaction Vision or Value Mission depending on the level. Process exercises, lectures and research events are not included. In practice there is no distinction between the principal and material level, thus the line is in-between.*



## Evaluating the V-V-based Methodology (6)

In fig 6.2 is an overview of the 4 workshops. The movements are represented by exercises and the involved levels of abstraction in a schematic form.

The schematic is a very condensed representation and does not take a number of the following into consideration. There are no process exercises and the exercises not directly linked to the pyramid level, such as unfolding the problem, doing research etc. are not included.

The navigational movements do indicate some tendencies for each workshop.

- WS 1 started with exercises specifically dealing with generating problem and used a specific exercise to elevate the participants to the higher levels of abstraction. The middle section of the course is rather abrupt, but it becomes more fluent towards the end focusing on concepts and vision.
- WS 2 from a brief visit on the concrete levels of abstraction the movements are concentrated on the highest level of abstraction for a long period. Both Value Mission and Interaction Vision is established without iteration between the levels. The second half of the workshop is focused on concepts with several calibrating iterations to the vision and mission.
- WS 3 starts out high for a long period and then shortly dives down to generating ideas. The second part is a new task where the existing and new ideas are used to formulate the vision through two iterations. Generally, the movements are connected in series of iterations.
- WS 4 also starts high and maintains this level for quite a while. The vision is established in iteration from the generated ideas and recalibrated after a second iteration. In terms of exercises, this course uses only few vertical movements.

WS 3 and 4 started out on the abstract level and stayed there until the Value Mission was established, before they commenced any creative idea development. Also WS 2 established a Value Mission before ideas were generated. This did not seem to have any impact on the final Value Mission and the use of it, because the participants in WS 2, 3 and 4 *continuously calibrated the levels towards the end, thus achieving the consistency*. This revision of the consistency between the levels was not only performed as exercises, and therefore it is not shown on the schematic of exercises.

A significant similarity is this calibration between the levels towards the end. On many occasions, this was done routinely by the participants without any facilitation.



### **Methods used**

In regard to the methods used in the workshops, there are few variations:

- WS 1: No relation map
- WS 2: No mental visualization
- WS 3: No mental visualization. No forced relationship with object. No sorting of ideas and no scenario play. No process exercises.
- WS 4: No mental visualization. No forced relationship with object.

The most evident variation is WS 3 with few methods employed. This is partly due to the structure of the workshop with abrupt sections. The participants' lack of design experience also decreased the number of methods; the speed of sketching was slow, and they required time to learn the methods and the system.

In WS 3, the lack of design process exercises may have influenced the rate of learning, but the main impact was on the social relations between facilitators and participants. The facilitators and some of the teams in WS 3 had several confrontations that related to different views on design. The lack of process exercises may have increased the importance of personal chemistry between the facilitator and participants. The process exercises are targeted at loosening the atmosphere and creating focus on the present moment.

### **Evaluation**

Evaluation comparisons worked out by the participants in the workshops reveal several common issues. The positive concerned the structured methodology, the precision in communicating abstract words, use of a facilitator and a valuable process. The negative aspects concerned lack of documentation and examples, confusion of terminology, intensity and pressure.

Other aspects were weighed differently in the four workshops and can be summarized in the following:

- WS 1: Positive towards the overall methodology and especially scenario plays as tools for making the abstract more tangible. Negative comments about time pressure and lack of overview of the activities carried out during the workshop.
- WS 2: Positive towards the methods, process and use of a facilitator. Negative towards the elicitation of values, confusion of progress, the basis for decision was vague, and they expressed uncertainty of what constituted the final product of the process.





## Evaluating the V-V-based Methodology (6)

- WS 3: Positive towards some of the methods and techniques but skeptic about the system and wanted more definitions of the terms used.
- WS 4: Positive towards the well-structured method. But they expressed difficulty in separating levels (terminology) and would like examples on use of the methods.

Reflecting upon the variation in the comments:

The time pressure of WS 1 is reflected in the comments from the participants, and the relatively low information level is also mentioned.

The confrontation of paradigms in WS 3 is expressed in the skepticism towards the methodology. The positive attitude towards some methods was an indication that some of the teams were very interested, but the level of learning was differentiated between the teams.

In WS 4 the structured methodology is welcomed as a refreshing new aspect. The notion of abstract goals is not new, but a structured implementation in the design process is new. The information level is increased, but they still want examples, indicating a learning style towards the concrete experience.

In WS 2 the participants welcomed the use of a facilitator guiding the process. In the other workshops, the facilitator was also seen as “a teacher”, making the difference smaller. The participants also expressed concerns towards the validity, revealing clues of practical pressure of a business dealing with the medical aspect. The ambiguity of the final product can be contributed to the higher pressure on the product concept and a less defined balance in this workshop in comparison with the others.

### **The milestones and values**

In respect of the use of the methodology as a system there are two main elements of interest; the abstract milestones and the movements. The use and development of the abstract milestones refer to the use of the methodology as a tool for developing the leading star expressed in qualitative terms.

The movements are interesting because they are the central aspect in the iterative approach; they are used for exploring opportunities and calibrating understanding.



### **Value Mission and Interaction Vision**

All workshops contained these elements, but there was some variation in the way in which they were represented and used.

In WS 1 and 2, the participants used posters as a placeholder for the Value Mission and the Interaction Vision. In WS 2, this resulted in a scenario where a team confused the values and qualities and only focused on the vision poster.

In WS 3 and 4, the posters were supplemented with an empty pyramid functioning as a placeholder for the values and qualities. This resulted in a continuous awareness of the relation between the content on the two levels.

Considering a variance in the active use of the mission and vision in relation to the concept development, it is as much team-related as it is workshop-related. In WS 3, there were two teams that did not reach a vision at the end; this was contributed to both contextual learning issues, as explained later, and the shorter and abrupt course.

However, there is a general difference between WS 1 & 2 and WS 3 & 4 in that the use of placeholders is reflected in the explicit/implicit movements.

When the Value Mission, the first abstract milestone, is on a separate poster it tends to be neglected as the teams move on to the vision. This might be contributed to the Interaction Vision being easier to relate to the concrete concept development. If the Value Mission and the Interaction Vision are “placed” inside the pyramid, the participants are constantly reminded of their presence and intrinsic relationship.

In WS 1, it was also observed that some teams neglected the vision poster as well during the idea generation session. This approach can be seen as a more implicit and depending on the atmosphere. The latter approach of using the empty pyramid is a more explicit and logical dependent approach.

### **Values**

The values chosen for the Value Mission reflected the desire to create *identity* and *safety* for the users, and the Interaction Visions reflected in general the desire to create something *flexible* and *innovative*.

In WS 1, safety was the predominant value and flexibility constituted the predominant quality. The desires to create *safety* for the users through the product as a common denominator may relate to the shared experience from the study trip.

The *flexibility* as an important quality for the product could be interpreted as a desire to create something useful for many situations in an early stage of the design process.



At this point, the concept was not defined, so they might have hesitated to rule out anything at this stage, thus expressing the desire to handle many situations through the quality of *flexibility*.

In WS 2, the values revolved around providing *life quality* and *safety* for the users. This can easily be related to the subject of designing dispensers for medicine. The starting point for these products is to add value for the users by providing them with some form of perceived value; here represented by *safety* and *life quality* through aiding with the correct doses of medicine.

In WS 3, values such as *prestige*, *identity* and *innovation* were dominant expressing the *desire* to create something new and attractive. The values in themselves do not mean anything as describing a unique or emotional argument for the product. This constitutes a superficial relation to the values as something added, not integrated with the product. In general, the teams focused on design as providing *status* and *prestige* through features and some undefined form, but the participants' lack of experience with regard to practicing the design process is reflected in the expressed *desire* to create something attractive, instead of expressing *how* it is attractive.

In WS 4, the product to be designed was a smoking device with the sole purpose of branding the tobacco. This was reflected in values such as *Story* and *Pleasure* communicating the underlying story of the tobacco and the pleasure of 'consuming' it.

The qualities reveal some of the intrinsic values of the participants through values like *discrete*, *considerate* and *clean*. The ambiguous relation to the assignment is obviously influencing the choice of qualities, and the complexity of designing a product that is supporting another product leads to simple, and in itself indifferent, values such as *story* and *pleasure*.



### **Horizontal and vertical movements**

All workshops used a combination of horizontal and vertical movement, but there is a variation in the emphasis and focus. The following overview will examine the workshops in terms of horizontal and vertical movements in order to pinpoint the different emphasis of use in the four workshops.

#### ***Horizontal movements: qualification.***

This deals with finding and qualifying the abstract words used on the upper two levels to describe the Value Mission and Interaction Vision.

In all workshops, the participants expressed a positive attitude towards the qualification process, especially the use of metaphors. The variations in the use of the other tools, such as visual images and scenario plays is wide spread over the various teams, more than related to specific workshops. The use of scenario plays is related to the personality and chemistry within the teams; are participants willing to expose themselves and use the body as a tool for expressing values and attitudes.

The visual images proved to be a double edged knife; a common pitfall is using an image that illustrates the overall meaning of the word, not the specifically intended nuance desired in the future product. This varied within the workshops between the teams. WS 3 was in general the workshop with the most difficulties, which can be contributed to the fact that the students are less visually oriented in general in their educational context.

#### ***Horizontal movements: generating ideas.***

This deals with the generation and synthesizing of ideas and concepts on the lower two levels of abstraction.

Although there is a variance between the teams in all workshops, there is a significant difference in WS 3 concerning the generation of ideas. In the other workshop, ideas were generated primarily through sketching, secondarily through discussions, and some were written ideas.

In WS 3, the primary tool for generating ideas was writing an explanation on paper or as keywords on a blackboard. This made the ideas less accessible and vaguely defined. The process of generating the ideas was also significantly slower in this workshop; however it should be noted that the participant already had generated ideas prior to the workshop.



### ***Vertical movements: analysis.***

This deals with the consistency between the levels and elicitation of values and qualities from the generated ideas.

This process of analyzing the ideas involves the abstraction of essence and is a very subjective approach. The analysis is done through reviewing the ideas and discussing possible interpretations. This however has a side effect; the participants can now understand how the other members in the team evaluate and reflect on the ideas.

For all workshops, this movement required assistance and the facilitator provided examples using the ideas of the teams. Again, the variance can be seen across the workshops; some teams found it easy and interesting, others did not.

However, there are some tendencies of preference in the individual workshops:

- In WS 1, the upward movements were primarily done indirectly by dilemmas or mental visualization, not explicit based on the product ideas.
- In WS 2, it was a welcomed movement and they frequently discussed the values and qualities of their main ideas. The calibrating analysis was used towards the end of the workshop.
- In WS 3, the participants had difficulties with any exercise of abstraction, and the facilitators assisted the teams extensively to the point of interfering in the decisions.
- In WS 4, the participants had difficulties seeing through the specific idea. They focused on their ideas and tried to describe them instead of focusing on the desired state; the vision.

Considering the other aspect, namely consistency between the content on the levels, there is a common problem. Analyzing the consistency between the upper two levels of abstraction was virtually impossible for any team. The facilitators tried alternative explanations for this particular analysis; the values are passive and the qualities are active. Although this explanation is not entirely consistent with the intention of the pyramid model, it provided a tool for analyzing the words on the different layers. This explanation was only provided in WS 3 and 4.



***Vertical movement: generating ideas.***

This deals with the development of ideas that are consistent with the abstract content in order to add to the pool of ideas as well as exemplifying the abstract content on a tangible concrete level (i.e. calibration of understanding).

As mentioned earlier, there is variation as to how the vertical movements are carried out; explicit or implicit. The explicit way is moving with a specific intent of transforming the content of the current level to a specific content on another. The implicit way is linking to another level, only keeping the problem in mind, thus disconnecting the relation between the abstract and concrete levels.

In WS 1 and 2, the implicit way was used more frequently than in WS 3 and 4. There is no evident impact on the final result, but the understanding of the process during the process is influenced. All participants expressed confusion about the methodology, due to its complexity – and it should be noted that in no workshop the explanation and unfolding used in the first section of this chapter was given to the participants.

The explicit variant made it easier for the participants to theoretically understand the relations, but they made the same error of confusing the content on the different levels as in workshops using the implicit variant.

**Conclusion on comparison**

Although this chapter has tried to outline some of the differences, there are many similarities between the workshops.

In regard to the reviewed parameters, there is not a significant difference in the use of the methodology in an educational or company context. The most interesting difference is the level of completeness in the developed product concepts and the desire for a higher degree of certainty in the company context.

A significant difference can be found in the use of explicit versus implicit movements and relations between the levels of abstraction. This difference can be contributed to the chronological sequence of the workshops. WS 1 & 2 was the 'original' way of performing and teaching the methodology, as Erik Lerdaahl did in WS 1.

In WS 3 and 4, the organization and implementation of the methodology was adjusted and made more explicit and the focus on values increased through the usage of value landscapes.



## Evaluating the V-V-based Methodology (6)

The adjustment is an inevitable part of unfolding the methodology to improve the presentation, teaching and facilitation. Some adjustments were made as a reflection upon the comments from the participants in WS 1 & 2. Other adjustments are a result of the facilitators desire to explain and unfold the logic of methodology.

The difference between explicit and implicit approaches is also reflected in the number of exercises. One can interpret the philosophy behind the two approaches in the following way:

- The implicit approach relies on numerous exercises, unlinked movements, unbound idea generation, intensity through forced deadlines and presentations to link the abstract and concrete levels together. The synthesizing process of concepts and the Value Mission and Interaction Vision is less evident and not forced.
- The explicit approach relies on continuous reflection on consistency, fewer but targeted idea generation sessions as stepping stones, consequential abstract analysis and calibration, 'logic' sequential movements, open and participatory explanations to link the abstract and concrete levels together. The synthesizing process of concepts and Value Mission and Interaction Vision is forced and attempted to be more evident.



### **Values and the Value and Vision-based methodology**

In this thesis, there is an emphasis on learning and implementing aspects, instead of the advanced use and the relation to product development. The advanced use prerequisites a continuous use of the methodology which is not possible to study due to its limited use in the current situation. Instead, the focus implies an expansionary view on the methodology. New participants should be able to join the process; therefore it is to be unfolded and understood.

This chapter will review how the transformation of values occurs throughout the process of methodology. Furthermore, observed phenomena related to the learning of methodology and the methodology itself will be presented and related to the methodology.

#### ***Value transformation***

The key aspect of interest in this thesis is the transformation of values, activating them and developing corresponding concepts.

The Value and Vision-based methodology uses the four levels of abstraction which can be used to identify the transformation of the values. If there is consistency between the levels, the values should be intrinsic in the lower levels.

- On the spiritual level the values are explicit in terms of words, but difficult to understand and argue for because of the vague implications. They are a set of rules.
- On the contextual level the values are activated in the context. They influence the possible behavior of the product and the signals that it should immerse.
- On the principal level the values are present through the chosen system and the principles of functionality.
- On the material level the values are implicit in the choice of details.

There is a difference between interpreting values in an existing product and transforming them in a process. The interpretation can be done as inductive reasoning; interpreting principals from the materials and deducing behavior from these principals, the set of values can be interpreted from the behavior.

The transformation process is not done exclusively as deductive reasoning; from the explicit values to a behavior expressed in the Interaction Vision, and then deciding on the principles of the product concept and the detailing the product following these principals.





In general, the process of the methodology follows an *iterative pattern*. The iterative pattern makes the values explicit through ideas and suggestions for products and concepts. This allows the team to check the relevance of the values in the practical applications. It also reveals the interpretation of the values by the individual team members.

Expressed in terms of reasoning; the methodology uses a systemic combination of deductive and inductive reasoning to develop and transform values. This only accounts for the vertical movements where the values are translated from one state to another. The horizontal movement is about defining and adjusting the nuance of the value.

In WS 1, a short deductive movement from the spiritual level to the contextual level was attempted with no success; the participants expressed that the distinction between the two levels was not possible in the midst of action. This means that the deduction between the two abstract levels is difficult to achieve for first time users. It seems more plausible that the movement between the abstract and concrete realms is less difficult in the sense that words and ideas not easily are confused.

The deductive and inductive reasoning only account for the vertical movements. Deciding the content on a level that defines the abstract words and nuances involves other types of reasoning. The process of developing the abstract goal and the design process in itself can be seen as a meaning making activity. Part of the meaning making is the creation of consistency between the levels. Another part of the meaning making is deciding on the content in the different levels. This decision process is subjected to a social negotiation process in the team.

Max Weber provides a distinction between 4 types of rationality behind social phenomena that work together but are different in nature; the axiological (deontological view using principles as guide), instrumental (consequentialistic view, the goal justifies the means), traditional (customs and history) and affective (feelings and emotions) rationality (Boudon, 2001 p.99). In practice, a decision context will hold a combination of these rationalities.

When the team decides on the Value Mission, they use a high degree of affective reasoning in the decision process. This might be contributed to the content of the Value Mission being related to emotions and feelings.



The affective reasoning is commented as being uncertain (especially in WS 2); “The milestones (mission and vision) were passed at an uncertain basis.” The uncertainty stems from the lack of factors and parameters that can be subjected to direct verifiability, either scientifically or through empirical investigation. Using the methodology in a workshop setup therefore requires the ability and willingness to guess and have confidence in the idea behind the vision.

The affective rationality can also be used in the horizontal movements on the concrete levels concerning the sorting and judging of ideas. If the objective of the sorting is to identify the most feasible ideas, an instrumental (or utilitarian) rationality might be imposed to investigate whether they meet the goals requirements. If the objective is to use the ideas as stepping stones for finding or defining values, an affective rationality can direct the participants towards the emotional aspects of the ideas.

### ***ESP and USP***

Viewing this methodology from a position of branding framework, there is some interesting interpretations of the rationality at work. The traditional branding approach is primarily concerned with the marketing and communication of a product (Kunde, 2001; Fog et al., 2002) and the company producing it.

In the Value and Vision-based methodology, the objective is consistency between the levels of abstraction by bridging between the abstract and concrete aspects. In that way, the methodology can contribute to the linkage between the ESP (Emotional Selling Points) and USP (Unique Selling Points) during the design process, thus trying to embody the values of a brand into the concept development.

This is supported by this statement from participants in WS 4:  
“This methodology provides us (designers) with a more honest use of values. Instead of inventing them after the design process we can use them to design the product”

The negotiation concerning the abstract content involved feelings and emotions that the product should evoke or immerse. Deciding on a Value Mission and Interaction Vision is about formulating emotional arguments for the product. The Value Mission deals with the argumentation of why this product is here, not what it does in terms of functionality, but what emotions and philosophy it stands for or symbolizes. The Interaction Vision concerns the argumentation of the impact on the social context; which signals the product immerses, i.e. the identity and image of the product.



These arguments constitute emotional arguments for the product and are in general not verifiable.

The negotiation regarding the concrete levels involves features and functionality of the product. These are related to the use context and the material purpose of the product. The process is developing features with regard to the utility and manufacturing of the product that set it apart from its competitors. These features constitute rational arguments for the product that are verifiable.

In the Branding context, the phenomena Storytelling is used to activate the set of values contained in the Brand. There are similarities in the Value and vision-based methodology in this process of translating a set of values into something more tangible and easy to communicate.

The Interaction Vision is a way of activating the values and describes the way in which they are to be implemented in the context. Behavior is used in both systems to communicate the understanding of a set of values and making them more tangible.

### ***Contextual level – the bridge***

When the process of the methodology is viewed as a consistency seeking activity this implies the process involves a negotiation of defining the values as well as deciding the appropriate *translation* of the abstract values.

The objective of consistency involves meaning making; defining its abstract role is giving the product meaning.

On the spiritual level it is difficult for a team to bring arguments to the discussion; it is a matter of beliefs (affective rationality) that are not easily changed by rational (instrumental) arguments. Additionally, on the concrete levels rational argumentation is predominant concerning solutions and functionality – these are not easily changed by emotional (affective) arguments.

On the contextual level the arguments are of a more varied character; the focus is on emotional arguments, but they are supplemented by instrumental arguments.

As a bridging point between the abstract and concrete, the contextual level is concerned with the product's role in the social environment; how it *behaves* as a social actor, how it influences the surroundings and which signals it immerses. The behavior can be associated with both a belief (one should act in a certain way) and actions (doing something).



Bridging upwards, the Interaction Vision describes a desired behavior and interaction with the context. This interaction can be related to the philosophy of the product; does the product behave according to the set of 'rules', does it fulfill the desired mission? This is subjected to argumentation concerning emotions.

Bridging downwards, the systemic aspect of the product includes the *principles* of how the elements and structure interact with each other. These principles can be related to the behavior described in the Interaction Vision. This can be subjected to a more rational argumentation.

It is therefore easier to relate to the product concept than the explicit set of values. Supporting this notion several observations during the workshop showed that teams tended to neglect or forgot the Value Mission and focused on the vision as the expression of the abstract content.

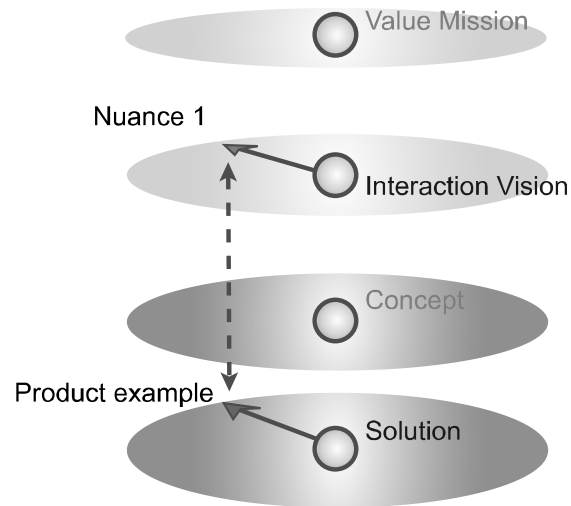
The process of transforming the values further into more concrete product concepts relies on a synthesizing process of integrating the systemic elements and optimizing the systemic principles and structure to correspond to the contextual behavior expressed in the Interaction Vision.

The process still involved continuous iterations in the form of movements. The vertical movements re-investigate the relevance and nuances of values expressed in the Value Mission. This is a calibration process aimed at confirming that the rules of behavior are consistent with the guiding beliefs of the product. The horizontal movements helped redefine and sharpen the precision in the nuances making the objective of optimization clear and well understood within the team.

#### ***Negotiating simultaneously on two levels***

The description of the generic system of the methodology is based on a step and go process in relation to the movements. Although the presentation suggests a deductive or inductive approach, the systemic nature of the methodology suggests that the transformation is not linear. This corresponds with the findings from the workshops; the values are adjusted through continuous iterations, especially in the initial stages of the workshop.

Observations in the workshops suggested a more complex and fluent use than the stop and go that dealt with one level of abstraction at a time. On several occasions it was observed that discussions about the desired behavior and quality included examples of features in the solutions. This constitutes a bridging between the abstract and the concrete in the negotiation process.



*Fig 6.3 Simultaneous negotiation on two levels*

The participants of the workshop employed deductive reasoning when discussing the contextual content, i.e. the Interaction Vision. They combined a quality of the product as a social actor with a feature or function of the product.

Thus, they made an argument for the abstract quality or specific nuance using a concrete example. The technique is within the spirit of the methodology framework, namely calibrating the understanding of something abstract using concrete ideas and solutions as part of this process. Using the concrete as part of the negotiation process of the abstract content can be seen as using concrete ideas as stepping stones for reaching a shared vision and meaning in a team (Darsø, 2001).

During the workshops many of the metaphors used in the horizontal movements on the contextual level used other products as mental images describing a certain quality. This can also be seen as stepping stones, the difference between the two types is that these ideas are not related to the problem of the design process but taken from completely different contexts.

This is creative work in the sense that it combines known elements in a new way (Striim, 2001). In this case, the combination is one on a non-concrete level; the behavior and qualities are 'imported' into the design.

Concluding on this multi-level negotiation:

The decision and negotiation on the specific abstract content is strengthened through exemplification on a concrete level within the problem area that can be further supported by using non-contextual examples.



### **Grounding values**

In the workshops, user needs and problems related to the product area were a part of establishing a referential frame for the values. One of the obstacles for the participants that became confused or lost confidence in the system was the lack of specific demands and requirements.

This was most explicit in WS 1, 2 and 3. In WS 2, a participant stated that the lack of well-defined “user needs” compromised the ability to generate ideas, even though the overall emotional and practical problems concerning the product were already investigated. Especially in this business context, the participants were focused on validating their “guesses” (Value Mission and Interaction Vision) through establishing more specific demands for features and functions. Visiting users and other stakeholders provided this information.

This indicates a need for a strong connection between the set of values to the problems and the needs associated with the situation where the product is used. The participants mainly focused on these user needs and tended to neglect the values of other stakeholders. The exercise of making a map of the value relations between the stakeholders clearly indicated the chosen values in the Value Mission originated from the use situation.

The impression from the workshops is that prior to using the methodology the participants should perform an extensive research of the problem area. Without information of the practical problems related to the product or use, the participants have trouble deciding on the content on the abstract levels, thus inhibiting the translation of values into ideas, because the ideas seem unverifiable. This establish a symbiotic relationship between the requirements/specifications and values that resembles a linking of ESP and USP; one hesitates to point out an emotional argument that has no equivalent rational argument.



### **Methodological phenomena**

#### ***The notion of qualitative goal***

The use of qualitative goals is not new to designers. In fact, every designer presented to the methodology has stated that it was not all that different from what he or she already did. However, this was a common tool and language for working together with others.

Finding a way of expressing the objectives for a project (designing and developing a product) is crucial to the active participation of all parties. Zaccai (1998) defines the common ground as overlap in competencies. This overlap may grow in time, if the same team works on several projects together. Or if the composition of the team is carefully thought through by considering the various competencies needed. The field of competencies is not necessarily the same as the field of disciplines, i.e. same competency is found in various disciplines.

Using an abstract formulated goal is one way of bypassing the terms and measurements of the different disciplines involved. At the same time, the abstract goal is related to the shared vision discipline of the learning organization (Senge 1992), bringing people together by focusing on a goal derived partially by themselves. This is part of a learning process for the team, and it also gives the participants a sense of ownership, if they are involved in formulating the goals.

#### ***Defining a loaded word – triangulation***

Using an abstract goal as common ground requires that the team shares the understanding of this goal. This “understanding” is part of a team learning process (Senge 1992), through discussion, exemplification and exploration, the understanding is calibrated within the team. This calibration further enables the team on a later occasion to describe and communicate this goal to a new audience. The process of this calibration methodology uses several methods; metaphors, pictures (moodboard) and scenario plays. This triangulation of qualification supports various competencies in expression and articulation for the team members.

The preferred mode of expression can be divided into verbal, visual and kinetic preferences. By triangulating the definition through the use of metaphors, pictures and scenario plays the team is able to describe the otherwise indescribable non-existing product and fuzzy goal: the vision.



Using only the words will be insufficient. Any word will have an almost infinite number of nuances. And in the process of defining a common goal, it is of crucial importance that the goal is as accurately formulated as possible. Otherwise, there will be the risk that each member of the team will work in different directions, using their own nuance of the abstract word used in the vision.

The three methods of the triangulation each contains certain problematic aspects that, if not observed carefully, can lead the teams to ambiguous conclusions.

The metaphors usually the first method employed in the process of qualifying a word. This is a common phenomenon known and used by everyone in the daily language (Johnson and Lakoff, 1980). According to Webster (www2), a metaphor is “a word or phrase literally denoting one kind of object or idea is used in place of another to suggest a likeness or analogy between them.”

In the process of developing and choosing this metaphor, the teams usually needed to be reminded of the purpose of the metaphor, namely to describe the concrete interpretation of the word used in the Value Mission or Interaction Vision. The participants tended to describe the word in common, not the desired nuance in their *future* product. This indicates that it is also a matter of understanding the objective of a vision approach in relation to a specification approach.

The visual images contain two main problematic aspects. The images used to describe the nuance of the words depended on the source. Especially in WS 3, it was very obvious because the teams did not share their magazines, and their posters reflected this in a very noticeable way. The selection process depends on the team and the way in which they usually negotiate with each other. In some cases, the team distributed the responsibility of finding images to a word among team members. If the team should benefit from the qualification process, it needed to communicate and confirm its choice during this process.

The other main problem is the discipline and focus. This is related to the first problem of the source of images. There is a tendency to pick the images that illustrate the word, not the nuance and meaning of the word as a description of the goal (vision or mission). For instance, if the quality “Clean” is qualified with two images; a baby and a white shirt, what is the exact nuance of the word then?

In WS 1, 2 and 4, there was given a limitation in the number of images allowed. This resulted in confusing posters in WS 3 where the participants were not accustomed to communicate visually. In WS 1 and 2, it was less problematic but still not sharp and precise.





In WS 4, the participants were encouraged to use only one image for each word to describe the nuance; they also used internet image databases as sources. This forced them into a discussion of the precision.

The scenario plays were often the last chosen method just before the presentation. Although the participants were able to use the method earlier, it seemed to be the least favorable method prior to its use. It was noted that the participants hesitated to use the method because they were skeptic about its success, and on some occasions they simply postponed it because they were shy and unwilling to 'perform' and play theatre.

It was however noted in several workshops that after they used the method, they realized that it was not easy and consequently new aspects and discussion were brought forth. The late use of the method had a consequence similar to the images; on occasions they tended to illustrate the word, not the intended nuance of the word.

### ***Fields of tension***

The combination of words used to describe the Value Mission and Interaction Vision is important. In this selection process, there are two phenomena worth mentioning; *tension* and *meaningless* words.

Tension is powerful. Dilemmas can hold much tension, which is an integrated part of creativity. It also refers to the discipline of personal mastery in the learning organization (Senge, 1992). It is the difference between the actual state and the desired state.

The levels in the pyramid model can be interpreted as surfaces (Fig 6.4). The Value Mission and the Interaction Vision are situated on the upper two surfaces. When selecting and defining the mission and vision, meaningful words are used. The words can be more or less closely related to each other and thus define a field that entitles the current solution space on that level.

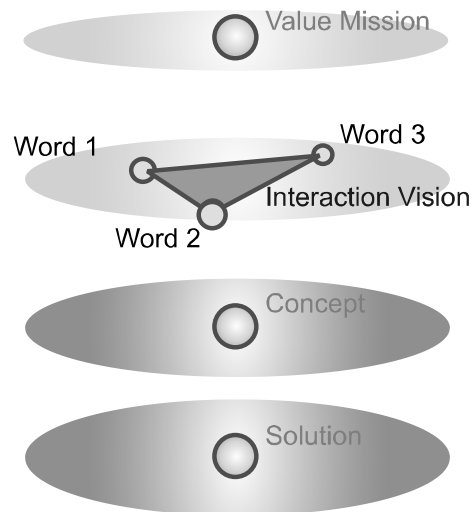


Fig.6.4. The field of tension for the Interaction Vision.

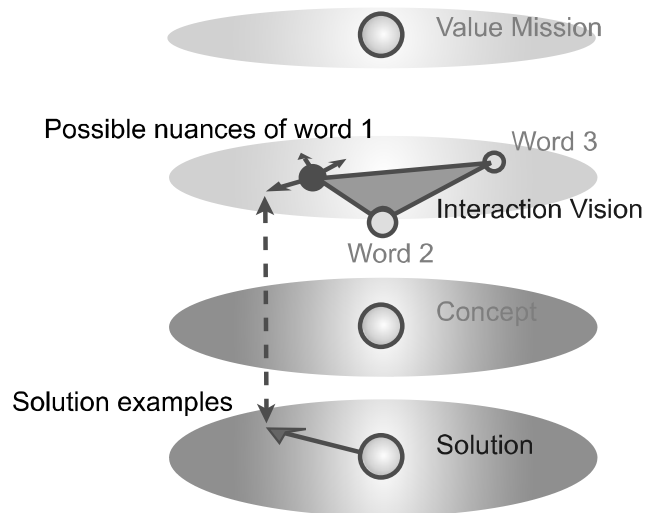
The participants in the workshops were asked to use approximately 3 words. There are two reasons for this. The first reason is the precision, a qualitative goal described with ten different words is not easy to grasp or use as a guideline. The other reason is that 3 things are easy to remember, and they define a field with more sense of direction than just two words. Two words can be a dilemma which also is a strong tool. But three words points in a direction, even if two of the words are of opposite meaning. In fact, the relation between the words is important, a dilemma or contradictory set of words is provoking and intriguing. This brings quality and spirit to the goal, triggering mental images of possible solutions for this 'problem'. One can interpret this as a problem defining process. By combining the words, the team simultaneously defines the problem that they should solve and the direction that they should work.

The choice and combination of qualities bring out different emotions and diffuse images of possible solutions. If this set hold intrinsic dilemmas in the combination of qualities, it is more powerful and intriguing than a more ordinary and 'logic' combination. The combination of words defines the *field of tension*; this tension can be high or low. If the words used are too similar in meaning they will be located to close to each other on the surface and make the field small. If they are too far apart the tension is too high and the frame might brake mentally.

Positioning these anchor points of the field involves defining the nuances by using metaphors, visual images and scenario plays. It also involves the previously mentioned negotiation using examples of solution or concepts (Fig.6.5).



## Evaluating the V-V-based Methodology (6)



*Fig.6.5. The positioning of the anchor points is done with horizontal qualification using metaphors, visual images and scenario plays – it also involves the previous mentioned negotiation using features as argumentation and explanation.*

The other phenomenon with regard to finding and defining the words used on the upper levels is *meaningless* words. These words can be either too specific or too broad.

Regarding the too specific words, there was observed a strong tendency to find and define words of the Value Mission and Interaction Vision that were closer to being a requirement to the product, or even part of a solution. Ex. a bike: A quality like “Mobility” is not part of a vision for the future bike to be developed. It is actually a necessity in order for the bike to be a bike – i.e. a requirement. Sometimes the chosen words were borderline specifications, meaning that they described part of the solution and thus belonged on another level of abstraction; the principal or material level.

Regarding the too broad meaningless words there are two types; the archetypical and the project related.

Popular archetypical meaningless words are *identity* and *life quality*. This type of word defines a *characteristic* for any product in the category or describes the archetype, not specifying anything unique for the particular product they are simply too broad in their meaning and interpretation.

Other values such as *innovative* and *new* are too broad and meaningless in the concrete situation of defining a vision for a *product*. This type of words expresses a desire to achieve the values in the *project*.



Hence they express the desire to make something innovative and new, not *how* the product would be innovative.

Type of meaningless word	Example on values (product: bicycle)
Demand / requirement	Mobility / Intuitive
Solution / specification	3 wheels / Lightweight
Archetypical characteristic / Broad	Identity / Life quality
Project related desire	Innovative, New

The tendency decreased throughout a workshop and therefore is interpreted as a part of the learning process concerned with the practical application of the 4 levels of abstraction and using a vision-based approach. Facilitators supported the process by reminding the teams that the Value Mission and Interaction Vision should describe something unique for the product.

It should also be noted that the problem was most pronounced in the words used to describe the Interaction Vision. The content would be qualities or characteristics, but participants, especially those participating in WS 4, had difficulties in distinguishing qualities and specifications.

Choosing qualities to describe the role implies avoiding words and terms that are an intrinsic part of the problem, i.e. *de facto* demands (something that will be achieved by any product in the category), specifications or solutions.

### **Advantages of the Value and Vision-based methodology**

Practicing the Value and Vision-based methodology is useful to a design team. In the practical framework for the methodology in this thesis, the participants are presented with this type of methodology for the first time. The advantages of the Value and Vision-based methodology should therefore be reviewed in relation to the fact that the persons – that are using it - are novices. There are two main aspects of the advantage; an internal benefit concerning the team and an external benefit concerning the product.

#### ***Internal benefit***

The internal benefits concern the team learning; building a shared vision and meaning. The pyramid model provide the participants with a common framework of reference for the dialogue; a language. Whenever they discuss they can pinpoint the level of abstraction of which they agree or disagree. The Value and Vision-based methodology can support the team in developing a common *ground* of interaction and negotiation.



## Evaluating the V-V-based Methodology (6)

The methodology provides the team with a structured approach in which they all can participate. The unfolding of words and defining the specific nuance calibrate the team members' understanding of words that describe their common goal. This process brings the team closer together in their understanding of the goal of their design activity and can at an early point reveal and pinpoint disagreement regarding the *direction* of the project.

### ***External benefit***

The external benefits deal with the development of the product; the communication, the implementation of values and a guideline for the design.

The methodology provides an extensive background for presenting and communicating the benefits of the product, both the emotional and the unique selling points. The thoughts behind the product are well-known and have been subjected to numerous discussions and qualification processes, making them sharp and precise. There is both visual and verbal material available for communication concerning the emotional arguments at the end of the workshop.

Implementing the values is giving meaning to the product in terms of the connotative aspects (Dahl & Buhl, 1993) that are decided and developed parallel to the solution. Instead of analyzing the final product in order to find appropriate connotative aspects, the process is reversed.

The team has the opportunity to use the connotative aspects as a guideline during the process, hence creating a high consistency between the emotional and the physical aspects of the product.

This also provides the team with a *guideline* in the form of an Interaction Vision and concepts developed in the workshops were very sketchy but were enough to give a sense of direction the product could take throughout the entire project. In fact, the main outcome of the workshops was the Value Mission and Interaction Vision constituting a generic guideline. The methodology is systemic and generic in nature and the objective of consistency goes beyond the workshop. This implies that the product development in later stages should reflect the Value Mission and Interaction Vision. If there is a discrepancy either the mission and vision should be revised or the solution should be dismissed.

This implication is important to understand when judging the outcome of the workshops; it is not a closed stage, but the beginning of a continuous reflection upon the relation between the goal (vision and mission) and the current suggestions and solutions for the product.



*Moving towards a guideline approach*

Making the methodology more explicit and logical in linking and transforming the content of different levels of abstraction is a step towards opening the creative process. There are still black boxes (Jones, 1981) in the process concerning the actual translation of values and interaction vision into a more concrete proposal for a product concept. This black box is related to the generation and synthesis of ideas, suggestions and solutions. Also the interpretation and derivation of values from these proposals remains undisclosed as a process related to personal ability to abstract the content to a higher level of abstraction.

The contribution towards the guideline approach (Stolterman, 1994) lies in the ability of the methodology to guide the participants to formulate, calibrate and exemplify a shared goal for the product within the design team. This opens the methodology on a process level regarding understanding the value system, not in a prescriptive way, but in a descriptive generic way through a system of methods and movements.

Teaching the explicit version of the methodology emphasizes the logic of the system in the methodology, but it might be at the expense on self-reflection by participants in the learning situation. Another trade-off could be the content of the Value Mission and Interaction Vision being less poetic and strong due too the mechanically derivation through the logic step by step approach. This issue has been not been investigated as such, but should be of concern when the methodology is applied in a non-teaching situation.”

**“After” effects**

In two of the workshops cases, WS 1 and 4, it was possible to see the final product in terms of project presentation in exams. This revealed that the Value and Vision-based methodology, to some extent, had an impact on the final suggestions for the product (the educational context means that no real products were developed, only suggestions).

The presentation of the product used words and concepts developed in the workshops. At this point, the distinction between Value Mission and Interaction Vision varied. In WS 1, the final presentation was done three months after the workshop took place. In WS 4, it was only one week after the workshop finished.

The difference in time gone since the workshop was reflected in the confidence of which the Value Mission and Interaction Vision were presented. It also influenced the richness.



In WS 1, the products and presentation showed one value or quality prevailed over the others. In WS 4, the presentation reflected all values and qualities whereas the products reflected two or more values *and* qualities. Besides the difference in the time spend on designing the product which indicates a difference in detailing and complexity, one should keep in mind that WS 1 worked with an implicit approach whereas WS 4 worked with an explicit approach.

Another very strong variable was that WS 1 was a normal project for the participants, whereas WS 4 was an intrinsic part of the focus of the design project. Therefore, no solid conclusions can be made concerning the influence on the prevailing values contributed to the difference in the implicit and explicit approach.

### **Unsettled aspects:**

The workshops cases produced many answers concerning the use and practicing of the Value and Vision-based methodology. However, it also revealed some unsettled aspects that would be interesting to investigate further.

#### ***What constitutes the leading star: Interaction Vision or Value Mission?***

A common phenomenon in all workshops was the confusion of the participants expressed regarding the abstract outcome. The difference between the Value Mission and Interaction Vision was not perceived as entirely clear. In theory, the Value Mission and the Interaction Vision would be components in an overall vision, but in practice the number of abstract goals is too high.

This is reflected in the “one word philosophy” in WS 1 where only one word was used as common denominator in the final presentation.

This raises a question of simplicity. Can the abstract goal, the leading star be further condensed? It contains an intrinsic dilemma of simplicity versus historic understanding. A simply formulated statement about the vision for the product is easy to remember, communicate and steer after as opposed to a complex combination. However, the simplicity can also afford misunderstanding and lack of nuances. This is related to the internal / external benefits.

The process of the methodology creates the internal understanding of the goal through the discussions and unfolding of possibilities before choosing. The statement is a result which holds this historic understanding and rich meaning to the team members, a meaning inaccessible to other parties not involved in the process.



It would be interesting to further investigate the relationship between the internal and external meaning of the abstract goal, and subsequently examine what exactly constitutes the leading star in practice.

***The origin of values?***

In WS 2, 3 and 4, it was attempted to spend more time investigating the value landscape of the stakeholders. However, the tendency was to focus on the user and the set of values that would meet the user needs.

The values of the manufacturing company tended to be neglected. Especially in WS 2, it was noted that some participants found these values biased and without any connection to the real world.

Eliciting the values is problematic without the stakeholders participating in the discussion. It is also a matter of judging between a desired communication and the perceived communication, i.e. is the appropriate interpretation of the set of values related to the way the company pictures itself, the perceived image by the participants, or the end-users?

Using the Value and Vision-based methodology revealed an uncertainty among the participants with regard to this problem. In the workshop, the Value Mission is the values that the design team decides are appropriate.

Investigating the methodology in other frameworks, for instance an advanced and continuous use in the same company may uncover ways of dealing with this problem in practice.

***Self-facilitation after workshop***

The workshops depended on the facilitators' experience in using and teaching the methodology. The facilitation relies on reflection upon a number of factors; the relation between the status of the design problem, the mental state of participants, the previous movements, the precision of the values and qualities, etc. In short, the main focus of facilitation is on the process, not the design problem. As the workshop progresses and the participants discover the systemic qualities of the methodology, they occasionally begin to make independent decisions concerning the methods and movement they want to do.

This tendency is almost always observed at the last day (third or fourth) and thus never provided an opportunity to let the teams be completely self-guiding. All participants commented on the positive aspect of having a facilitator. At the same time, they doubted whether they could use the method without a facilitator. Their comments might be related to the confusion after an intensive workshop where many new concepts, methods and techniques were introduced over a short period of time.





It would however be interesting to investigate an autonomous use of the methodology in order to judge the influence of facilitation on a more advanced level.

### ***Combining the Vision approach to a Specification approach.***

In WS 1, 2 and 3, the participants commented on the Value and Vision-based methodology's very different approach in relation to the specification based approach. The engineers in the workshops expressed difficulties in understanding the relation between the specifications. As an engineer in WS 2 commented; "They seem to generate two competing documents." This could be interpreted as a misunderstanding of the role of the vision, but it reveals a communication problem of the compatibility between the two approaches. It also could be contributed to the focus purely on the vision-based stage of the methodology during the workshops. This generates material mainly derived through the design teams' interpretations that is represented in a non-factual manner. At the same time the experienced engineers ask for a framework for their design problem, i.e. the specifications they should meet expressed in tangible terms.

This suggest there is an aspect of merging the intangible values and visions together with more tangible boundaries and problems"

Investigating an advanced use of the methodology over a longer period of time might reveal information about the merging of the two approaches.

### ***The level of innovation in the product concepts.***

Is it possible to detect an impact on the innovation level through this use of abstract objectives as a way of creating more alternatives like in the value-based thinking approach by Keeney (1992)?

In theory, there is a possibility to bypass the evolutionary approach and find concepts that are of a different character than the one derived from evolutionary development of the existing product concept. The data in this thesis do not support any conclusion of that because the focus of investigation has been on the use and learning of the methodology, not the impact on the product development. However, it would support the use of the Value and Vision- based methodology of whether there was evidence for the advantages in terms of innovation.



### **Learning the Value and Vision-based methodology**

The practicing of the Value and vision-based methodology in the empirical data of this thesis holds some strong learning aspects; the participants were inexperienced with this methodology and the complexity of the methodology affords multiple learning loops. This subchapter will outline the learning issues related to the Value and Vision-based methodology and then outline the context-related issues.

#### **The five elements**

Learning this methodology requires reflection on many levels. In any design process, there is reflection upon the design problem (Schön, 1983), the designer tries out different solutions or partial solutions and reflect upon how they can help to solve the problem. This accounts for single loop learning (Argyris and Schön, 1978). If the designer simultaneously reflects upon how the problem is perceived and how the design methods employed deals with the problem, this accounts for double loop learning. One could summarize this by interpreting the two notions of the reflective practitioner by Schön; Dealing with the problem is “Reflection *in* Action” and dealing with how you deal with the problem is “Reflection *on* Action”. The Value and Vision-based methodology uses reflection on action as an intrinsic part of the system by dealing with the same problem on different levels of abstraction.

In the following, five elements related to learning will be outlined. The five elements are related to different aspects of the methodology. When thinking metaphorically (as the methodology encourages), then learning the methodology can be interpreted as learning how to dance. The basic understanding of the dance is the type of dance (the pyramid model), the dance steps are the individual techniques and methods, a series of steps are the movements (links between levels of abstraction), the composition of series is the process of the methodology and as you dance you get to know your dance partner (the design problem).

#### ***The model***

The pyramid model is the basic language of the methodology. The terminology and type of content of the different levels of abstraction are usually provided as reading material before a workshop. However, being aware of the fact that material provided beforehand is not always read, any workshop starts out with a presentation of the model and process. Since the participants are novices in relation to this methodology, they cannot relate the presented theoretical information to a practical framework. This is reflected in the participants' confusion about content on the various levels of abstraction when they were in the midst of action.



The practical application was more difficult than they imagined when being presented with the theoretical explanation. There is a difference between reflecting upon information and imagining its relation to practice than relating the practical application to the theoretical information. The latter requires facilitation in action and the former is subject for misinterpretation of the information given.

Learning the model is primarily obtaining operational knowledge through a process of internalization (Nonaka and Takeuchi, 1995). The knowledge arises from the practical experience with the process. This reflects the operational aspects of the different levels of abstraction in the model presented through documents and lectures.

It would correspond to “learning by doing”, an *accommodative* learning style (Kolb, 1984), the participants learn about the model through the exercises and methods presented by the facilitator throughout the workshop.

### ***The methods***

The majority of the methods employed were relatively simple in itself. The type of instruction given in the workshops was given verbally in plenum and sometimes followed by imagined examples performed by the facilitator on the design problem of the individual teams.

In WS 2 and 3, the verbal instructions were supported by short written instructions, however, it did not decrease the requirement for extra verbal instructions and examples provided by the facilitator.

Using the methods is primarily an issue of reflecting upon the problem (reflection in action) and is similar to regular design activity of developing ideas or analyzing the problem. This did not constitute any major learning obstacles, the main problematic issue concerning the learning of the methods was found in an associative type of methods, especially mind mapping, and is related to a reflection on action.

It is a common mistake in the associative methods to neglect the two types of phases; the free association unfolding the *potential* interpretations and the synthetically analysis of the *desired* interpretations. The teams usually required re-instruction in refrain from seeking consensus while associating freely upon a subject, because the idea is to explore and discover the borders of interpretation and association. This reflection is also related to understanding the overall idea of the vision approach, namely focusing on what could *be*, not what already *is*. Meaning that when exploring interpretations and associations, the team should not focus on what is a ‘right’ association, but what are the possible associations. Then, when the landscape of associations is laid out, the team can discuss the appropriate, important or desired associations and interpretations related to its project and product.



Learning to use the individual methods primarily involves an operational knowledge obtained through active experimentation and concrete experience, thus requiring an *accommodative* learning style in an *internalization* process.

However, the learning process of using the method is influenced by the type of content that the method deals with, i.e. the movement in which the methods are employed.

### ***The movements***

The two different types of movements, the vertical and the horizontal, require two different ways of reflecting. The vertical movement requires the ability to do an abstract analysis and generate alternatives. The horizontal movement requires an explorative association and synthetic analysis, besides the ability to generate ideas and solutions.

When reviewing the two ways of facilitating the vertical movements, the implicit and explicit, there is an emphasis on self-reflection in the implicit way of linking levels vertically. The implicit facilitation is less systematic because the linking of the content on the different levels is not outlined in the same structural manner as in the explicit.

In the explicit facilitation, the facilitator assists the reflection by instructing the participants to extract qualities or values from the concrete ideas and supports this by giving examples.

Learning how to make an analysis of an object in order to extract an abstract essence is not examined per se in this thesis. In the facilitation of the methodology, this is an important obstacle that is dealt with by “situated exemplification”. This means that the facilitator provided the participants with an example of abstract analysis by performing it on a concrete idea from the team’s idea pool. This way of exemplifying is to assist the team in learning how the theoretical explanations work in practice.

The movements dealing with generating or synthesizing product ideas involve a *systemic* knowledge (Nonaka and Takeuchi, 1995) obtained through a combination and correspond to a *convergent* learning style (Kolb, 1984).

These movements would be downwards vertical (generating ideas from the abstract goal) or horizontal on the concrete levels (generating ideas related to the problem, i.e. solving a problem).

The movements dealing with associations, qualification and abstract analysis involves a *conceptual* knowledge derived from an *externalization* process. The learning modes supporting this are abstract conceptualization, reflective observation and concrete experience.



This brings forward two learning styles; the *divergent* (using imagination and creating alternatives) and the *assimilation* (inductive reasoning to synthesize general values and qualities).

These movements would be upwards vertical movements (analyzing ideas or analyzing consistency) and horizontal movements on the abstract levels (associated interpretations or qualification of nuances).

### **The process**

Learning the process of the methodology is about discovering the systemic quality of combining movements. It is a common feature of all the workshops that the participants express confusion about the methodology and process, however, at the same time a sense of crystallization emerges on the second or third day. This is an expression of reflection on the action intrinsic in the methodology. The participants begin to discover the guidelines of how to compose the movements in order to obtain consistency between the levels and generate product concepts. The facilitator is steering the process, especially in the beginning and, in the explicit approach, the facilitator informs the participants of the purpose of the movement in relation to the levels of abstraction and the building of the abstract goal.

None of the workshops used in this thesis provided extensive information regarding the composition and system before, during or after the workshop. Therefore, the participants were a part of discovering this system during the workshop.

The process involved a learning process concerning the systemic qualities of the methodology. The practical understanding (operational knowledge) these systemic qualities of the methodology is derived from an *internalization* process (Nonaka and Tekeuchi, 1995) that occurs throughout the workshop.

Discovering this systemic quality is done through concrete experience and active experimentation thus supporting the *accommodative* learning style (Kolb, 1984). The learning process concerning the process and combination of movements constitutes a double loop learning as described in chapter 2. It includes reflection upon the current status as well as reflection upon the perception of the problem and how it can be handled (Argyris and Schön, 1978).

### **The problem**

The last learning issue has to do with the design problem, i.e. the content that undergoes the treatment of this methodology. This includes learning about their project, the users and problems related to the product.



As stated earlier, the methodology deals intrinsically with reflecting upon the problem in different ways. In the workshop, the design teams were in general (except WS 3) in the early stages of the project still researching and in the process of defining the design problem.

This meant that the main learning issues concerning the design problem were related to the emotional aspects of the product in using it. The ideas and solutions developed in the workshops were not substantial enough to be used directly for further development. However, the forming of the abstract goal meant that the design team learned something about the direction of their project and the philosophy through which the problems could be solved.

The forming of the abstract goal is both a process of *socialization* and *externalization* that creates a *sympathized* and *presentational* knowledge (Nonaka and Takeuchi, 1995). The *presentational* knowledge is expressed in the visual images, metaphors and scenario plays. The *sympathized* knowledge is the common understanding and calibration of expectations and communication between the team members. This constitutes sharing mental models through shared experiences. The product ideas and concepts generated by the methodology is a systemic knowledge derived from a process of combination.

#### ***Multiple learning styles***

Reviewing the five elements and their related learning issues reveals an emphasis on active experimentation and concrete experience (accommodative learning style) in an internalization process of creating operational knowledge about the methodology.

However, this is influenced by the other learning issues, concerning the content of various characters. The methodology is connected to the design problem and the formulation of the abstract goal, thus involving other processes of creating knowledge and thereby requiring other learning styles.

The participants are in general confused throughout the first days of the workshop. The purpose and use of the methodology slowly crystallize themselves towards the end of the workshop. The diversity of the knowledge created and the complexity of the involved learning modes can be a significant factor in the entire learning process of the workshop.



### **Contextual issues**

In general, all workshops demonstrated the learning issues explained in the five elements of learning the methodology. Especially the practical navigation and distinction between the levels of abstraction caused confusion when practicing the methodology.

In the following, the particular learning issues related to the four workshops will be outlined. In general, all workshops contained all learning issues described in the previous section; the present outline will therefore focus on the issues characterizing the individual workshop.

#### **WS1**

WS 1 was a mandatory part of the curriculum on the 7<sup>th</sup> semester. This represents a focus and teaching of concepts development that is new to the students at this point in the education. Thus, they experienced somewhat of a paradigm shift when presented to this methodology. Previous focus on specifications was in *opposition* to this vision-based approach. Several teams expressed frustration concerning this shift, and it inhibited the learning process of some teams.

It was observed that in general all teams experienced problems of understanding the *structure*, *principles* and the *rules* of using the methodology. But half the teams experienced severe problems in accepting and understanding the overall approach, and one team did not succeed in reaching a vision. This team was reluctant to enter the process on the given premises, and they were still focused on specifications and requirements. The most outstanding learning issues in this workshop thus revolve around the *movements* and *process*.

#### **WS2**

WS 2 contained an *internal conflict of interest* developing appropriate product concepts and learning about the methodology. The pressure of developing useful product concepts during the workshop did not directly influence the learning of the methodology by haste and participants pushing forward. On the contrary, the participants did not keep the deadlines because they got very involved in the discussions, thus demonstrating seriousness concerning the content. This was also the main concern in relation to the methodology; was the Value Mission and Interaction Vision valid when related to the 'real world'?

This concern indicates several issues; the seriousness and pressure of the company context causing a need for certainty and team members focusing on the use of the products; i.e. being the users' advocate.



The learning issue is related to the *model*, i.e. the language of the abstract milestones, and the *movements* between the levels in the model, i.e. the “mental jumps”.

The cross-disciplinary team and the mixture of experienced employees and trainees did not seem to influence the learning or practicing of the methodology in any noticeable way.

### **WS3**

WS 3 demonstrated most problems concerning the learning and understanding of this methodology. This can be contributed to several issues; the phase in the design process, the experience with design, *different paradigms* and the abrupt sequence of days.

Their prior sessions of generating ideas and developing concepts meant a fatigue in relation to creative methods, and they were less willing to ‘start over’. Only a few teams in this workshop were - judging by their own statements - enthusiastic about the methodology. It was related to the fact that they were not satisfied with their current concept ideas.

The lack of experience with the design process and their paradigm of *business* and engineering meant that they were insecure and focused on the way of doing things as were used to. With little practical experience in the design process, they were reluctant to deviate from this approach and therefore some had extreme difficulties in grasping the notion of vision-based methodology in relation to specifications. The values chosen illustrated a certain set of connotations that described the intended innovation as a concept, not in a specific way. This meant they were focused on creating something new in a business way through values such as; new, *innovation* and *prestige*. However, they had difficulties in pointing out what the *new* was about, thus constituting a superficial relation to the vision by the marketing type connotations that are general and non-unique.

This paradigmatic difference between the facilitators, methodology and the participants caused severe problems for the overall understanding of the use and purpose of the methodology. These learning issues are related to the *model*, the *movements* and the *process*.

The fourth issue of abrupt sequences did not provide an intense atmosphere for creative work and collective learning. It meant that for each time the workshop started a new day, the participants had to readjust themselves to the setting of the workshop and the mental state of dealing with abstract values.





### **WS4**

WS 4 learning issues were focused on *distinguishing* between the *vision* as an overall generic goal and the *concepts* and their connotations. Some teams exhibited confusion about the use of a vision as the overall goal and focused on describing one or two concept ideas instead. The contextual focus on product design and the tendency to focus on this element as the focal point presented a slightly different point of view of developing concepts. Instead of pursuing a search for an overall mission and vision, they were more focused on describing a good idea. Thus, the learning of the system and use of the methodology in relation to developing a qualitative goal through using ideas as stepping stones were slightly inhibited.

However, it is interesting to notice that dealing with the abstract roam did not present a problem; the participants welcomed the discussions and acted as if they were on their own territory. This indicates that abstract values and connotations are 'normal' elements in the design process, but they are second in rank to the *good idea* which is the focus and goal.

The learning issue in this workshop was mostly concerning the *process*, i.e. the purpose and system of *movements*.

### **Conclusion**

In WS 1 and 3, the issues of confronting paradigms were most evident in terms of accepting the premises of the methodology and willingness to learn. In both workshops, there were teams that fully accepted the premises and were enthusiastic, thereby diminishing the importance of the context paradigm. It can only be concluded as to being tendencies of the specific contexts. The notion of a qualitative goal did not present a learning issue for the designers in general, but in all cases the terminology and distinction between mission and vision presented a problem.

It is interesting to note that in WS 2 the importance of the vision / mission being *unique* and not describing obvious values was not a learning-issue, but taken as a prerequisites in this company context. In WS 1, 3 and 4, learning issues regarding the mission and vision were focused on the abstract notions describing the desired *future* state of a product not yet created, i.e. understanding that mission and vision describes something *unique* and *desired* not related to a certain suggestion or idea. In WS 3, there was furthermore the learning issue of not describing superficial *intentions* such as innovative, but pointing towards the content of that innovation.

In general, the systemic rules of the methodology seem to be the common denominator for the workshops regardless of the contextual issues representing learning elements of *process* and *movements*.



### **Facilitation and teaching issues**

The teaching and facilitation of the methodology vary in the four workshops, both in terms of persons and approach. The difference in approach was outlined in the comparison section earlier (p.224) as *implicit* or *explicit* linking. In this section, the learning related issues of facilitation and teaching will be outlined for each workshop.

#### **WS1**

In this workshop, there were two facilitators; one experienced and one less experienced. Having two facilitators was positively commented on by the participants and ensured a larger amount of support throughout the entire course, as well as provided the participants with two differently formulated explanations. It also meant less individual time for work and reflection for the participants, thus inhibiting the embedding of the knowledge through own reflections.

Plenum presentations of status and milestones functioned as part of the facilitation. This allowed a workshop calibration of the expected performance level and what constituted the abstract milestones. Through comments from facilitators and other participants, the presenting team could get inspiration and reflection.

The teaching involved two lectures; one initial presentation of the theory of the vision-based methodology and one presentation half way through the workshop showing some examples from previous workshops.

The course of exercises was tight and intense with short exercises and deadlines. The tight deadlines created an intense atmosphere at the workshop, focusing the participants on the present moment and providing an increased workload. On the other hand, this drained energy from the participants and decreased the overview of activities. This left the participants in a state of chaos where there were little time for reflection.

#### **WS2**

In this workshop, there was only one facilitator not experienced in handling a workshop alone. This made some impact on the learning of the methodology in the sense that the facilitator was learning concurrently with the participants.

This meant that precautions and pre-emptive actions/exercises were not taken in order to guide the participants comfortably through the methodology.



This is reflected in the comments made by the participants and in the sequence of exercises presented in the comparison found in the beginning of this chapter. The participants went through less vertical iterations and the facilitator did not assist the participants in gaining an overview after the initial theoretical presentation the first day.

Plenum presentation of status and abstract milestones were also employed in this workshop. However, the participants also held inter-team presentations because they needed more feedback from each other. The workshop did not contain fewer presentations than the others, but the increased focus on certainty might reflect this need for calibration and feedback from the other team.

Deadlines were not enforced and the atmosphere was both relaxed and informal, and at the same time the participants worked concentrated and kept long hours. The long work day did not provide particular much time for self-reflection for the participants concerning the methodology. However, they frequently discussed the situation and progress with each other and the facilitator. The facilitation shifted from focused at keeping the teams progressing in parallel to guiding them individually and allowing the teams to be more and more autonomous towards the end, thus focusing the facilitation on assisting the team in the methods and effort they decided themselves.

### **WS3**

This workshop had two facilitators, both with prior experiences of facilitating the methodology. It provided a forum for discussing the facilitation approach in an educational context where design only is a component, not the focus of the entire system.

The teaching of the methodology in this context involved a “training run” exercise, where the focus was on learning the pyramid model and some of the methods. This preparing step did not have the intended effect on the learning of the methodology; however several other factors influenced the learning process as mentioned earlier. The explicit lining between the levels of abstraction was more helpful for explaining the methodology but did not leave a significant impression of having supported the learning process in terms of the observed subsequent actions of the participants.

Using plenum presentations as a means for facilitating is not common in this context. The teams did not know what the other teams were doing and what kind of design project they carried out. Therefore, the facilitation included supporting the teams in communicating their material in terms of posters and visual aids.



The absence of process-related exercises in this workshop might have influenced the learning as mentioned earlier; it might have helped to build a more intense and creative atmosphere.

The teaching and exercises were stated in a relaxed manner and depended to a greater extent on individually guiding the teams forward instead of attempting to keep everybody at the same level at all times. This “personalization” of the facilitation was made possible by having two facilitators. Through discussions between the facilitators the progress of the teams was outlined and new actions of facilitation were decided. Two facilitators also allowed for adjusting facilitation according to personal chemistry.

#### **WS4**

This workshop only had one facilitator, with previous experience from 3 similar workshops. However, the number of participants being significantly less than WS 3 meant the same facilitator-to-team ratio.

The participants do not normally work in teams but plenum presentation of milestones and the process exercises assisted the facilitation in building a team spirit.

The teaching of this methodology was focused on keeping the participants aware of both the previous, current and potential future activities. In addition, the abstraction level of the activities and content was supported by comments, explanations and examples. The participants asked for examples of use of the methodology, and with no out of the bag examples the facilitator made examples in action; in other words, use the participants’ current material to exemplify abstraction, analysis, etc. In this way, the exemplification was directly focused on assisting the team in the concrete situation.

This was combined with an overall relaxed atmosphere and individual deadlines and facilitation. The teams did not progress in the same rate or manner and were therefore assisted by this individual support. However, in broad terms they followed the same type of pattern moving on and between the levels of abstraction.

#### **Conclusion**

The facilitation progresses throughout the workshops, both in terms of the experience of the facilitator and the plenum guidance.

In WS 1 and partially 2, there was a specific focus and intention of keeping the teams in parallel progression.



## Evaluating the V-V-based Methodology (6)

In WS 2, this intention was more or less abandoned towards the end because the teams differed so much in their progress and need of facilitation. In the following workshops, the teams were increasingly subjected to individual facilitation and deadlines for exercises were almost abandoned in WS 4.

At the same time, the explanations of the methodology shifted from implicit fussy linking towards explicit logic linking. The “logic” of linking the movements is carefully explaining the intentions behind the movement, thereby attempting to prepare the participants for navigating the movements themselves.

The evolution can thus be summarized as “moving from plenum facilitation relying on implicit linking, intense atmosphere and strict deadlines to individual facilitation relying on explicit linking, self-reflection on the methodology and more autonomous steering of progress.”



## Highlight résumé

This chapter reviewed the practical examples in relation to each other (comparison), the generic description (phenomena of use) and the learning of the methodology (learning issues).

### **Comparison**

The comparison revealed a difference between the workshops organized by Erik Lerdahl, or being strongly inspired by this approach, and the workshops adjusted according to the structural analysis and comments from participants.

The *first approach* (WS 1 and 2) was more implicit in this linking relying on numerous exercises, unlinked movements, unbound idea generation, intensity through forced deadlines and presentations to link the abstract and concrete levels together.

The *second approach* (WS 3 and 4) was more explicitly relying on continuous reflection on consistency, fewer but targeted idea generation sessions as stepping stones, consequential abstract analysis and calibration, 'logic' sequential movements, open and participatory explanations to link the abstract and concrete levels together.

### **Phenomena**

The phenomena uncovered by practicing the methodology concerned the value transformation being done through two types of exemplification; an internal exemplification and an external exemplification.

*Internal exemplification* means that the values were subjected to an interpretive translation to either product ideas or concepts within the problem framework. These ideas and concepts were used as stepping stones in an analytical abstraction process of interpreting the desired product behavior.

The *external exemplification* means that the values were described through examples outside the problem framework in order to calibrate the teams' understanding of the values. The examples were of a metaphorical nature using other products, phenomena and feelings to describe the intended nuance of the value.

The *contextual level* in the Pyramid functioned as the *place of transformation* between values and concepts. The behavior of a product is closely related to both its systemic principles and the values.



## Evaluating the V-V-based Methodology (6)

### ***Learning***

The learning of the methodology is primarily a creation of *operational* knowledge in an *internalization* process (Nonaka and Takeuchi, 1995).

However, the learning process is complicated by the multiple learning modes (Kolb, 1984) required by the diversity of the material (abstract and concrete) and the *double loop learning issue* in relation to reflecting upon the view of the problem through different levels of abstraction.







## 7. Conclusions

### Conclusion on research questions

The overall theme of this research is methods within Integrated Design; more specifically the vision-based approach had been under investigation in order to unfold and describe the related methodology. Integrated Design methodology deals with the integration and optimization of different aspects into the design. The focus of this research is the optimization objectives expressed in qualitative terms by a set of values; how these values are transformed into product concepts by applying a particular methodology in a design team context.

The research question:

*Within the framework of the vision and value-based approach as a methodology for handling the value transformation from a set of values to initial concept proposals:*

*- How can this methodology be unfolded, understood and practiced in a design team context in relation to the value transformation?*

This question is based on the assumption that the values play a significant role in the Integrated Design (Nielsen, 1999) and that the vision-based approach by Lerdahl (Lerdahl, 2001) is an appropriate methodology for investigating how these values influence the transformation process (Stokholm, 2003) in practice.

The answers to the research question are found in chapter 4, 5 and 6 as elaborated on in the following:

#### ***Unfolding the methodology***

In chapter 4, the process of the value and vision-based methodology was unfolded as a generic system of movements. The movements were closely related to the four levels of abstraction in the Pyramid model (Lerdahl, 2001) and could be combined using a simple guideline: "Bring in content on a given level of abstraction, qualify it and then link to another level".

The different types of movements were outlined and the methods used in the methodology were briefly presented. This unfolding answered the question of unfolding the methodology and partially provided an understanding.



### ***Practicing the methodology***

In chapter 5, the practicing of the methodology was presented through four workshop cases providing examples of use as well as presenting evaluation and analysis of the use of the methodology.

The process of each workshop was presented and combined with analysis of the systemic use of the methodology. These workshops present the answer on how the methodology can be practiced in a design team.

The practicing is done by novices, thus the data do not support any conclusion regarding a more advanced and embedded use of the methodology.

The evaluation from the participants was in general consistent with regard to the use of the methodology to form a precisely formulated abstract goal. The methodology was viewed as confusing during the learning process, but the participants found the structure and systemic approach to be a positive experience.

Especially the methods used to calibrate and define nuances of key words were viewed as valuable.

### ***Understanding the methodology***

In chapter 6, the relation to value transformation and learning of the methodology were reviewed. The review revealed that the value transformation was concentrated on the contextual level where the *behavior* of the product was constructed. This behavior was closely related to both the set of values and principles of the concept. The set of values could be used to interpret the 'allowed' behavior. It activated the values in a similar manner as Storytelling was used to activate the Brand Values (Fog et al., 2002). The behavior was also related to the qualities of the concept; the features described what the product "did" and the principles were part of *how* it performed these features.

Thus, the contextual level functioned as the bridging between the explicit values and the product concept at the principal level. This was supported by the observation of practical use, where the participants' main focus was on the *Interaction Vision* as the leading star for their design of the product.

The review also pointed out that the methodology was not as strictly used as the generic system in relation to working on separate levels of abstraction. The participants negotiated simultaneously on both abstract and concrete levels. In this way, they used concrete product or feature examples to advocate or discuss abstract notions of values or qualities of behavior.



The review of the learning aspects showed that there were five levels of learning in relation to this methodology. The learning styles and their related learning issues revealed an emphasis on *active experimentation* and *concrete experience* (accommodative learning style) in an *internalization process* of creating *operational knowledge* about the methodology.

However, there were also additional learning styles involved concerning the design problem, methods, techniques and the formulation of the abstract goal: thus involving other processes of creating knowledge and thereby requiring additional learning styles, making the overall learning process complex.

The research question has been partially answered by these conclusions, but there are a few issues worth noting in relation to the answers:

### ***Learning emphasis***

The investigation has been done with novices, thus emphasizing the learning aspect and not only focusing on the phenomena and use of the methodology.

This can be argued to be relevant due to the limited use of the methodology at present time, and more importantly the objective of participation by all members of the design team. This implicates a focus on how to learn and teach this methodology in order to involve novices in the process of formulating the vision, thus building shared meaning and shared vision for the team.

### ***Stakeholders***

The design projects used in the workshops were pre-formulated and part of the participants' normal work and the majority of the projects investigated were in an educational context.

Although a workshop was done in a business context, and one of the educational context workshops involved a company as stakeholder, not one stakeholder participated in the process. This renders the formulation and definition of the values a matter of interpretation by the design team.

The value transformation under investigation in this thesis therefore did not deal specifically with eliciting and double-checking the values in collaboration with stakeholders such as clients and users.

More business cases using advanced users could have provided further data regarding this issue.



### ***Facilitation***

The teaching of the methodology naturally influences the learning process, and two styles of facilitation have been outlined in this thesis; “implicit” and “explicit” linking of levels of abstraction. However, due to the generic qualities of this methodology, other facilitators might have provided further insight into how the methodology could be practiced.

Thus, these conclusions regarding the use are closely related to the teaching and the facilitation used in this research.

## **Concluding on research method**

As presented in chapter 3 the research method used in this thesis is of a qualitative nature and has been conducted by action research.

### ***Preparation on Action research***

Preparing for the workshops involved some form of prior experience with the participants. This preparation was an important part in preparing for the facilitation by getting to know the educational background of the participants.

Preparing WS 1 was done by participating in the same type of course twice. This included participating in the same innovation course at the Institute of Architecture & Design, which was also organized by Lerdahl the previous year. Moreover, it included preparing and participating in a PhD course concerning Facilitation in the design process, where Lerdahl presented the same methodology.

Preparing for WS 2 included more pre-investigation carried out through several meetings with two contacts at the company. These meetings included reviewing their product development process and interviewing the participants with a view to getting to know them; their background, attitudes and roles in the company.

Preparing for WS 3 was done by teaching a similar course to students at the same Institution one year in advance. Preparing WS 2 through a previous workshop was necessary because these students' competencies and experience were very different from the design students, thus producing new conditions for the teaching in terms of terminology and explanations.



Preparing WS 4 was different, because it did not prerequisite a previous course to get to know the type of students and context due to prior knowledge of the education and due to the fact that the facilitator and organizer holds a Master degree at this institution. However, the participants were prepared for the workshop by a lecture held five months prior to the workshop.

This type of preparation process was elaborate but it did not seem feasible to commence a teaching of this methodology without prior practical experience, both as participant and assistant. This was accomplished in WS 1 and extensively supported by the reflections stemming from the discussions with Lerdahl.

### ***Data production***

Emphasis on practicing and learning the methodology meant that the majority of data were produced during the workshops.

In all workshops, the role of researcher was not limited to observation. The action research paradigm renders the researcher a facilitator and this was extensively practiced, even in WS 1 where Lerdahl was the organizer, the role of assistant facilitator was taken.

The multifaceted role of being the organizer, teacher, facilitator and researcher might have influenced the data collection. It required extensive personal resources and good grasp of the events to fulfill all roles simultaneously. Self-reflection was imperative when documenting the course of events; what had been directly influenced by facilitation and what had been indirectly influenced by the organization and methodology?

The data produced were mainly a result of the methods and introduction provided by the role as organizer and teacher. The facilitation of learning the methodology and practicing influenced the use of the methodology. Thus, the data produced were a result of a particular type of facilitation in a particular context with these particular participants. It is feasible that other results would have been produced if the roles had been practiced by different individuals.

This could have brought forth more details of the use, because the observer would be liberated from the responsibility to guide and provide explanations, thus having more time to record and note. A stronger reflection might have been brought forth by the possibility to discuss the observations with a facilitator; and in that way compare observation of activities with intentions stated by the facilitator.



However, as stated in the research question the research is seeking to unfold how the methodology *could* be unfolded, i.e. it is not viewed as the *only* and *correct* way of using and understanding this methodology. However, the research has made a contribution to a systemic understanding of how it can be done in relation to transforming values into product concepts.

### ***Evaluation and analysis***

The produced data have been through several iterations of documentation and analysis. In some workshops (WS 1 and 2), it was attempted to have the participants reflect upon the methodology and associated aspects approximately one month after the workshop took place. However, only the participants in WS 2 (the business context) returned the questionnaires, so this method was abandoned in the other workshops.

The participants were asked to give feedback at the end of each workshop. First, they were asked to write positive and negative comments on a piece of paper.

This could be done anonymously, but they were encouraged to state their name if they wanted. Afterwards a plenum discussion allowed for participants to comment and reflect upon each others comments. Letting the participants write down comments before discussing them, was done with the aim of collecting unbiased comments as well as providing the participants with time to reflect. The written comments were collected and the verbal comments noted, and this formed the basis for documenting the evaluation by the participants.

The comments could be influenced by the situation of criticizing the teacher, especially in an educational context. Although this could not be refused as being the case, countermeasures were taken in advance. The methodology was not presented as being a work of the teacher, but rather a subject of investigation for research. Using the Pyramid model and theory from Lerdahl and others in the theoretical presentation was an attempt to distinguish between the teacher and the methodology taught.

The written comments from the participants did provide negative reflections; many of them were related to the teaching and exercises as well as the confusion regarding the complexity of the methodology. This should account for a minimal influence of sympathy for the teacher in the comments.

It might have provided further insight in the reflections of the participants regarding a more advanced and embedded use of the methodology if it was attempted through other means, e.g. interviews.



However, it did not seem feasible that the students would spare the time for interviews because they were busy finishing their projects.

Instead, another approach was taken in two of the workshops where it was practically possible to attend the final presentation of the projects. This would reveal whether the workshop had any practical impact on the final result and presentation of the project. The result of this impact is described in chapter 6, p. 239 .

It could have been an alternative solution to follow one design team more closely throughout the process of their project. This approach would however move the focus of the research slightly towards the effects on the process, instead of using and learning the methodology. This particular type of research would have been even more in-depth and very qualitative.

### ***Deep versus broad data production***

Reflecting upon the possibility to have been more qualitative it is argued that the chosen approach has been an attempt to outline phenomena, and important aspect of practicing and learning the methodology. A compromise could have been fewer workshops and deeper involvement on the part of the participants who investigated the implementation of the methodology in the following work on the project. The chosen approach did however provide a wider basis for analysis, thus investigating the repetition of the phenomena. This wider basis was due to the difference in contexts´ and the training period as a facilitator allowing skills to grow through practical experience and continuous reflection.

The present work in this thesis can now form a platform for an in-depth investigation into a single workshop. It is argued that the reverse approach was not feasible before this thesis; however it could be a natural next step to go in-depth in a single workshop, preferably using triangulation in researchers and perspectives. Furthermore the participants should be submitted to extensive observation and interviewing before, under and after the workshop in order to produce data about the detailed decisions, progression and negotiations for each single method and step throughout the workshop. Such an approach would open for more detailed conclusions concerning the understanding and practicing of the methodology.



## Further research

As the research here had been conducted with participants new to this methodology, it possessed a significant learning perspective. The next step could be to investigate an advanced use of the methodology by practitioners accustomed to the vision-based approach and trained in this methodology.

The workshop cases used existing projects with great relevance for the participants, but it did not provide insight into the impact on daily practice using this methodology.

This next step into the advanced use, together with some of the unsettled aspects using this methodology mentioned in chapter 6, produced intriguing new research areas.

### ***Speciation, demands, requirements and vision - integration***

In WS 1, 2 and 3, the participants commented on the Value and Vision-based methodology's very different approach in relation to the specification-based approach. The engineers in the workshops expressed difficulties in understanding the relation between the specifications and vision.

As an engineer in WS 2 commented; "They seem to generate two competing documents." This could be interpreted as a misunderstanding of the role of the vision, but it revealed a communication problem of the compatibility between the two approaches. The specification was being perceived as the serious mandatory document, and the vision as the colorful addition that only was important in special occasions where the product type encouraged such an approach through focus on lifestyle and image. The vision was apparently in danger of being perceived as loose and insecure, if the participants tended to focus on specifications.

Investigating an advanced use of the methodology for a longer period of time may have revealed information about the merging of the two approaches.

### ***The impact in the innovation level***

Is it possible to detect an impact on the innovation level through this methodological use of qualitative objectives as a way of creating more alternatives as described in the value-based thinking approach by Keeney (1992)?

In theory, there is a possibility to bypass the evolutionary approach and find concepts that are of a different character than one derived from evolutionary development of the existing product concept.





The data in this thesis do not support any conclusion of that because the focus of investigation has been on the use and learning of the methodology, not the impact on the product development. However, it would support the use of the Value and Vision-based methodology if there was evidence stating the advantages in terms of innovation.

### ***Stakeholders and elicitation of values***

Eliciting the values is problematic without the stakeholders present in the discussion. It is also a matter of judging between a desired communication and the perceived communication. In other words, is the appropriate interpretation of the set of values related to the way in which the company views itself, the perceived image by the participants, or the end-users?

Using the Value and Vision-based methodology revealed an uncertainty among the participants with regard to this problem. In the workshop, the Value Mission is the values that the design team decides to be appropriate.

Investigating the methodology in other frameworks, e.g. an advanced and continuous use in the same company, might uncover ways of dealing with this problem in practice.

### ***Implementation in various contexts***

Does the use and unfolding of the methodology depend on the type of product to be developed and the desired level of innovation (as stated by Lerdahl)? Or can this systemic thinking and paradigm be used in a context not directly involving designing products? This would be an interesting pursuit to discover the boundaries of use, and perhaps provide new insight into the process model that could lead to new explanations and principles of use, thus developing the methodology.



## **Perspectives of the value-based methodology**

### ***The question of value and meaning***

This Value and Vision-based methodology is relevant to the products where immaterial and material values (connotations) play a significant role in the success of the product as a part of value economy as described in chapter 2. Some product categories are in the midst of the process of changing from specification-driven to image and value-driven product categories.

An example of such a category is personal computers. A few years ago, virtually every personal computer was a grey box and was sold on the specifications of the components inside; speed, size and cost. This development was challenged by Apple with the iMac where they changed the parameters of competition to embody lifestyle and image. Today, this development is spreading to regular PC's, Barebones (small stylish cabinets) along with the merging of technologies and product categories into multifaceted electronic devices handling TV, video, audio and communication. The conditions change and so does the role of the computer as a social actor.

As this becomes ever increasingly important in various product categories, the Value and Vision-based methodology can play a significant role in the concept development. The value and vision-based methodology can be viewed as part of a value specification for the product. The process involves not just a translation of a predefined set of values, but a contextualization of these values, thus transforming them into a tangible set of values in the process of developing a product concept and designing the product.

The context of culture and use is approached through the Interaction Vision, but the information is derived through the participants, thus being influenced and interpreted by their set of values; e.g. the "user's advocate" or the "cost-benefit view".

This would be an expected part of the negotiation that is intrinsic in the design process. In this case, the Value and Vision-based methodology uses the Pyramid model as a language and platform for separating the discussion into levels of abstraction in an effort to guide the negotiation into the same level for all participants.

### ***Common ground through behavior***

The contextual level of abstraction in the Pyramid model (Lerdahl, 2001) and the Interaction Vision is concerned with the behavior of the product and its role as a social actor.



As pointed out in chapter 6, this is the bridging point between the underlying set of values in the Value Mission and principals of the product concept. Besides the bridging perspective of this contextual level of abstraction there is an aspect of the phenomenon *common ground* related to the behavior.

Everybody can have an opinion on behavior; it is not exclusively related to visualization skills or particular knowledge derived from a single discipline or competence. Hence, the design of behavior is more “open” and participatory friendly. It represents a common ground where participants can discuss and negotiate.

Within software design this can be observed in the Use Case Methodology (Cockburn, 2000) that in effect has the same focal point on the behavior of the product. In software, the behavior is an intrinsic part of the system design; the system provides some form of service; if there is no behavior there is no service. The Use Case Methodology focuses on the dialogue between User and SUD (System under Design) with specifications on how the system is *created* (in code) or how the interface, where the interaction takes place, *looks*. The only issue that is designed is the dialogue and the prerequisites of this dialogue. Software engineers, graphic designers, users and usability experts can participate in this design of the dialogue that develops the concept of interaction. Technical knowledge, insight in the use context, experiences, etc. can form a basis of contributing to the behavior of the SUD.

Within product design the notion of qualitative goals, visualization and behavior of the product is not something new in itself, however the skills and methods used by the designer is often tacit knowledge. The second premise in the new paradigm for design indicated that the design process should be described in order for the cross-disciplinary team to participate in the creative process. The Value and Vision-based methodology is part of systemizing the process of forming of a vision of the product through developing qualitative goals concerning the softer aspects such as form, expression, etc. within a team organization. The methodology does not as such entitle a revolution; it could however influence the collaboration in forming the shared goal through the participatory principles, the holistic viewpoint and especially through the focus on *behavior* in the context.

### ***Designer as facilitator?***

In line with other creative methods in collaboration, such as the “Six thinking Hats” (de Bono, 1996?), it involves an aspect of facilitation, a guide of thinking (i.e. Blue Hat thinking).



As with the Six Thinking Hats the objective is calibration of communication; bringing the participants into the same level of abstraction – or the same type of thinking – thus decreasing miscommunication.

The facilitation perspective is interesting for the designer in terms of continuing the line of integrative work that is intrinsic in the design process. The integrative aspect of the design process also involves integrating aspects of various natures belonging to different levels of abstraction. The notion of working with several levels of abstraction simultaneously is familiar to the designer. These levels of abstraction involve the use of value-based goals, represented in various tools of the designer, such as moodboard expressing the desired quality and atmosphere of a product.

There is an emphasis and focus on the *process* in this methodology. As mentioned above, the designer has experience and skills of in navigating levels of abstraction and integrating aspects in the design process. Together these aspects bring forward the designer as a candidate for facilitating this methodology. In addition, the concept development process and many of the creative techniques and methods in the methodology is closely related to design activities, thus familiar to the designer.

However, this does not in any way exclude other candidates from facilitating the methodology; the sensitivity towards process, levels of abstraction and behavior of products can be found elsewhere and is also related to personal skills and competencies.

### ***Type of values***

Are there different types of values? When reflecting on the confusion that the participants in the workshop experienced regarding the content of a Value Mission and Interaction Vision, and an expressed wish for more examples, there must be an issue of value categorization. Categories have been suggested in chapter 6 (p.237) as a result of analyzing the observed chosen keywords.

However, a pre-categorization and source of pre-defined values could assist the learning process when practicing the Value and Vision-based methodology. . This is supported by the request for examples of Value Missions and Interaction Visions put forward by participants in all workshops.

When one has never has dealt with these abstract entities in a development process, there is little chance of knowing what the *right* type of values is. The “right” type evokes emotions, as suggested by Kunde (2001) and Jensen (2002), and thus can be used in the Value Mission and Interaction Vision.



It is part of the operational knowledge of practicing the methodology to know when the right type of keyword is found. And as a further complexity, it is not only the single value keyword, but the constellation that has the possibility to evoke these emotions. This is observed by the phenomena of “field of tension” as described in chapter 6.

Having this source, a list, of possible values should only be used as a starting point. Whenever the users of the methodology gain a bearing on the useful type of words, they can invent and find new words.

### ***Creativity and innovation in the Vision-based methodology***

In chapter 2, p.28 the difference between creativity and innovation was discussed. The creative process uses the creators’ criteria, and the innovative processes use both the creators and the stakeholders’ criteria. There is no question that many of the methods in the methodology regarding the generation of ideas contain creative processes and aspects.

However, it raises a question of innovation in relation to the value and vision-based methodology. Nielsen (1999) states that the success of products depends on the values of the company expressed through the products’ *compliance* with the priorities of the consumers. This corresponds to the notion of innovation involving the stakeholders’ criteria.

The values used in the workshops were defined by the participants, based on their knowledge from the research they had carried out prior to the workshops. Especially in WS 2, this raised the question of validity of these values, as just being *decided* upon by the participants in the midst of the workshop. The values were not *reviewed* by management or *tested* on users during the workshop.

If the criteria for innovation should be met, the values in the Value Mission should correspond to the priorities of the user, *and* be evident in the product. The latter is a discussion of semiotic and product semantic that has not been dealt with specifically in this thesis.

This puts forward a question of how the methodology can be used to meet stakeholders’ criteria in a more specific way. Does it involve new methods or principles? Or is it a question of more research?



In addition to this, there is an interesting semantic discussion on how to make sure that the product expresses the values in an appropriate manner.

### ***Dismantling the framework***

As mentioned in chapter 2, the Vision-in-Product approach uses a term called “Deconstructing” (Hekkert, 1997). This notion is also found in design practice, by rephrasing the question of the design problem into a higher level of abstraction related to the function of the archetype of the product. This could be a design problem stating: “Design a new city-bike”. This could be rephrased into “Design a non-motorized, one-person vehicle”.

The intention is to break the mental frame of the perceived problem and thus the imagined solution. This would in theory allow for non-traditional ideas to emerge.

The mechanism of disconnecting the decision from the present framework and moving to a higher level of abstraction in search for new alternatives is similar to the idea of value-focused thinking formulated by Keeney (1992) as presented in chapter 2.

In the value and vision-based methodology in this thesis several attempts are carried out with a view to dismantling the existing framework.

The entire principal of the Value Mission and the Interaction Vision can be seen as an attempt to think about the design without dealing with the physical features and structures of the product. However in the procedures there is no direct dismantling of the existing framework. This is also indicated by the tendency in the workshops to describe “*what is*” instead of what “*could be*” when determining the keywords.

On a method level there are some problem oriented methods directed at dismantling the existing framework. Methods such as “What If?” are working by breaking the perception of the problem or solution (Method no. 7 in Appendix A). The session of generating ideas can be used to articulate and visualize the ideas about the solution that the participants have formed prior to the workshop. This allows for new ideas to be created, because the old ones are already formulated and logged.

However there are no direct principles or methods in the methodology targeted at dismantling the perception of the product-related design problem, before building a new perception through the Value Mission and Interaction Vision. This aspect might be very relevant to incorporate in the methodology.









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www2, [www.webster.com](http://www.webster.com), On-line dictionary

www3, [www.ideo.com](http://www.ideo.com)





## **9. Appendix:**

- A. Method descriptions
- B. Interview guide from WS2
- C. Important events in the research project
- D. Questionnaire from WS2
- E. Design brief from WS4



## (A) Methods in the methodology

These descriptions are identical to those presented at the workshops as slides and handouts.

### ***Problem oriented methods***

#### **1. Mind map**

*A brainstorm method using paper.*

Procedure:

- Place a large sheet of Paper in the middle of the table
- Note the subject in the center of the paper
- The team associates freely upon the subject (divergent thinking)
- All associations are noted down, no consensus seeking or analysis
- New words are noted and the links are marked with words already noted. The link itself can be named.
- Abstract is done through Post-it, defining the layer of analysis

Result:

- Overview of subject and related subjects
- Physical type of brainstorm, with progression documented.

#### **2. Abstracting from a mind map**

*Step by step extracting the essence.*

Procedure:

- Search for groups of concepts
- Search for overlaps between the groups
- Combine groups into new (and fewer) groups if feasible
- Concretize concepts
- Choose the most relevant

Result:

- Overview and the essence through keywords





3. Forced Relationship

*Generating ideas using random objects.*

Procedure:

- Place an object on the table
- The team compare the shape, structure, principals, methods of production, functions, etc. to their design problem
- Ideas are generated through this comparison; discussions are welcomed during this session.

Result:

- The line of thinking about the design problem is broken, thus challenging the framework of perception regarding the defined problem.

4. Reversed brainstorm

*Focusing on the problem leads to a solution.*

Procedure:

- The problem is formulated in positive terms (how to?)
- The problem is defined in negative terms (how not to?)
- Negative ideas are generated
- Positive ideas are developed from the negative ideas

Result:

- Breaking the framework regarding the perception of the problem

5. Brain pool writing

*Sketching in a group generating a common pool of ideas ideas.*

Procedure:

- Every participant has a pile of blank sheets of paper (A4/A3)
- One idea is noted on the sheet in the 'corner', making room for further comments and drawings. The paper is then placed in the middle of the table.
- When a participant runs out of ideas, a piece of paper is taken from the pool in the middle of the table and the idea on the paper is used for either improved or used as inspiration for a new idea.
- Variant: send the piece of paper clockwise around the table forcing the next person to work on the idea.



Result:

- Ideas are further developed and the process continues longer compared to working alone.

## 6. Sketching together

*Enhancing dialogue and communication.*

Procedure:

- The team sketch on the same piece of paper
- Discussing and commenting continuously and noting new ideas on the same piece of paper.

Result:

- More details and richness in the ideas.
- The team calibrates their perception and understanding of the idea.

## 7. "What if?"

*Suspending the framework of reality.*

Procedure:

- The team invents 10 mysterious and unrealistic conditions.
- Example: "What if there was no water?", "What if everybody only had one arm?", "What if there was no gravity?"
- Three conditions are selected for a forced relationship type of generating ideas.

Result:

- Suspension of framework
- New type of the ideas.

## 8. Converging analysis

*Judging ideas.*

Procedure:

- The team review their ideas and grade them:
- "+" Good ideas, comments strengths and challenges
- "?" Ideas with potential to be good
- "!" Ideas that produce inspiration, but are not useful in the context
- "%" useless ideas, normally around 90%.

Result:

- Overview of the pool of ideas and extraction of the best ideas.



9. Silent structuring

*Non-verbal sorting process in a group.*

Procedure:

- Ideas are noted on Post-Its, one pr. Post-It
- All participants place them on the wall
- Without talking they are to be categorized and headlines for the categories are made on large Post-Its. Everybody can move any Post-It as they see fit.

Result:

- No persons dominate the interpretation of a word or an idea in relation to the categorization and understanding of the idea.

10. Metaphor-Concept-Metaphor (MBM in Danish)

*A mind map variant; a process of divergent association that leads to precision of a keyword.*

Procedure:

- The team notes a keyword in the middle of a large piece of paper
- All possible metaphors that unfold the nuance of that key word are noted in the first round of association. – No consensus!
- For each metaphor, new possible keywords are derived, creating a second round of association.
- Then the appropriate metaphor that describes the intended and desired nuance of the keyword is chosen – this requires discussion, analysis and negotiation.

Result:

- Either the nuance of the keyword is defined, or another nearby keyword is found in the second round of association. If another keyword is chosen, the process must start over with the new keyword.
- Precision and shared understanding of the meaning of the keyword.



#### 11. Mental visualization

*Getting in contact with the emotional aspects.*

Procedure:

- The participants close their eyes and relax while sitting comfortable on the chairs.
- Facilitator tells a story revolving around an experience related to the subject of the design problem. Preferably from the childhood, that holds the strongest memories and emotions.
- The team discusses their impressions and emotions stemming from the story and memories.

Result:

- The participants get in touch with the emotional aspects of the problem, thus indirectly dealing with values.

#### 12. Dilemmas

*Creative tension.*

Procedure:

- The teams identify the contradictions within the desired qualities, or the opposite to the chosen qualities.
- The dilemmas are noted on the same piece of paper.
- These dilemmas can be used as a starting point for a session of generating ideas.

Result:

- Focus on fields of tension that can be used actively in the design process.

#### 13. Vision statement

*Condensing the values.*

Procedure:

- The Interaction Vision and the Value Mission are condensed into a single sentence expressing the vision and value basis for the product. (NOT mindlessly repeating the individual keywords.)

Result:

- Prerequisites a well developed feeling for the vision. If so, the vision can be used as a leading star for the design process.



#### 14. Relation map

*Mapping the value landscape between the stakeholders.*

Procedure:

- Choose 3 stakeholders.
- In sequence make a mind map of each stakeholders focusing on their values.
- Abstract the essence from each mind map by (Method 2)
- Identify the three most important values.
- Draw a map of the landscape with the product in the middle. Note the values for each stakeholder and identify their relations; signals to and demands from each other.
- Identify the values that the product should carry and support within this landscape.

Result:

- The participants are forced to consider the values for all (at least 3) stakeholders in relation to the Value Mission for the product.

#### ***Process oriented methods***

#### 15. Clapping game

*Focus and enthusiasm.*

Procedure:

- All participants form a circle on the floor.
- Facilitator sends a 'clap' one way.
- Participants clap their hands on both delivery and reception of a 'clap'.
- The speed is slowly increased.
- Step 2: facilitator send a clap the other way (the first is still running) above the head. Now claps are running both clock wise and counter clock wise in separate height.

Result:

- Focus and concentration
- Fun



## 16. Body sculpture

*Training the body language.*

Procedure:

- Each team has to make a static sculpture with their bodies.
- One in each team starts by assuming a position, the rest jumps in and finishes the sculpture – without talking!
- The exercise is repeated until every person in the team has tried to start the sculpture.

Result:

- Learns to build on others 'work'.
- Focus on intuition and improvisation – not thinking rationally, but acting fast.

## 17. The machine

*Playing a component through a moving sculpture*

Procedure:

- Each team has to make a dynamic machine with their bodies and sounds (not words).
- One in each team starts by assuming a position and making movements and noise, the rest jumps in and finishes the machine – without talking!
- The exercise is repeated until every person in the team has tried to start the machine.

Result:

- Learns to build on others 'work'.
- Focus on intuition and improvisation – not thinking rationally, but acting fast.

## 18. "Mirror"

*Detail versus overview*

Procedure:

- The participants team up in pairs and each pair faces each other standing close together.
- They take turn in leading – the other part mirrors the leading parts movements.
- Step 2: they move away from each other and repeats the exercise across the room.



Result:

- Coordination and collaboration
- Demonstrates the relationship between detail and overview in terms of perception.

19. “Flying”

*Working against inhibitions.*

Procedure:

- Each team selects a person that should be raised from the floor and moved around without assistance of any tools or objects.
- They take turn.

Result:

- Breaking inhibitions.

20. Drawing in pairs

*The lowest common denominator in consensus.*

Procedure:

- Facilitator tells a story about a house.
- The participants make a drawing of the house; in pairs, on the same piece of paper, holding the same pen (!) and without talking to each other.

Result:

- Training collaboration

21. Association sketching

*Warming up the associative mind flow.*

Procedure:

- In 2 minutes the participants should draw as many things as they associate with a certain words, revealed by the facilitator (e.g. circle) – NO words!
- After 2 minutes they swap their piece of paper with the person sitting next to them. Everybody notes what they think each drawing is.
- The papers are returned, and the number of right guesses is noted as a fraction of the total number of drawings. Example: 8/14.



Result:

- Pressure for creating new associations, getting into a flow.
- The fractions tell something of the speed of generating associations versus the thoroughness of drawing.

### **Presentation method**

#### 22. Moodboard

*Visual expression of keywords*

Procedure:

- The team makes a visual collage that represents their keywords, max. 9, usually around 3-5 words.
- Each picture/photo/image is carefully selected to express the exact nuance of the keyword that the team desires.
- Each word should be represented by no more than 3 pictures, otherwise the message is lost.

Result:

- Visual connection to the keywords

#### 23. Scenario play

*Expressing a value, quality or attitude through body language and a scenario. (non-verbal)*

Procedure:

- The team presents their keywords from the Interaction Vision (or Value Mission) through small scenario plays
- A scenario play is a short enactment without words that expresses a certain quality or value through body language and attitude.
- The plays are presented in front of the other teams, allowing them to comment on the plays before the keyword is revealed – this provides feedback to the acting team on association to their keyword.

Result:

- The team is forced to present a quality or value through an unusual media; this provokes new discussions about the precision and definition of their keyword.
- The scenario play can incorporate the factor of time and sequences, thus more efficiently express variations, actions and reactions.





## Appendix (A)





### **(B) Interview guide**

This interview guide was used for interviewing participants in WS2 approximately 1 month prior to the workshop. Translated from Danish to English:

#### **Background**

- Education
- Experience
- Role in the team; Enabler, critic, follower, bystander?
- Role in the team: Gardener, Jester, Conceptualizer, Challenger?
- The roles found in the design team?

#### **Product Concept**

- Concept definition? – Perception, examples...
- The origin of ideas? – Problem, need, technology, sales...
- Research phase and its impact on the concept?
- The objectives for ideas? – How are they established, who is involved?
- Developing ideas – your perception?
- Tools for developing concepts?
- Methodology for developing concepts: Dialog, sketching, modeling...?
- Design process: Iterative, Stage-gate, Linear, chaotic, learning process?
- Focus in developing concepts: Function, form, user needs...?
- Models and theories?



- Play?
- Creative environment?
- Atmosphere and physical surroundings?

### **Importance of organization?**

- Preferred form of organization? – Team, Pairs, cross disciplinary...
- The role of the client in the concept development? – sparring, research, "buyer"...
- The role of the user? – Source of ideas, developer, verification, inspiration...
- The role of management? – developing ideas, client, active, passive, visionary...

### **Communication**

- Communication between departments? – hierarchic, equal...
- Common reference? – models, process...
- Common understanding and misunderstandings? –focus, mental models...
- Typical conflicts – ways and areas?
- Preferred media of communication? – mail, models, telephone, meetings

### **Values**

- The Company's set of values?
- Is the philosophy used actively?
- Should any solution correspond to a particular image?
- Is there a defined set of values that the solution should be based upon?



- Positioning the product; process and role?
- The user's priorities and role?
- Are the clients set of values used actively?
- Are there emotional aspects in the requirements and specifications for the product, or only functions and features?

### **Vision**

- Establishing the objectives for the product: Who, how and when?
- Do you develop visions as part of the product concept development?
- Does visions precede specifications?





## **(C) Progression and important events in the PhD project**

**2000**

August

- First contact with Marianne Stokholm regarding the PhD project

December

- Attending a seminar organized by CID (Center for Integrated Design) with the theme “abstract concepts in research.”

**2001**

January

- Start of PhD project at Institute of Architecture and Design at Aalborg University.

January – December

- Literature study in design, decision-making and learning organizations.
- PhD courses in philosophy, facilitation and Integrated Design
- Interviews with three companies; a design studio, a Corporate Identity design studio and a software company. These interviews were later discarded, but they provided some insight into methods used in practice.

September

- First encounter with Erik Lerdahl; attending and participating in the innovation workshop for 7<sup>th</sup> semester in “Industrial Design” as a student.

October

- Organizing and facilitating a concept development workshop together with a 9<sup>th</sup> semester student, Michael Damkjær, as part of his semester project. The workshop was held as part of a development process at A.I. (Aalborg Industries) and provided practical insight into facilitating such a workshop.

December

- The final study program is finished.



## **2002**

### January- June

- PhD course in Design facilitation. Assisted in preparation of this course and had fruitful discussion with Erik Lerdahl, who organized the workshop part of the course.
- Contact to the company used in WS2 where established through one of the other participants in the PhD course in Facilitating Design.
- Organizing and facilitating a workshop at HIH (Herning Handels- og Ingeniørhøjskole) together with Michael Damkjær. This workshop provided training in facilitating a workshop in this context of Business Development Engineers.
- Revising research questions; discarding interviews with the companies in 2001 and focusing on Vision-based methodology as the focal point in investigating the value transformation.

### September

- Assisting Erik Lerdahl in facilitating the innovation workshop at 7<sup>th</sup> semester in “Industrial Design”. This is WS1 in the empirical material. Further discussions with Erik Lerdahl.
- Documenting WS1 – reflecting upon the methodology and facilitation.

### September-December

- Preparing for WS2. Interviews with participants and meetings with contact persons organizing and planning the workshop.
- 4 day workshop in December. This is WS2 in the empirical material.
- Giving a lecture at Aarhus School of Architecture as part of preparing a workshop in 2003 (WS4). Meetings with amanuensis Birgitte G. Jensen and visiting professor Jørgen Rasmussen.

## **2003**

### January-February

- Documenting WS2– reflecting upon the methodology and facilitation.

### March

- Workshop at HIH (WS3 in the empirical material). Organized and facilitated in collaboration with Michael Damkjær.





### April

- Documenting WS3– reflecting upon the methodology and facilitation.
- Workshop at Aarhus School of Architecture for 4<sup>th</sup> year Industrial Design students. This is WS4 in the empirical material. Preparation through meetings in the spring of 2003, and communication with the company involved in the workshop.

### May

- Documenting WS4 – reflecting upon the methodology and facilitation.

### August

- Started writing the thesis

### September

- Organizing and facilitating the Concept Development workshop at 7<sup>th</sup> semester in Industrial Design. Reflecting upon the methodology and facilitation.

### October

- PhD courses in Learning and writing scientific papers.

### November

- Organizing and facilitating a short workshop for colleagues teaching Industrial Design at the Institute for Architecture and Design. The aim was defining the research strategy in Industrial Design and define possible research project.
- First Draft of thesis finished

### December (2003)-January (2004)

- Getting feedback from Professor Marianne Stokholm on the thesis. Revising and finishing the thesis.





## **(D) Questionnaire**

This questionnaire was used in WS2. It was e-mailed to the participants three months after the workshop. Translated from Danish:

### ***General***

1. Your general attitude towards the workshop in December?
2. Looking back three months later, which three things is clearest in your mind?
3. Is there anything from the workshop (methods, concepts, approach) that you have adopted in your daily work?

### ***Research and knowledge***

4. Do you think the level of knowledge and research was appropriate in your team?
  - If not, what was missing?
5. What role did external contacts (nurse, doctor, user) play?

### ***Process***

6. What is your attitude towards the process in general?
7. How was the theory and methods communicated?
8. How was the facilitation, was there enough support in both process and methods?
9. Were you aware of the progress of the methodology at all times during the workshop?
10. What would help you gain an overview of phases, methods and levels of abstraction?
11. Do you feel that you completely understand everything that happened at the workshop?
12. How are you general attitude towards being in the midst of chaos, in a process where the result is unknown?

### ***Method***

13. What is your attitude towards focusing specifically on values during a session of concept development?



14. Have you adopted any methods from the workshop into your daily routines and tasks?
15. Has the Pyramid model changed your perception of products and development of product concepts?
16. Is there any of the used methods that seems appealing but not directly useful to you– if yes; why?
17. Did you miss any type of methods?

**Concepts**

18. Can you at present moment explain the concepts vision and mission?
19. What is a Value Mission?
20. What is the relation between product qualities and Value Mission?

**Concept development**

21. Did the workshop change your point of view regarding the origin of ideas for product concepts?
22. Did the workshop change your point of view on the relation between play and product concept development?
23. Did the workshop change your point of view on the aspects that should be a part of the concept development process?

**Organization and communication**

24. Has the focus on values in concept development any impact on the manning of the team?
25. Can a value and vision-based methodology be used actively in the later phases of product development?
26. has it any impact on the communication of product ideas that they are based on a Value Mission and a vision?

**Values**

27. Did you change your perception of values of B&O Medicom, the clients or the users during the workshop?



28. Do you think that the understanding of the values behind a product can be used actively in the decision making – if so, how?

***Vision***

29. What comes first, vision or specifications?

30. What is the role of the vision in the concepts development process?

31. Is the vision a tool that you would consider using again?

***The result***

32. Can you detect any relation between the values from the Value Mission and the present product concept?

33. Can you detect any relation between the vision and the present product concept?



## **(E) Design brief for WS4**

Translated from Danish:

Sponsored assignment in collaboration with Orlik Tobacco Company A/S (OTC).

April 2003, ID department, AAA

### ***Background***

OTC is a company producing and selling tobacco, mainly for pipes, coarse cut, but also for home-made cigarettes, fine cut, in a number of countries around the world..

In general the number of smokers has decreased in the past years. Similar the percentage of pipe smokers has decreased and OTC is facing a problematic future if the tendency continues. Therefore OTC wishes to make an effort of recreating the interest for smoking pipe. In that way, market shares from the popular cigarette should be conquered.

### ***Assignment***

The segment of particular interest for is the younger trendy segment of the public between 20-30 years that at present smokes cigarettes. They need to see OTC with a new image. This group has not experienced the time of boom for pipe smoking and has no natural approach to smoking a pipe instead of cigarettes.

The target groups' perception of pipe smokers is not in line with their own values and attitudes. They relate to other role-models and smokes to be "with-it" like these role-models.

OTC wishes to make pipe smoking trendy for the target group of young people between 20 and 30!

The assignment is therefore to develop that scenario, where it is natural for the target group to sit at a café and smoke coarse cut tobacco in some way. That means the scenario with a specified sequence, where the user relates to the factors intrinsic to smoking tobacco. Choice of Brand, the process in preparing the consumption and the consumption it self. Typical questions to be answered would be:

- Why does he/she purchase Orlik?
- How does the packaging from OTC function?
- How is the unpacking and presentation to friends?
- How is OTC consumes, how does the trendy smoking device look?



The success criteria are proportional with the degree of innovation and differentiation compared to existing processes and in particular smoking devices.

To clarify these questions and rethink a company Brand, it is necessary to understand the company values and their visions.

### **Course of events**

In preparing for this assignment Frank H. Christoffersen will present the company at the visit to OTC in Assens. He will also describe the assignment and be at your disposal for providing further information.

Based on the assignment and the information from OTC Christian Tollestrup will hold a 3 day workshop on how you with a starting point in the values of the company, the user and other stakeholders can create a value base for a product and continue the development based on these values.

The outcome of this workshop will be the basis for the continued development of OTC new identity and answering the posed questions.

During the workshop the work will be organized in teams, however the assignment will be completed individually in the following week.

At the final presentation each student will, in pictures and text, present the idea and concept of the suggested solution. Equally the various product parts will be presented as design elements.

### Timetable

Tuesday 22.04	9:15.-?	Excursion to OTC, Assens.
Wednesday 23.04	9:15-17	Presentation by Christian Tollestrup Working in teams of 4 persons
Thursday 24.04	10:00 11:30 13:00	Presentation by the teams Lecture by e-type Working in teams with vision and concept
Friday 25.04	13:00	Presenting vision and concept
Monday 28.04	13:00	Lecture by ECCO
Friday 02.05	9:15	Presentation for OTC