Semiotics, quality, and user experiences in a cultural perspective

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Introduction

To improve knowledge about how to design appropriate products which are perceived as pleasurable by the indented users, it is necessary to understand the concepts of semiotics, quality, and user experiences in a cultural context. Cultural awareness can be an important aspect for increasing user satisfaction. A person's identity is strongly related to his or her culture. Culturally adapted products can reflect peoples' identity and help them find something which is in harmony with their own culture and lifestyle. (Razzaghi & Raminez, 2006) The very concept of pleasurability, usability, and aesthetic experience is based on cultural and social aspects. (Norman, 2002)

In this article the importance of awareness of cultural and social need in product development is illustrated through the design of a below knee prosthesis for underprivileged children in India and Nepal. All too often in development aid it is believed that products should solve only specific functional problems. Non-physical properties which are beyond the scope of technical functionality and user friendliness are seldom considered. Assistive devices are often, as with crutches and prosthesis, extensions of the users' bodies. The users are usually dependent on these products but they also wish not to separate themselves too much from other people and to be accepted as regular members of society. (Werner, 1998) Designing assistive devices therefore requires good understanding of the society and culture that the products are supposed to fit in. This article uses the development of artificial legs as a case example, but similar considerations are important in most product development.

This article investigates the impact of social and cultural issues on semiotics, quality, and user experiences within the framework of human perception, ontology and epistemology. Human perception is here defined as "the process whereby sensory stimulation is translated into organised experience. The experience, or percept, is the joint product of the stimulation and of the process itself. " (Britannica Encyclopedia, 2006) In resemblance with the social anthropologist Almklov (2005), I choose to use the terms epistemology and ontology in a simplified way: Ontology is"what you know" and epistemology is "how you know it". In this article the quality of a product is understood as how the users perceive it and is hence inseparably connected to user experiences and satisfaction.

In the following sections there will be presented three non-physical views on products to give a wider, more overall understanding of how objects are perceived. The analyses provide a foundation for alternative ways to understand semiotics, quality, and user experience in product development.
First a common view with focus on physical properties will be presented.

The Perception of Quality is controlled by the Properties of the Product

The communication between the user and the product is often believed to have one direction; from the product to the user. In the model illustrated in *figure 1* what we perceive is exactly the same as the image we receive on our retina when looking at our surroundings.

This way of interpreting human perception indicates that designers, engineers and others involved in the development of a product can fully control its quality, the way the users experiences the product, in this case a prosthetic leg, by giving it certain properties. Hence quality is seen as being an attribute of the product. Moreover the quality which is materialised through physical and functional properties will be perfectly mirrored in the users' minds.

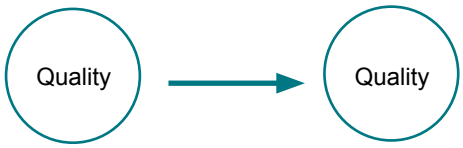

Figure 1: Unilateral Influence model

According to the model in *figure 1*, which I have called the Unilateral Influence Model, the design challenge is reduced to the understanding and anticipation of what the intended users want – to detect which physical properties of the product are desirable for the users based on functional, economical, emotional, or aesthetical reasons. These properties can then be further developed, and less desired characteristics can be changed. In the case of the prosthetic leg it was among other things found that Indian and Nepalese users wanted a product which was durable, had light weight, and looked like a natural leg. These are specific desires and needs which can be fulfilled by giving the prosthesis certain physical properties.

Although a large part of the design challenge is to interpret what users want and design a product accordingly, the Unilateral Influence Model is based on a too simple view on human perception. The understanding of quality is highly subjective and cannot be communicated directly without any distortions between product and perceiver. Users will interpret physical properties differently based on individual, social and cultural values, and taste. Each user will have their own experience of the product and its use. From this perspective, neither the product developers' nor the users' perception is objective.

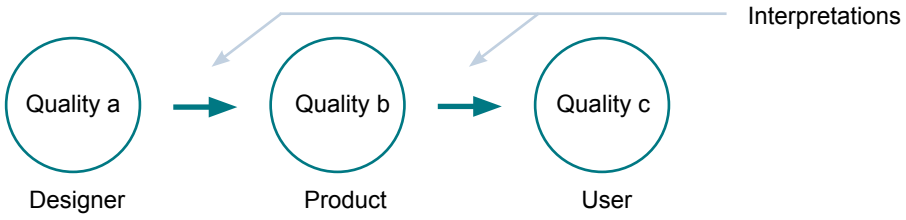

Figure 2: Products and their quality cannot be perceived objectively

The Perception of Quality is created through connections between Product Properties and individual Pre-Understanding

Another point of view than the one represented by the Unilateral Influence model, is that the properties that determine how a product is perceived are both in the perceiver and the product itself. As argued by Bohm and Peat (2000, pp. 64): "What we 'see' is as much a product of previous knowledge as of incoming visual data."

The perception of an object is never a mere reflection of its visual appearance but is affected by the qualities we inscribe to it based on our pre-understanding; previous experiences, prejudice, cultural background, associations, biases, and so on. What we perceive is a creation or construction that takes place through connections between incoming impressions and memory. (Almklov, 2005)

Kant (1790) believed that it is the mind of the subject and its representations of the world that makes the object understandable, rather than the object that makes the representations possible. This introduced the human mind as an active originator of experience rather than just a passive recipient of perception. Perceptual input must be processed and recognised; otherwise it will not make any sense. In Kant's terminology, the human mind has only a perception and knowledge of the phenomena of nature, while the things-in-themselves remain inaccessible to us. This division between phenomena and things-in-themselves led Kant to formulate some objective conditions of knowledge.

The German philosopher Gadamer (1975) did not agree with Kant on that the understanding of our surroundings is limited to objective conditions that make knowledge possible. He instead argued that knowledge is gained through a long process of interpretation, which is neither subjective nor objective since it involves an interaction between both the subject and the object to be interpreted. For Gadamer absolutely everything is open to interpretation. Language has a central role in the process of interpretation, but consists of no set of "rules" that can establish the objective criteria of understanding.

In "Truth and Method" Gadamer (1975) writes about the universal practice of understanding through interpretations. When we interpret something we do it in the framework of a pre-ontological understanding. For us to be able to interpret something, we must already find ourselves in the world along with the phenomena which are to be understood. We always meet a phenomenon with a pre-understanding. Even if something mysterious and utterly unknown landed from out of space, we would still perceive it by relating it to our previous experiences. If we do not have some sort of pre-understanding of a phenomenon it cannot be seen as something to be understood. Since everything could be subject to interpretation, and there is no absolute objective truth as such, the relationship between understanding and pre-understanding is an ongoing dynamic process. When we interpret something we approach it with our pre-understanding and the experience gives us a new understanding which is our pre-understanding when we interpret an additional experience. This is called the hermeneutic circle.

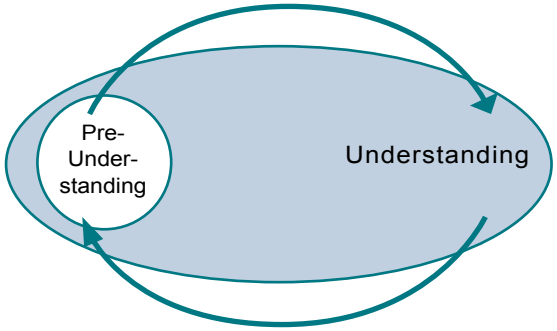

Figure 3: The hermeneutic circle.

When we have the same experiences several times we connect events. Two experiences are never exactly the same. However, humans have the ability to generalise and extract abstracted meaning from our sensory inputs. For instance a human being may learn that long, loud wailing audio signals imply danger, such as the warning from a fire bell or a police siren. This does not necessarily imply that the sound literally means danger or is exactly the same as previous sounds he or she has heard, but in addition to generalise the content of our impressions, we have the ability to interpret metaphors. The human being in the example might have heard similar sounds before used as warning signals, and he or she might perceive the signals as a metaphor for threat. Our pre-understanding, based among others on prior experiences, will always affect how new sensations are interpreted. Based on this argumentation, the British anthropologist Gregory Bateson (1991) concludes that an object cannot be viewed independently from the perceiver's pre-understanding.

An example of how individual pre-understanding affects user experiences and satisfaction can be demonstrated through the case of Rajawal. Rajawal is a nine year old boy which I interviewed in Bangalore. He was born with a congenital limb deficiency and has been using a prosthetic leg since he was nine moths old. Children grow fast and may require a new prosthesis up to four times a year. Rajawal's current prosthetic leg is made of polyethylene but his earlier prostheses were made of aluminium and wood. The old prostheses were heavy and the aluminium felt hard and uncomfortable against the residual limb. The bad memories of the previous prostheses were clearly visible in Rajawal's face when he explained why he prefers polyethylene over aluminium sockets. Due to Rajawal's personal pre-experience he may be sceptical about a new prosthesis design which comprises of aluminium components even though it may be superior to his current plastic leg in terms of physical properties.

An extreme consequence of the view presented by Bateson (1972) is that meaning is entirely subjective since it is constructed through individual experiences. Two persons can never have the exact same experiences; therefore we cannot assume that users perceive products the same way. This apprehension obviously implies that product developers can never control how users understand the quality of a product as each individual will have his or her own personal opinions. At best products can be tailored to match the preferences of as many users as possible.

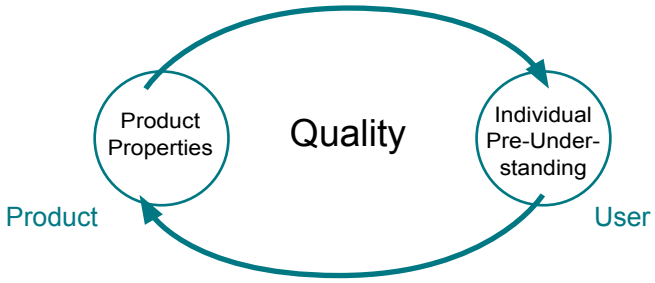

Figure 4: Bilateral Influence Model

In what I have called the Bilateral Influence model (*figure 4*), the communication has two directions, since both the product and the perceiver affect each other. The influence is perpetual, dynamic, and circular in the sense that the first moments of experiencing a product will create a new pre-understanding and influence the next moments of experience and the circumstance of it. The perception of quality is hence formed through the interplay between the user's pre-understanding (the subject) and the physical product (the object).

The Bilateral Influence Model acknowledges that we interpret things differently. When interviewing prostheses users in India and Nepal, it was certainly clear that opinions and attitudes differ on an individual level. One mother, for example, seemed depressed since her only son was disabled. She stressed that her son could never have a normal life. Another mother, on the other hand, felt her son was as active and athletic as other children and did not see his disability as a limitation for his opportunities. However, in spite of individual differences it is still possible to see tendencies on a social and cultural level. In my experience, the general view on disability issues in India is different from the general view in Norway. In India you can see many people with disability begging on the streets, and disability is seen as a legitimate reason for begging. This attitude affects both disabled and non-disabled people and can interfere with rehabilitation. Basavaraju, the director of The Association of People with Disability in Bangalore, thinks the most important part of the rehabilitation process is to make a person believe that he or she can to a large extent gain independency, and does not have to rely on others for survival. (V.S.Basavaraju, personal contact, May 5, 2006) In Norway, beggars are usually drug addicts. The country's economical structure and social scheme makes it unnecessary for disabled people to beg. Recently foreign, organised gangs of beggars have come to the capital. Many of them hold crutches to evoke sympathy. Clearly they have not understood cultural codes; in Norway there is no tradition for disabled people to beg on the streets and people do not feel that they have to give money to someone due to their disability.

The Perception of Quality is created through Connections between Social and Cultural Aspects and Product Properties

Even though two individuals can never have identical experiences throughout their lifetime, it is evident that within a society people tend to have a somewhat coordinated understanding of the world. Almost all modern literature on social anthropology agrees that a culture can be viewed as self reflective systems with internal logic. There is a certain cultural grammar within a society that helps us to communicate with each other, even though we probably do not interpret experiences exactly the same way. (Almkov, 2005)

Gadamer (1975) promoted the idea that our biases and beliefs are the product of our history. He used the term horizon for the totality of all that can be realised or thought about by a person at a given time in history and in a particular culture. The horizon thus includes everything that can be seen from a particular vantage point, and nothing more. Our pre-understanding, or prejudices as Gadamer sometimes calls it, do not merely arise from ourselves. It is rather a consequence of all that has gone before; the pre-existing worldview that our parents, neighbors, and nation had. "Understanding is not to be thought of so much as an action of one's subjectivity, but as the placing of oneself within a process of tradition, in which past and present are constantly fused." (Gadamer 1975, pp.258) Interpretation becomes "validated" within a certain "community" through "consensus," while remaining open to other possible interpretations. Since the members of a society share history, interpretations are not utterly subjective.

A society is a self reproducing group of individuals which have its own distinctive culture and institution and is occupying a particular territory. The word society may refer to a particular people, such as the Tamils, to a nation state, such as India, or to a broader cultural group, such as the South Asian society. The word culture generally refers to patterns of human activity and the symbolic structures that give such activity significance. (Oxford English Dictionary, 2006)

In "How societies remember" Connerton (1989) describes how ceremonies and rituals commemorate special events and give members of a group, or a society, common memories. The rituals serve as tools for remembering the events and to talk about them. This gives further basis for understanding also other experiences in somewhat similar ways within a community.

Almklov believes that rituals, along with other types of experiences, create our mental schemas; shapes and patterns that influence how we construct our reality. He explains this by using an example with how we are trained to interpret perspective in a two-dimensional drawing. The cube in *figure 5* can be understood in two different ways as indicated by the thicker lines. The way we "read" perspective is also related to our culture. Within a culture we learn to see things in a certain way. Almklov draws a parallel between important common experiences as rituals and the thick lines. They create reference points which influence how we interpret the thin lines. The thick lines do not only indicate what we should see (ontology) but also how we should see it (epistemology). In a similar way important shared events will

affect how our individual experiences are analysed and understood. A culture's epistemological principles will affect our individual epistemology and ontology.

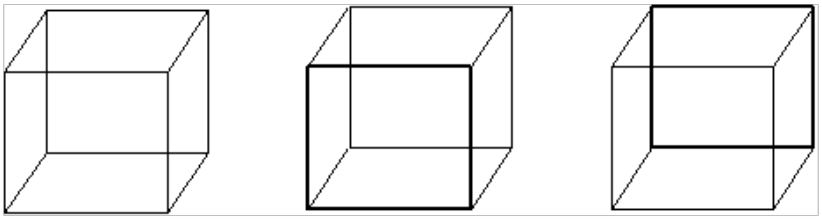

Figure 5: The cube to the left can be interpreted in different ways. The thicker lines indicate two possible interpretations of what is the "front" of the cube. (Almkov, 2005, pp. 7)

Even though prosthetic limbs are often regarded as mere technical products, cultural and social aspects do influence how such products are perceived by their users. Low cost, simple prosthetic legs in India and Nepal often have a leather belt that holds the prosthesis to the residual limb. Many Hindus regard leather as an impure material. Consequently, many Indian and Nepalese prosthesis users are denied entry to temples, and even private homes. Many Indian and Nepalese women wear toe rings as a symbol of being married. Women also have black threads around their toes as a protection against evil spirits. A prosthetic foot which is not adequate for allowing the user to wear toe rings or bind treads around the toes does not have cultural and social sensitive design.

As opposed to the previous model, in the Multilateral Influence model (*figure 5*), the individual is not viewed isolated but within a cultural and social context. By belonging to the same culture and society we develop a shared pre-understanding that let us see our surrounding world in a similar manner. An understanding of the quality of a product is also here developed through an interaction between physical properties of products and the users, but the users' pre-understanding is a result of the society and culture they live in. Society and culture affect each individual's epistemology and ontology. In this framework product developers will be able to make products which the users find satisfactory, as long as they have sufficient knowledge about the society and the culture of the users.

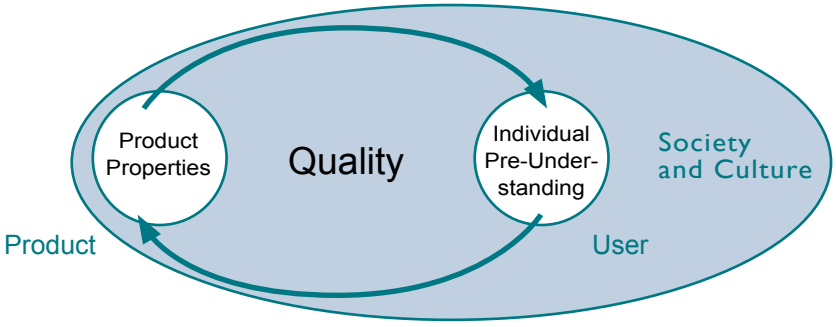

Figure 6: Multilateral Influence Model

The Perception of Quality is created through Connections between Product Properties, individual Pre-Understanding, and Social and Cultural Aspects

So far three ways in understanding a product and the perception of its quality have been presented. All these views represent different models, and accordingly different ways of interpreting our surrounding world. The first model has a more physical angle than the two others. Its foundation is that the characteristics of a product entirely affect how we perceive the product itself. The other two models include the impact of pre-understanding; the belief that our previous experiences have an effect on how a product, a new experience, will be perceived. They are distinguished from each other by their view on experiences as being merely individual or within a cultural and social framework.

The questions of ontology and epistemology are complex. A model will never be able to fully grasp this complexity, but can only provide simplified interpretations of some aspects of human perception. Instead of selecting a model, I wish to combine them, since they can be complementary to each other when we want to understand how quality is perceived and how we should develop good products. The properties of a product will indeed affect how a product is perceived. Otherwise there would be no need for engineers and designers to teach the skills of product development. When we communicate through words, for example, although our pre-understanding will affect how we understand each other, it is not indifferent which words we choose to use. We are taught some general "rules" for how to express oneself. Similarly, cultural and social factors determine what product properties are appropriate for a user group. However, product developers can never fully control how all intended users perceive a product. All individuals will have their own interpretation because of their personal experiences and pre-understanding; there is always a chance of not liking a product which all your friends find attractive. Furthermore, individual pre-understanding is to a large extent affected by cultural epistemological principles. It is therefore necessary to have good understanding of cultural factors when products are made.

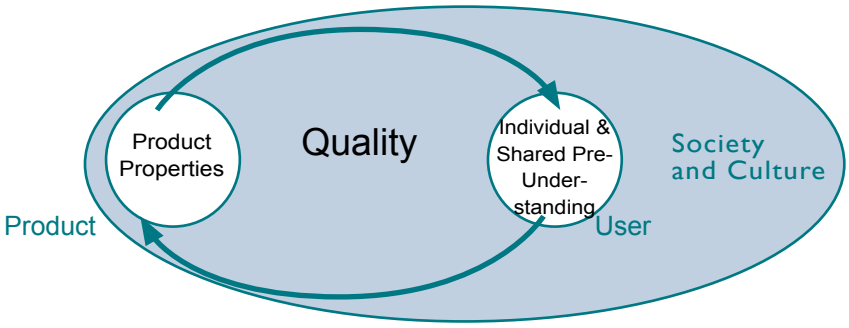

Figure 7: Integrated Influence Model

When the three models are put together, we get a new model which I call the Intergraded Influence Model (*figure 7*). In this model individual as well as

shared pre-understanding, along with the physical properties of an object, will determine how we perceive the quality of the object. The product, individual, society, and culture have reciprocal influence on each other. This can be demonstrated through the case of a prosthetic leg: The physical properties of a prosthesis indeed affect the user's possibility for independent mobility. The physical properties also influence the user's aesthetical experience of the product and the semiotic interpretation of it. However, in the Integrated Influence Model, it is not merely the physical properties that determine the user's experience and interpretation of the product. The user's previous experiences, knowledge, prejudices etc. are all prerequisites for the interpretation. A prosthetic limb is a very personal product that has to be tailored to each individual's physical as well as emotional needs. Studies show that users even within a country have very different views on their prosthetic appliances. Some users feel that the prosthesis is almost like a part of their body, while others view it only as a tool. This may be reflected in the way they want their prosthetic leg to look like; like a natural leg or like a technical appliance without any cosmetic covering. (Murray, 2004) This is an illustrative example of how individual pre-understanding influences the interpretation of semiotics and aesthetics. Additionally, a person's pre-understanding is not independent of cultural and social contexts. Whether or not we think it is acceptable to eat dogs, for example, is highly influenced by the culture we belong to. We are taught to have certain views on various aspects. Not all Hindus are vegetarians or avoid animal products such as leather. However, the notion that leather is impure is strongly related to Indian and Nepalese culture. Moreover, if prosthesis users are denied entry to temples and deprived of their right to take part in religious ceremonies due to a the leather belt used on prostheses, this can indeed influence their interpretation of the product no matter how they themselves may feel about leather. In an Indian and Nepalese cultural context the use of leather is clearly not an appropriate solution, but this may be a good choice of material in another developing country.

Conclusion

The perception of a product's quality is a continuous ongoing process between a product and its perceiver. This implies that the products physical properties as well as the users pre-understanding and individual interpretation affect the interpretation of the product. Moreover, the cultural and social context for the use will affect the userexperience. The Integrated Influence Model gives a visual representation of the complex relationships involved in the perception of a product. The model seeks to motivate designers to have a holistic approach to product development by acknowledging that physical product properties alone do not control the quality of the product.

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