As a starting point some considerations from Peircean thinking will be presented. The Peircean sign conception will be outlined as looked upon from a design point of view. Thus, e.g. the index brings an actual connection into the human experience and the interpretation of things, which is too little dealt with. Other modes of signs refer to other contents and signify respectively. Peirce’s semiotics does not split the inner and outer into separate domains, but conceives them in mutual interaction. Furthermore, one may ask what feelings a design product awakens.

The article concludes by outlining a work in progress, which will approach care homes for elderly people by means of Peircean semiotics.

**KEYWORDS:** DESIGN SEMIOTICS, PEIRCE, DESIGN PRODUCTS, ELDERLY CARE HOME


Cet exposé conclut en présentant un projet en cours de réalisation qui étudie les maisons pour personnes âgées du point de vue de la sémiotique de Peirce.

**MOTS-CLÉS:** DESIGN PRODUITS, PEIRCE, SÉMIOTIQUE DU DESIGN, ENVIRONNEMENT DE SOINS DES PERSONNES ÂGÉES

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An entire culture can be recognised on the basis of the design of its product environment, because that environment embodies human conceptions and values. However, design is not exclusively about the professionally planned artefact. This is a fascinating and also a key question for designers, who play a part in constructing the environment. Design research must look for ways to integrate and understand people’s choices, attitudes, and expectations in order to be able to improve the outcome of design.

Semiotics is the study of meaning formation, signification and communication. It is also an umbrella term for several research approaches. To begin with, it is worth noting that there are two or three quite disparate traditions in modern semiotics, and all have been applied to the study of artefacts in the built environment. The so-called American tradition starts with the thinking of Charles S. Peirce and the other, the so-called continental tradition, is based on the Swiss linguist Ferdinand de Saussure’s ideas about language. Both traditions have produced a vast amount of scholarly texts and discussions, some of which are well-known worldwide. In addition to these two, the tradition of the so-called Paris School established by A. G. Greimas deserves separate mention because of its specific characteristics and terminology. The traditions sometimes seem to include incompatible ways of thinking; hence, it is necessary to be aware of the basic assumptions of a text, or it may be impossible to pull the arguments together.

In this article, the reader will be introduced to procedures mainly based on Peirce’s philosophical assumptions, which offer opportunities for a design researcher to gain knowledge and deeper insights about the interpretation of product characteristics and how material artefacts interact with humans. Someone may still wonder: what is the point of bothering with such analyses, particularly if one conceives of design as the technical and practical construction of artefacts and their marketing? If design is seen chiefly as a practical undertaking the purpose of which is to provide people with affordable tools, semiotic scrutiny would indeed appear a superfluous undertaking.

A Design Conception

The core argument of the article is in fact that signification and the analyses of semantic features are central to the trade. Technical expertise, business knowledge and other competencies are generally all represented in design teamwork nowadays. The role of designers may vary according to the task and context at hand, but they must nevertheless claim for themselves a speciality that cannot be replaced by engineers, economists or other experts. According to a familiar

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2 They, in turn, will design the product somehow anyway.
Positioning the Design Semiotic Approach

To illustrate the design conception in question, a schematic division into three basic dimensions is indicating the material, technological and use-related dimensions. No doubt all three dimensions need careful consideration, and are explicated and argued in design briefs and later in the presentation of design options. These dimensions can be termed as the material, the syntax, and the pragmatics of design. Is this all, however? Does this schematic really describe design by means of its relevant characteristics? In the view argued in this article, this is only the beginning.

In an actual design situation, the designer reflects on many issues and demands, because there are an enormous variety of options in any case. What kind of arguments and visions could a designer aim at, other than fulfilling technical functions and practical use-related demands? These are the key questions to be answered if design is seen as a field that comprises more than just solving problems of material, technical construction, and usability. A fourth dimension can be added to the scheme: the expressive, signifying and communicative called the semantic dimension.

A designer reflects upon such questions as why draw a line or add a particular kind of colour into the assignment at hand. Someone concerned with design may ask, why does iPod seem cool to so many people? Why do people prefer flower decorations on their teacups, or wrap their gifts in glossy paper? Why are fast motorboats often white in colour? Why do companies spend money on new logos or bother about exhibition design? Why do some places seem more cosy and inviting than others? Surely the design of artefacts wishes to reach some aims and draw attention to them, and also to communicate contents, increase some specific effect and style, etc. It is clear that design always comprises a semantic dimension which is not measurable in the same way as the other three, because semantic analysis is about interpretation, which requires other means for its study.

The interpretation of the design outcome can be studied from many different positions: that of the designers’, the users’, the producers’, that of a group, a larger cultural community or society, and so on. A study of the semantic aspect
of design would therefore need its viewpoint to be positioned so as to avoid the fallacy of a (non-existent) neutral observer or “the god’s eye view”, which results in excessively broad generalisations.

However, these theoretical considerations are not enough to cover the entire complexity of a design activity and the aspects of its outcome. One more dimension needs to be added, namely the aesthetic one as illustrated in Figure 1.

![Figure 1. The five dimensions of design. Accordingly, a design outcome can be studied from five perspectives using relevant methods respectively.](image)

It follows that the semantic and the aesthetic dimension are conceived as separate facets of the product, which may further assist the analysis. If we examine the design process with the two dimensions merged, important characteristic are easily overlooked. Value-laden aesthetic feelings may come to dominate semantics, which is then ignored. For example, an aversion against walkers may obstruct an analysis of the formal qualities of the walker as a tool.

The five dimensions presented above might possibly be complemented by still other ones, or they could be further divided into more detailed ones as necessary. Here the point is only to draw attention to the complexity and broadness of design, which embraces very diverse dimensions that require appropriate methodological and conceptual tools for their research.3 Especially in design, it easily seems that

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3 I have previously (Vihma 1995) touched upon this schematic division. The idea was inspired by my
material, syntax, and pragmatics constitute the basics upon which semantics has to be formed. However, this is a too simplified notion.\textsuperscript{4}

Up to this point, not much has been said about semiotics in connection with the schematic above. Only the term \textit{semantic} has been brought up. The semantic has been discussed as a dimension. It could also be called a field of inquiry, a topic that calls for specific approaches and concepts. As a theoretical undertaking, semiotics seems to offer suitable methods for studying this field.\textsuperscript{5} However, in the history of design research, different approaches have also been introduced to examine semantics, not all of which have been called semiotic.

\textbf{A Brief Introduction to Peircean Concepts from a Design Research Perspective}

One inspiring starting point is the semiotic concept of sign. Charles Peirce wrote an introductory text precisely about this idea, entitled \textit{What Is a Sign?}\textsuperscript{6}, which is recommended reading for anyone interested in his philosophy. For the purposes of design research, it is perhaps sufficient to say that the concept of the semiotic sign both initiates a theory and explicates its basic assumptions. In semiotics, a sign represents something in some capacity, when it is interpreted.\textsuperscript{7} It follows that a sign consists of relations between three components: that which represents (\textit{Representamen}) something (the \textit{content}), and the interpretative act. In semiotic literature, these elements are named Representamen R, something O (the Object to which R refers), and \textit{interpretant} I (which is an ongoing process, not to be confused with any individual interpreter). The concept of sign is thus seen as consisting of relations between R, O and I, a triadic configuration that cannot be reduced any further. In an act of interpretation, a person generates reference relations of different kinds. A sign is not a thing, but a theory about relations. The Peircean sign consists of reference relations and interpretation of these relations. For example, when someone looks at a door, s/he may see the possibility to enter; the door may \textit{afford} entering, to use Gibson’s term\textsuperscript{8}. Nonetheless, the door refers not only to a possibility of action, the opening of the door and the

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\textsuperscript{4} It is not possible here to go deeper into the interdependence and hierarchy of the dimensions in a design analysis.

\textsuperscript{5} In my experience, students often need to ask about the difference between semantics and semiotics. Semantics here denotes a dimension or a field; semiotics in turn, is a theoretical approach into this field.

\textsuperscript{6} Peirce, MS 404. Published in part in \textit{CP} 2.281, 2.285, and 2. 297–2.302.

\textsuperscript{7} «A sign or representamen, is something which stands to somebody for something in some respect or capacity»(\textit{CP} 2.228)

\textsuperscript{8} Gibson 1976.
possibility to enter, but also to other issues (other contents, O). The sign refers not only to actual possibilities of human action, but also to a complexity of issues evolving through time by virtue of the interpretative act. A string of signs evolves. Interpretation produces various kinds of contents and is “productive labour”, as formulated by Eco (1979).

The complexity of reference relations makes the sign a useful theoretical tool for analysis, but also tricky one. Let us look closer at the example of the door. Through its material qualities, its shape, colour, constitution, components (syntax), and so on, the door may refer to (represent the possibility of) pulling, welcoming, calmness, authority, as well as other attitudes and emotions. The semantic qualities materialise for anyone who perceives and uses the door. Humans not only see and act; we also react and interpret simultaneously. Therefore, it seems important to design the door so that its reference relations meet people’s needs, wants, expectations and values.

Reference Relations Designed into Products

A product as a sign, then, refers not only to functional properties, but allows interpretation to embrace many other qualities as well. That is precisely why the semiotic sign is so useful for semantic analysis. Peirce discusses three different modes of reference relations: the iconic, the indexical, and the symbolic. Most of the semantic analyses used in design research focus on just one of these, namely the symbolic mode, or they persist in looking at the functional qualities in order to improve the ease and effectiveness of use, thus omitting other possible features. Peirce’s concepts, however, seem to open up a more versatile interpretation, one that would seem to suit design analyses better.

Nothing is a sign unless it is interpreted as a sign. The grounds of reference relations are different, which is noteworthy, and this is what distinguishes the Peircean approach from many others. The first mode, called iconic, is likeness. The reference relation consists of common qualities, and this association is created by an interpreting mind. Metaphors, for example, are iconic references. In addition to linguistic metaphors, visual metaphors can be produced. For example, a material product can be seen as showing a face or a facial expression when it is interpreted as a sign. A door can be said to refer to a facial expression (associated with it) and to have features in common with a face. A material product can be conceived as assuming a pose which resembles a human posture. By virtue of this association the product is said to express an attitude, an emotion, a style, tradi-

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9 CP 2.307–2.308
10 CP 2.228 and 1.555–1.558.
tion, etc. Even solid static material objects can seem to move forward or slink. In this way they acquire characteristics which are not related to their actual practical function, but ascribe expressive and representational attributes to them. Products are thus perceived (metaphorically) as active, smiling, joyful, dull, sad or exciting.

*Metonymy* is an apparently important concept, though less used in design theory. In design, the interpretation of metonymic relation is based on the proximity of objects. Qualities from one nearby object seem to be transferred to the other one with the help of likeness, one influencing the other. In painting, photography and graphic design, such as in advertising, metonymic relations are often used as an artistic means of emphasising a specific content (reference relation) in the composition, such as a power relation. However, in the design of the product environment it is hardly examined at all.

The second mode, the indexical sign, is an actual connection between the representation (R) and its cause (O). This mode of reference is usually left out in design analyses. It seems crucial, however, because it in fact links the semantic dimension of the product to its material, syntax, and pragmatic foundation. The third mode, called the symbolic, is grounded on agreement and has to be learned. Interpretation of symbolic content cannot be deduced just by perceiving the object. Peirce’s semiotics does not split the inner and outer into separate domains, but conceives them in mutual interaction: “The mind is not a receptacle, which if a thing is in, it ceases to be out of.” Furthermore, one may ask what feelings a design product awakens and what qualities are experienced with it. When feelings become involved in interpretation, the analysis includes appreciation and evaluation, and it enters the realm of aesthetics.

According to Peirce, all modes of reference relations are prevalent and merge together. As a result, iconic signs such as metaphors or symbolic reference relations cannot be understood detached from their actual and causal connections. This enables us to avoid the dualistic fallacy of cutting the mental off from the material, as when we have interpretation on the one hand and the material outcome of something like design, on the other. In addition, by including indexical signs in semantic analysis, we avoid being trapped in linguistic traditions, which perceive representations of material artefacts as language like systems – words, sentences, and stories. In this tradition, design discourses often use such formulations as *design language, form language, story telling and narration, reading images*, etc. in an attempt to clarify semantic features: expression, communication, style, and even aesthetic values. Interaction by design entails more than language.

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11 See, e.g. example analysed by Barthes (1977), the Panzani advertisement, where fresh tomatoes and onions are placed close to the packages.

12 *CP 8.16*
Criticism

One criticism against semiotics and Peirce's philosophy concerns the concept of representation. According to some researchers, representation is only a visual manifestation of the product (a drawing or photo). This means that actual material objects cannot be representations of anything and do not refer to anything (“outside themselves”) when interpreted. They are nevertheless seen as language-like constructs negotiated between stakeholders, and as affording possibilities of use. For example, Krippendorff (2006) applies Gibson’s conceptions of direct perception and affordance to his Product Semantic theory. In this theory, expressive and representational qualities of products receive very little attention. Consequently, the Product Semantics theory acquires another emphasis altogether. Gibson’s affordance is about the potential of action and use. However, in this article I wish to emphasize that there are always various alternatives for how to design affordances. Variations are not much discussed in the Product Semantics theory, which still represents features from Modernism.

Moreover, semiotic research is sometimes criticised for being led by theory, implying also that theory becomes somehow alien to practice: it would lead design research away from practice. Instead of promoting understanding, it would lead research off track, putting design practice in a theoretical straitjacket by force. One answer to this critique is that research always includes basic assumptions, be they explicitly stated or not. Thus any argument should question their relevance. The semantic dimension in particular, which requires interpretation and integration of knowledge from many fields, flounders without careful theoretical reflection.

Application

All three modes of reference relations merge in everyday interpretation as well as in a design process, during the process and when conclusions are drawn to describe the outcome. For the purposes of research, it is best to look at each one of them separately, allowing a designer to deal with the multifaceted reference relations in a careful, more detailed and systematic way.

However, one mode of reference can dominate the interpretation of the product form as, e.g. the symbolic mode. For instance, control equipment, product graphics or packages function mainly on symbolic grounds, but can often include iconic references such as a schematic illustration of a hand, the sun or a landscape. Graphic figures are designed onto electronic equipment and contain, as said, all three modes of references. The system of traffic posters and signals is a helpful example for understanding the three grounds as presented above.
The Peircean approach stimulates different modes of interpretation: design objects can be analysed by looking at likenesses, causal connections and replicas of symbols, all three modes in turn, and then synthesised for further discussion.

Indeed, the role of the context needs to be brought up. Reference relations cannot be understood without knowledge about the contexts in which interpretation takes place and the situation the product is aimed at and used for, etc. The production of iconic references can be understood better when a designer knows the cultural background of interpretation, which means familiarizing with the broad pragmatic dimension. It is exciting to become aware of people’s shifting iconic interpretations, because they often vary for different pragmatic reasons. Yet, it is not enough to list various modes of references, most importantly: a designer also needs to argue for them. Only then will s/he be able to discuss similarities and differences between the many possible interpretations, and proceed by thematizing the responses.

There are a few key questions to continue the discussion of the design semantic dimension. These questions concern the content of the references:

1) What do the reference relations represent when they are interpreted? To put this in another way: what are the contents of the relations?
2) How are the contents represented?

The second concerns the ways, manners or styles in which the content is expressed or represented. Surprisingly often only the first question is addressed and the second one, which is typically a design issue, is passed over.

An answer to the first question often includes technical or pragmatic dimensions. A car is perceived as referring to driving and moving, a rain coat to protection, etc. In an essay, Roland Barthes (1964) pointed to these primary functional aims. In the same text, he then discussed also other modes of reference and answered the question of how a product may express its functional tasks. The semiotic sign – as iconic, indexical, and symbolic modes – gives answers to what a product refers to, and also to how a product refers (connotes) to its functions and to other issues. That is why the sign is capable of offering a platform that is versatile enough for semantics.

Interpreting a Care Home for Elderly People

Semiotic analyses of spaces need to be based on knowledge about the used material, construction of the building (syntax) in combination with knowledge about the aims and underlying values of its design, planning process, financing, organizational purpose and function (pragmatics). After having familiarized with such issues, it would be reasonable to carry out a semantic analysis, i.e. look into the
reference relations of the space as a sign. Following the approach outlined above, it is also important to keep in mind the separation of semantics and aesthetics of the same. The chosen space will be split up according to the modes of reference relations, e.g. iconic reference relations answering the question of what the space (the actual space, not the picture of it) is like. The material, fabrication, and traces of use can suggest and support the interpretation of indices. Replicas of symbols can be listed and analysed. For this purpose, ethnographic, historical, economic, and other considerations are needed.

All this concerns my example: the research into the semantics of Finnish care home for elderly, which started in 2009. The aim is to fuse organizational studies and design research to promote the quality of wellbeing for all stakeholders. Inhabitants, staff, visitors, designers, etc. have been associated with the research. Thus a list of various reference relations will be formed for further deliberation and, lastly, for an overall semiotic description of various interpretations for further argumentation.

For example, semi-public spaces, e.g. corridors, constitute one of the problem fields with special interest to design semantics. These spaces seem to represent key characteristics of these institutions, and they constitute meeting places of organization and design (see photographs below). Many times, care homes bear similarities to health centres (hospitals) and offices in contrast to domestic life and homely activities. Cleanliness, order, and surveillance are dominant features in spite of different buildings and lay-out. And, together with some details as, e.g. floor material, clock, lighting, and equipment, they form an atmosphere of control and tension, which can be conceived as opposing recreation, personal self-determination, and integrity, which may be experienced in a home. The opportunities of design semantics have been hitherto neglected.

The corridors exemplify semantic shortcomings of both the organization and the design with respect to the aim of the institution. Nowadays in Finland, the intention is to form (renovate and build) homelike milieus and create an atmosphere of homeliness by means of design and organization. Understanding homeliness, however, can vary among the stakeholders, and this understanding influences the conception of wellbeing and the quality of life for the elderly, the staff, and the visitors. That is why a semiotic approach is needed.

13 Rissanen et al.
Two corridors in Finnish elderly care homes 2009.14

14 See Rissanen et al.
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