



Contextualizing perception in design

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Studies in material culture specialize in exploring the designed object and the meanings we attribute to it (Pearce, 1994). These studies are conducted principally as a means of reaching conclusions about us, i.e. the society. Society, in material culture explorations can take various forms – it can be understood as a whole community or can be segmented into market niches for example. The aim of studying our material culture is to understand the beliefs and value systems of various societies, in various historical moments and for various purposes. In order to understand our beliefs and value systems, material culture studies consider how we interpret what we see.

Literature from material culture has described the designed object as being a visible physical form with an invisible semantic content (Vihma, 1995; Petterson, 2001). This semantic content does not follow the visual appearance of that object but is an interpretative consequence of it. This means that when we are confronted with any object and visually assess it, we access its visible physical form. This visual stimulus that our eyes pick up from the external appearance of that object and of the surrounding context will then be filtered and interpreted by our knowledge of the world. Therefore, according to material culture literature, we see what is visible of the physical manifestation of an object and its context, and then conduct a personal interpretation of this visible information. This implies that the physical aspect of both the object and the context is fixed but that our understanding, valuation and opinion of that physical aspect may vary according to our cultural make-up.

In order to study the interpretation of visual manifestations the researcher tends to adopt an approach from the area of material culture. Previous studies of the designed object within material culture have focused on the object, on the user or on the object/user interface, and consequently on methods for object and consumer analysis. Studies that focus on the object have mainly employed object analysis methods. These studies focus on the construction of the object and/or on the observer's reaction to it rather than on the observer's interpretation of that designed object (Büchler, 2004; Büchler, 2005). When considering our interpretation of the designed object, studies in material culture have focused on its semantic dimension. Such studies have held the position that when we see the physical aspect of an object, we give it meaning according to our value system. This means that, to material culturists, the physical aspect of what we see supplies information for its interpretation. This interpretation would therefore be a direct consequence of the physical aspect that we see.

The material culture position on the interpretation of the designed object is that the physical aspect of what we see is filtered through our cultural make-up. Although the designed object is composed of physical and semantic content, its interpretation is the semantic result that is based on its physical aspect. This describes a linear connection where the physical aspect cues a semantic connection to be made based on our individual set of values and prior experiences with the world. However, as will be presented below, what we are able to see when we observe a designed object is already conditioned by our cultural make-up. This suggests that the physical aspect of what we see cues us as to what physical features we should take into consideration when interpreting that object. This would mean that the interpretation of the designed object is not such a linear and straightforward consequence of the object's physical aspect as the material culture perspective would imply.

The physical aspect of a designed object is the object itself and the contextual cues that

surround it: a teapot, with an Alessi label, in a shop window. The interpretation of that physical aspect of the designed object is reached through forging semantic connections with it. This is done when our cultural make-up (i.e. prior knowledge and values) filters the physical aspect that we see: a cylindrical body with a handle and spout is a teapot; the Alessi label may connote quality; the shop window informs that it is a consumer product. Therefore, in material culture it is believed that our perception of the designed object is the interpretative result of our cultural background but that our visual perception of that object is directly linked to the physical aspect of it. This describes a direct link between the observed physical aspect and the resulting interpretation: the observed object is at once a good quality teapot that is for sale.

Interpretation in the context of perception

Contemporary studies in psychology of perception take one of two main lines: the direct or the indirect account of perception. The basic difference between these two accounts revolves round the nature of the stimulus. The stimulus is thought to be either complete or incomplete. This suggests whether or not perception of that stimulus has to be mediated by the perceiver. Mediation or lack of mediation therefore describes the act of perceiving as either indirect or direct, respectively.

The direct account of perception describes the stimulus in the outside world as being detailed enough for perception to result directly from it. In the direct account there is no need for the perceiver to mediate the stimulus by making personal inferences because the stimulus contains all the information that is necessary for its straightforward perception. According to this account of perception, the perceiver is the passive recipient of relevant information from the outside world.

The indirect account of perception claims that the outside world supplies stimulus that are incomplete. To the indirect perceptual psychologist, our perception of the outside world is far richer than the original stimulus would promote. In this case, the perceptual experience must have been the result of mediation. The perceiver is the mediator who constructs the perception of the outside world. The inferential perceiver does this by selecting the relevant stimulus from the outside world and piecing together a meaningful and plausible perception from the incomplete stimulus.

While both approaches have strong proponents, the instrumental distinction between them for the present argument is that the direct account of perception does not focus on the perceiver but on the environment/perceiver system (Michaels & Carello, 1981). The indirect account of perception focuses on the perceiver's perceptual experience and endows that perceiver with the interpretative ability to make sense of stimulus from the outside world.

The indirect account of perception suggests that because the world of stimulus is an impoverished one, in order to make sense of it, the perceiver has to select and process that stimulus. The process of making sense of the world is in itself an interpretation therefore it seems clear that an inferential perceiver described in indirect accounts of perception is needed for the study of how form contributes to perception of the designed object.

Perception in the context of the designed object

The notion of interpretation from material culture and from psychology relies on an interpretative observer/perceiver. Richard L. Gregory proposed a theory of perception (1980) that describes an interpretative perceiver rather than merely a seeker of stimulus from the outside world. His theory is therefore useful in detailing the element of perception in studies of the designed object. This is because both the material culture definition of interpretation and that used by Gregory require an interpretative perceiver.

According to Gregory (1998), perception is an interpretation of what is being sensed: we feel warmth and perceive comfort. He has also explained the perceptual process as being an act of

generating hypotheses of plausible interpretations of a sense stimulus: we hear a cry and hypothesise an enemy attacking, a friend calling, our beloved team scoring. Visual perception involves the interpretation of a visual stimulus: we see a snake and perceive danger. When observing an object, we perceive what it is, or in Gregory's terms, select a fitting hypothesis of what it is. The resulting perception is therefore an interpretative filtering of the observed object through our knowledge of the contextual cues that are available in the environment: a snake in the grass is danger while one behind glass is entertainment. These contextual cues inform our knowledge filters and ultimately condition how we should interpret that object (i. e., harmful or safe) given the physical information.

Gregory's perceptual theory is helpful for the study of perception of the designed object because it assumes that perception is but one of many possible interpretations of the physical world. His theory was developed within the indirect approach to perception, which implies that the signals that our sense organs are able to pick up from the outside world are flawed and thus supply insufficient information for perception. This means that in order to perceive, we must resort to contextual cues and stored knowledge to make sense of these imperfect signals.

Gregory's Theory of Perceptions as Hypotheses (1980) suggests that the perceiver is a hypothesis generator who constantly filters and interprets signals. The hypothesis generator looks for the most reasonable or helpful interpretation of what is being observed. As a means of demonstrating how perception occurred according to his theory, Gregory has proposed a model of perception. In the two-dimensional representation of Gregory's model for human perception, the hypothesis generator is located at the centre of the many factors that impact on the perception of the outside world.

The two-dimensional representation in Figure 1 shows the influences that impact on an individual's perception of the outside world. From the bottom-up the senses send signals to the central hypothesis generator, i.e. the perceiver. These signals are codified sensations that any sense organ can pick up from the outside world. Signals are then processed by the side-ways operating rules that inform the best way to deal with and interpret the signals. The interpretation is conducted from the top-down. This interpretation requires knowledge of the external world, its structure and expected outcomes.

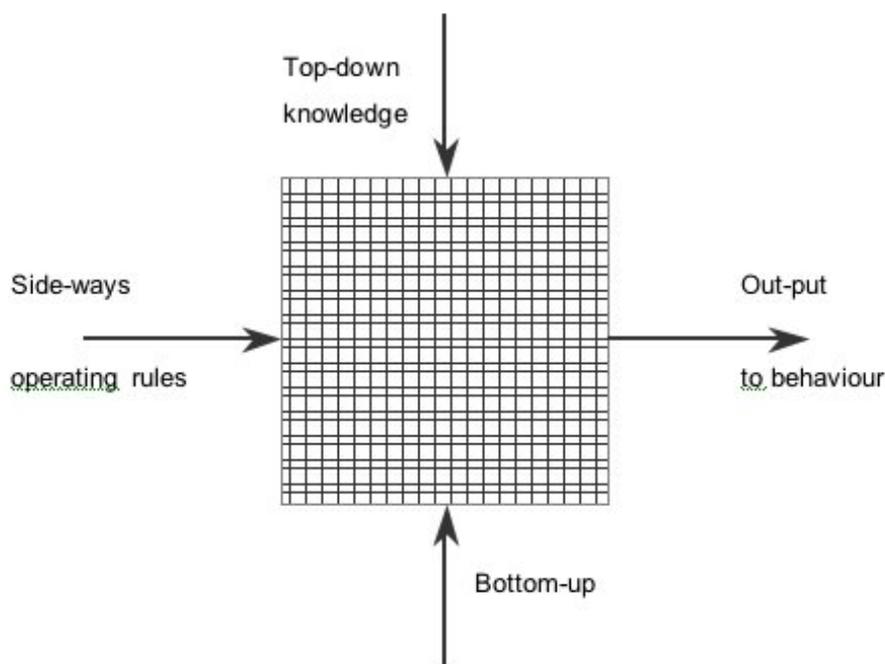


Figure 1: 'The Flat Box.' (Gregory, 1994:140).

This is a two-dimensional representation of Gregory's visual perception model where the bottom-up

signals from the eyes are read with top-down object-knowledge and general side-ways rules.

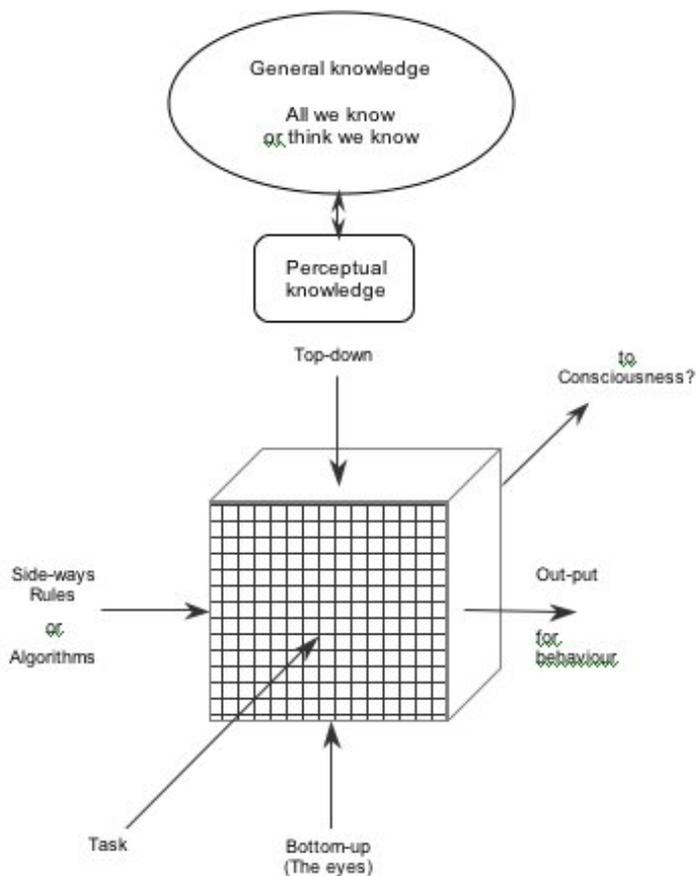


Figure 2: Ins and outs of the Black Box of vision." (Gregory, 1994:141).

This is a three-dimensional representation of Gregory's vision model where top-down knowledge is divided into two: general knowledge (which included abstract concepts far beyond perception; and perceptual knowledge (which is limited to what is needed for reading bottom-up signals from the eyes).

Gregory makes it clear in his two-dimensional representation of the hypothesis generator's process of perception that what occurs within the mind of the perceiver is invisible and inaccessible. Because of this inaccessibility, Gregory has chosen to refer to the hypothesis generator in his three-dimensional representation as the 'black box'. Gregory has given the perceiver a third dimension in the Figure 2 representation in order to better introduce the other external influences that impact on perception. This three-dimensional representation details the top-down knowledge and incorporates the contribution of the external task for which the perceiver is preparing behaviour. Gregory also speculates on consciousness as another possible out-put of perception.

In line with his Theory of Perceptions as Hypotheses, Gregory suggested that in order to make meaningful hypotheses the perceiver uses prior knowledge of the world. His claim is that we have a knowledge base that is learned through perceiving, i.e. the more we experience, the more we learn and know for future perceptual reference. This knowledge base is used when we need to act in response to outside stimulus. In other words, when we are confronted with an external situation, we need to make sense of it in order to plan the best course of action. Therefore, according to Gregory, we learn through experience and create a catalogue of sensations. These stored experiences form our entire knowledge base of the world around us and of our beliefs and value systems.

There is also a last and subtle difference between these two representations of Gregory's vision model. The output of the two-dimensional representation is '*to* behaviour' while the output of the three-dimensional representation is '*for* behaviour'. This difference suggests that perception is the result of an iterative connection between the physical aspect and the

resulting perception. The physical aspect informs initially 'to' us what the situation is and we can decide based on our knowledge and values what the relevant pieces of information are for the adequate interpretation of that object given that situation: the snake an Amazonian indian sees informs that native that there is potential danger while a small infant seeing that same snake is informed that there is potential entertainment.

We are then observing the physical aspect through our knowledge-prescribed filter which conditions what we see according to our understanding of the situation, which is in turn given by our beliefs and value systems: both native and infant consider the proximity and colouring of the snake, the first with caution, the second with anticipation. Upon observing the physical aspect again or still, we are scanning the scene 'for' perception, in search of the previously defined relevant cues: the native sees safe distance and harmless colouring while the infant sees crawl-able distance and engaging colouring.

The initial connection between physical aspect and perception is 'to' perception because it at the same time builds our knowledge base 'for' perception and informs on the relevant information that should be sought from that scene. The observer's culture and training influence how that scene is understood: the native and the infant understand the physical aspect of the same snake in different ways based on their different experiences. Our understanding of a situation and what it calls for then informs what we should look for and how we should judge that which we can see through our knowledge-prescribed filter: both native and infant observe (albeit for different reasons and in order to inform different interpretations) the distance, whether 'harmful or safe' or 'reachable or out of reach'; and both observe the colour, whether 'poisonous or not' or 'interesting or not'.

It could therefore be said that different visual perceptions can result from observing the same physical snake. This is different from saying that individuals will have different perceptions of the same physical snake depending on their cultural make up. The description of perception offered by Gregory suggests that individuals will have different *visual* perceptions of the same physical object. This claim suggests that what we know can impact on what we see, not only on what we think of that object.

What this means for the designed object is that – back to the Alessi teapot in the shop window – if we do *think* that it is 'at once a good quality teapot that is for sale', we may *see* a physically better teapot. This may account for the fact that, once we are informed of the desirable brand, we see a shinier finish on the teapot that we had initially found to be dull. This explanation of perception brought into the context of the designed object would suggest that perhaps product knowledge is more important to our visual perception of that object than the actual physical design.

The role of form in the context of perception of the designed object

We therefore have certain assumptions about the designed object and our perception of it that are current in the context of material culture. We also have certain complementary assertions from studies in the context of perceptual psychology. In this section these assumptions and assertions will be clearly stated so that the latter may substantiate the former. The role of the form of the designed object in the construction of perception is proposed in a preliminary model at the end of this section.

In the context of material culture there are some assumptions about interpretation and visual perception of the designed object and about the role of form in the construction of content. It is generally assumed that (1) the designed object is composed of a fixed physical form and a constructed semantic content; (2) our visual perception of the designed object is directly linked to the object's physical form; (3) the construction of content is the interpretative consequence of our knowledge filtering the physical form of the designed object that we see and (4) in the construction of content, knowledge impacts more strongly on the final interpretation than the designed object's physical form.

From Gregory it can be asserted that (1) perception is an interpretation of the visual world through our knowledge; (2) our knowledge interacts with the visual world in an iterative relationship leading to the perception of what we see; (3) depending on our knowledge, our visual perception of what we see can depart from the physical aspect of the observed object and (4) therefore knowledge can be a stronger contributor to visual perception than the physical object form.

The result of considering the material culture assumptions in light of the Gregory assertions is that (1) knowledge is indeed stronger than form to our perception of the designed object and (2) the construction of content is the result of an iteration between knowledge and the object physical form. Therefore (3) the visual perception of the designed object may depart from the physical form of that object. Rather than merely informing perception of the designed object, form also conditions the knowledge that will be used in the interpretation of what is being seen. This means that form plays an iterative role rather than merely an informational one in the construction of perception of the designed object.

Figure 3 offers a simplified representation of the original model from material culture that describes how content would be constructed from form through use of knowledge. It is generally believed that interpretation of the physical object occurs through an iterative relationship with knowledge where form would only provide an initial visual stimulus.

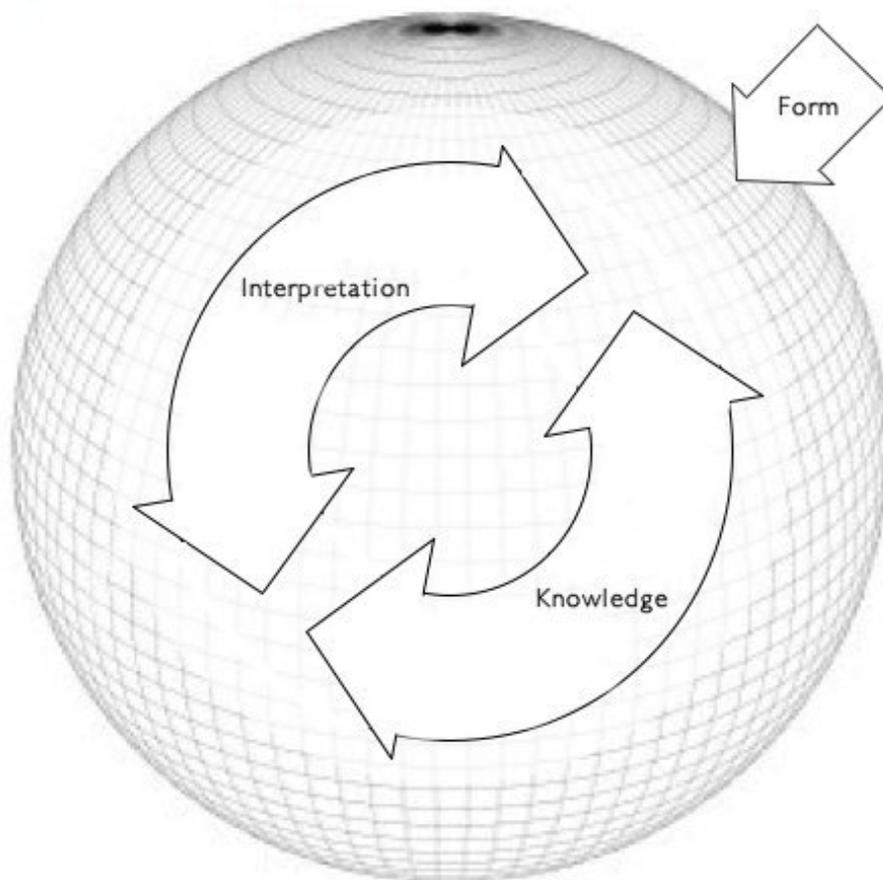


Figure 3: Simplified representation of the notion of construction of content presenting the role of form.

After contributions from the indirect theory of perception, Figure 4 suggests an equal, integral and active role for form in the construction of content. This role implies that form does not contribute in a static, given nor punctual way, but in a dynamic and iterative way. This role for form also implies that visual perception of form of the designed object is constructed throughout the interpretation of that object.

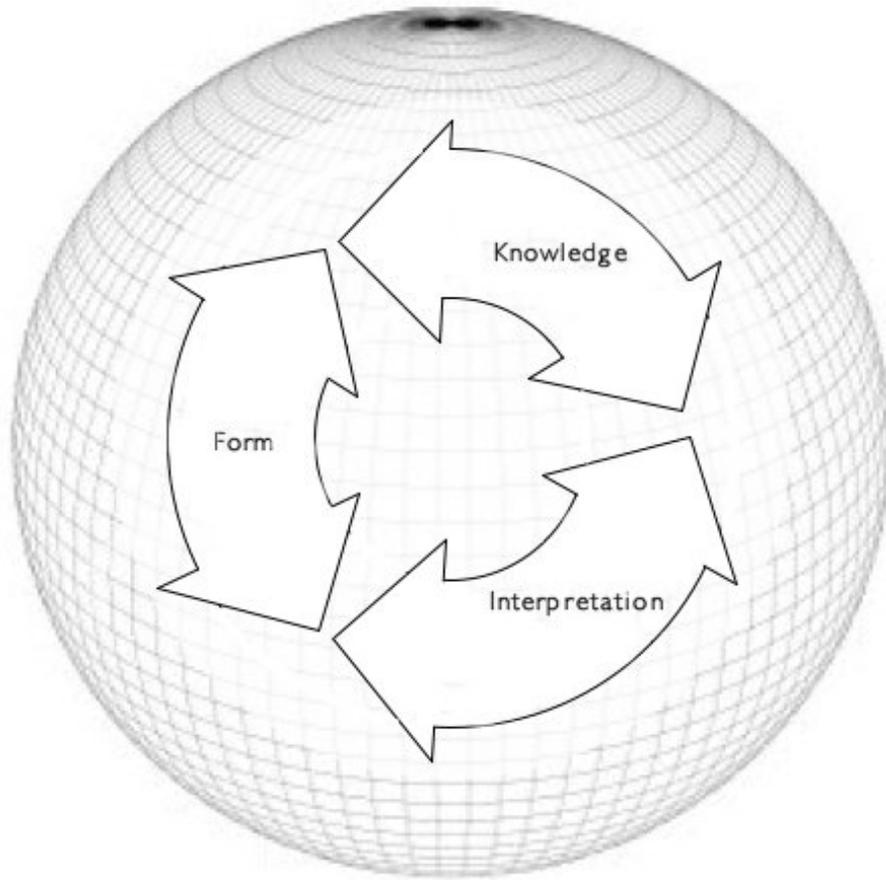


Figure 4: Proposed model for perception of the designed object revealing the integral role of form.

The outcome of contextualizing perception in design

This paper presented assumptions from material culture that implied the belief that the interpretation of the designed object was the result of a single connection with the physical object form. Theories from the indirect account of perception suggested, rather, that the physical aspect of the observed object was connected to the construction of perception/interpretation in an iterative and continuous way.

It was therefore suggested that the physical aspect of what we observe impacts on our interpretation of it in more and alternative ways than the material culture framework would account for. It was further suggested that the physical aspect of what we see could be altered by our knowledge and cultural make-up. Regarding perception as iteration between physical form and personal knowledge suggests a distinct role for form in the construction of content. The original role of form was that of visual catalyst however this paper suggests that the visual perception of visual form is constantly constructed in the process of perceiving the designed object.

While it is familiar to think that our knowledge would condition the interpretation we make of an object, this paper has suggested that our knowledge and understanding of the situation conditions our ability to see the physical aspect. This notion is novel and contributes original information to material culture and the study of the designed object by suggesting an iterative connection between physical aspect and interpretation.

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