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The designed object that we know and see

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This paper discusses perception of the designed object and how our knowledge impacts on our visual perception of that designed object. It is however challenging to describe what this entails because what is being said at a technical level about perception of the designed object has an everyday counterpart. This means that the point that is being made here can be at times lost in the commonplace understanding that knowledge impacts on perception. It is common to think, and indeed to say, that an Alessi teapot seems shinier to us because of our belief that Alessi is good. However it is not common to think that our belief that Alessi is good could make us actually see a shinier finish on that teapot. This paper describes how what we know of an object will impact not only on our intellectual perception or cognition of that object but also on our visual perception of that object. This phenomenon has been studied in the psychology of perception but its impact in design and material culture has not hitherto been studied. The contribution of this paper is to bring concepts for the psychology of perception into material culture so as to problematize the role of visual appearance in the formation of our understanding of designed objects.

Material Culture and the designed object

Studies in material culture specialize in exploring the object and the meanings we attribute to it. These studies are conducted principally as a means of reaching conclusions about us, i.e. society. In material culture explorations society can take various forms. For example, it can be understood as a whole community or can be segmented into market niches. The aim of studying material culture is therefore to understand the beliefs and value systems of various societies, in various historical moments and for various purposes, through their objects.

Let us initially consider the designed object. It could be said that the designed object has a visible external form and an invisible semantic content. This semantic content does not normally follow directly from the visual appearance of that object but is an interpretative consequence of it. This means that when we are confronted with any object we visually assess it by accessing its visible form. The visual stimulus that our eyes pick up

from the external appearance of this object will then be filtered and interpreted by our knowledge of the world. Effectively, what we do when we filter and interpret the visual stimulus is attribute meaning to it based on our understanding of the world. Therefore when we see an Alessi teapot we apply all the knowledge we have of Alessi and attach a meaning to that teapot. If our knowledge of Alessi is that it is a good brand, we will attach a positive connotation to that teapot. This is an explanation of the ascription of meaning to an object through our knowledge through the process of connotation. This is therefore a description of how the semantic aspect of the designed object is constructed.

In this context, where it is important to understand people through their use and connotation of objects, it is essential that peoples' perception of the objects be taken into consideration. This is because our behaviour is a function of our beliefs that in turn impact on our interpretation of what we are seeing. However, according to the psychology of perception, what we see is mediated by our perception of what is being observed. This paper focuses on how our semantic construction of the designed object can in turn impact on our visual perception of it, i.e. how the semantic content can change the visible form that we see.

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 perception of that designed object. Studies that focus on the user and on the object/user interface have tended to focus on behaviour (Büchler 2004). In material culture, studies that focus on behaviour have typically taken a scheme drawn from behavioural psychology. According to the behavioural approach to material culture analysis, interpretation is a function of perception. This recognition that perception informs interpretation and behaviour justifies a more detailed account of the perception element in the material culture analysis of object interpretation. Such an elaboration would have to come from the psychology of perception.

Studies in the discipline of psychology of perception take one of two main approaches: the direct and the indirect accounts of perception. The basic difference between these two accounts revolves round the nature of the stimulus. The stimulus can be either complete or incomplete and therefore whether the 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 from 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 recipient of relevant information from the outside world.

The indirect account of perception claims that the outside world supplies an incomplete stimulus. 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 be the result of mediation. The perceiver is the mediator who constructs the perception of the outside world. This is an interpretative perceiver who selects the relevant stimulus from the outside world and pieces together a meaningful and plausible perception from the incomplete stimulus.

While both approaches have strong proponents, the instrumental distinction between them for this study 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 use of psychology of perception can be justified in a study of the designed object in terms of its contribution to interpretation. It has been said (Pearce 1994) that psychology has contributed the behavioural approach to material culture and the study of our interpretation of the designed object. The behavioural approach is therefore, within the material culture context, the most 'psychological' of all the object analysis methods. However, the analytical method offered by behavioural psychology follows the direct account of perception.

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 interpretative perceiver is needed for perception.

Gregory's (1980) theory of perception describes an interpretative perceiver rather than one who merely picks up stimulus from the outside world. His theory is therefore useful in detailing the element of perception in studies of the designed object. Both the material culture definition of interpretation and that used by Gregory share a degree of commonality that could invite a greater exchange. Gregory produced work within the indirect approach to perception that assumes 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 stored knowledge to make sense of these imperfect signals.

The indirect approach to perception has informed Gregory's 'Theory of Perceptions as Hypotheses' (1980). This theory 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 visual perception. In the two-dimensional representation of Gregory's vision model, the hypothesis generator is located at the centre of the many factors that impact on the visual perception of the outside world.

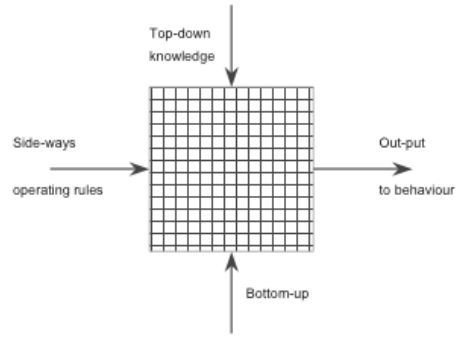

Figure 1 The Flat Box (Gregory 1994: 140).

This is a two-dimensional representation of Gregory's vision model for human perception in which the bottom-up signals from the eyes are read with top-down object-knowledge and general side-ways rules.

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. It is conceivable that by observing behaviour, an individual's perception of the outside world could be understood. Although behaviour is the visible output of perception, the internal process that led to this perception is invisible and inaccessible.

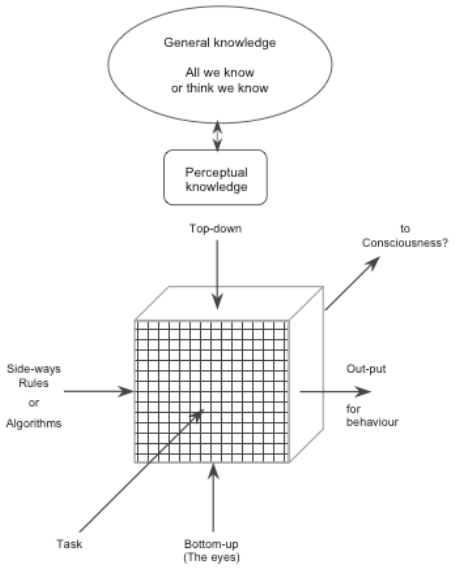

Figure 2 Ins and outs of the Black Box of vision (Gregory 1994: 141).

This is a three-dimensional representation of Gregory's vision model in which 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).

It is clear from Gregory's 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 this three-dimensional representation as the 'black box'. Gregory has given the perceiver a third dimension in this representation in Figure 2 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 output 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 stimuli. 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. In his three-dimensional representation Gregory makes a distinction between two major types of knowledge bases. He breaks top-down knowledge into a simpler, cruder and smaller knowledge base for perception that is needed for immediate action, and a more refined, reflected and extensive body of general knowledge.

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. However, depending on the task at hand, one has more or less time to act, from a few seconds to many years: one might thoughtfully and ethically decide on one's feelings towards euthanasia but ponder less when pulling one's hand out of boiling water. Accordingly, Gregory has distinguished between two broad types of knowledge bases: one for perception and one to house our conceptual framework.

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 confirms the distinction that he made between the two types of knowledge where perceptual knowledge, as distinct from general knowledge, is *for* perception.

Implications of Gregory's Theory for Material Culture

It is possible to consider either the material or the semantic aspect of the designed object. There is a range of analytical methods that are used in object analysis. The aim of these analytical methods that are used in material culture is to understand the interpretation we make of the material world around us. It is believed that the meanings that we attach to objects are a function of our unique cultural make up. This way of relating

interpretation to personal make up helps to account for multiple interpretations of objects. This is because it could be said that, for material culturists, there are as many object interpretations as there are interpreters.

Similarly, Gregory's Theory also implies that interpretation that leads to perception is a function of our unique knowledge of the world. He stated that our perception is but one possible interpretation of a stimulus. Perhaps more relevant to the material culture position, he claimed that the resulting perception is the more probable and helpful hypothesis of what is being observed. This chosen hypothesis was selected by the active perceiver as the more helpful one in light of the perceiver's interpretation of the situation at hand. This is a useful application of Gregory's Theory because it sustains the material culture position that for every object/percept there are a series of possible interpretations.

Gregory's Theory results in the possibility of multiple and equally valid interpretations of a visual percept. An interpretation is chosen as the more fitting one by the perceiver and this choice is informed by a series of relevant pieces of knowledge that are specific to that individual. Now, if we accept that visual perception results from one interpretation that was thought to be more fitting to the circumstances than the rest of the possible interpretations, then we must accept that there are degrees of adequacy involved in the hypothesis selection. This means that amongst the multiple possible interpretations we could have made of a percept that we are observing, one is 'fitting', while possibly a few were 'close runners-up' and many more were probably 'far from fitting', although still conceivable.

Therefore we have a multitude of possible interpretations of a percept. We have degrees of adequacies between percept and perception (i.e. interpretations or hypotheses). We, as interpretative perceivers, have the power to make a selection of what hypothesis is the most adequate and will therefore result in the final perception of that percept. That selection is informed by our knowledge and understanding of the situation. We will prioritize different qualities of a percept depending on our understanding of what the situation calls for (cf. Biggs 2005). We may, on a cold day, perceive a coat to be warm because it matches our outfit. In such a case, the choice is informed by the visual appearance rather than the thermal potential of that coat, and our perception of the thermal potential is modified as a result. Similarly, we could experience a perception that was far removed from fitting the visual percept that was being observed, but highly fitting another aspect of that percept, such as warmness.

Modification occurs when an alternative interpretation is taken because it is more relevant in dealing with our understanding of the situation. Although it is our prerogative to attribute priority to object qualities according to our understanding of the situation, this ability could result in a perception that departs from the percept. It could be, for instance, that we experience a perception that has no relation to the actual percept but only to our knowledge of it. Theoretically, we could *see* a shiny finish on an Alessi teapot just because we believe Alessi products are shiny. Gregory has empirically demonstrated that this happens and he has classified this perceptual experience as occurring when perception departs from percept and has defined this phenomenon as a perceptual illusion.

Hypothetical example

We are familiar with the idea that added values such as those brought on by branding can influence our opinion of an object. This influence may change the way in which we think of that object. However, this paper introduces the notion that what we know about the object can also change the actual physical characteristics we see in it. Once we know an object is of a desirable brand we may believe it is better, however this paper asserts that once we know an object is of a desirable brand we see physical characteristics in it that we did not see prior to that knowledge. This is not a case of selective attention, whereby we now take notice of certain aspects that we did not pay attention to before we knew the product to be of a desirable brand. This study describes the phenomenon in which we are unable to see a distinguishing shine in a teapot and then, when it is known to be an Alessi, being able to see a distinguishing shine. In other words, our knowledge may enable us to see physical characteristics that we did not see before *even if we were directly instructed to consider them*. This paper therefore maintains that knowledge of the object will impact on our object semantics but it reveals that our knowledge of the object will also impact on our visual object perception.

Consider a hypothetical case in which the stimulus is a set of teapots in a display. Each teapot has a different shape design but they are all made of the same material. The participant is asked to select out of the sample of teapots the one that is the shiniest. The participant responds: 'They all look the same to me – they all look equally shiny.' The participant is then told that one of the teapots was made by the designer company Alessi. The participant struggles to see a physical distinction between the teapots believing that the teapot made by Alessi would be the shiniest. The participant is still unable to detect a physical distinction between the teapots. Finally, the participant is shown which teapot is the Alessi one.

The value that the participant will attach to that object will follow that participant's knowledge and opinion of Alessi. However, depending on that participant's knowledge and opinion of Alessi, the visual perception of that object's physical characteristics will also be impacted by that knowledge. With the knowledge that a given teapot is an Alessi, a participant who is familiar with the brand name may find it difficult not to see actual physical differences in the teapot. If this participant's knowledge of Alessi teapots is that they are shinier, it may be difficult for the participant not to see the Alessi teapot as physically shinier now that the teapot is known to be an Alessi.

'Shinier' expresses an opinion however it describes a physical object characteristic and not an abstract one. It is common to think that object knowledge will impact on the value we ascribe to objects, however it is surprising to think that knowledge will impact on the physical characteristics we see in an object. Object knowledge informs our value system and will in turn inform the interpretation that we make of an object. It is surprising to think that object knowledge could make us actually see a once dull teapot as shiny just because we now know it to be an Alessi teapot. We may think of it as better and hold a more favourable opinion of the teapot because it is an Alessi, however this study suggests that our knowledge may cause us to see actual physical differences in objects as a result of our knowledge of them.

Visual illusions and the perception of the designed object

The power of branding is a strong one. Many of us are guilty of succumbing to the allure of a 'designer' label or a 'time revered' manufacturer. We are willing to pay more for these, in our minds, added values. We can skilfully outwit the most argumentative attorney in our post rationalistic justification of how the object is indeed worthy of such increase in price. It is disturbing to find that we can even persuade ourselves of this.
However uncomfortable, this power of what we know about an object influencing our opinion of it is not news. We can accept that our opinion is swayed by what we know of an object. Although we may resign ourselves to falling victim to our personal temptations, we accept that the desired value changes our opinion of the object and that we may, conscious or unconsciously, try to hide behind a plausible excuse for the altered opinion. We can accept that our minds and opinions are influenced. We can accept that we think the object is better. We are, however, reluctant to accept that our eyes can be fooled by our minds. We would be surprised to find that we actually see physical improvements in an object because of the value we have mentally added to it. However surprising, this paper argues from the psychology of perception that it is possible to have visual illusions with designed objects. These visual illusions with the designed object are not mistakes or errors of judgment. These visual illusions are perceptual experiences that result from our object knowledge overriding our visual perception.

For a contextual example, consider a shopping expedition. When scanning the shelves for a teapot, we may think: 'They all look plain to me'. Then, when advised by the shop assistant that one of the teapots in the display – one that we had not especially noticed – is in fact an Alessi teapot, we give it the time of day. We notice it. We move towards it. We pick it up. We examine it more closely. We inquire about the price. We examine it further in search of that distinguishing characteristic that we will use in the defence of our over-priced purchase. 'An Alessi…I love their products! I suppose you have to pay a little extra for the pleasure of owning one…I'll take it'. There is nothing alarming about this behaviour. We are aware that abstract values impact on our opinion of objects and that our behaviour is motivated by our values and opinions.

Now in a similar sequence, consider that we are helped by a less experienced shop assistant. The novice does not reveal the teapot's designer label immediately but engages in our disappointment, trying to convince us otherwise. We browse through the teapots and think they are all plain. 'Have you seen this one? It is our best seller.' We are handed an obscure teapot that the assistant has pulled out of the back of the display. We unwillingly examine it so as to not be impolite. We think this is a waste of time though: we know it is plain because we are perfectly capable of looking at an array of teapots and identifying the exceptional one and we had not found any one to be exceptional. Still, we humour the poor salesperson. 'Isn't it exceptional?' is the sales pitch. 'Well, to be perfectly honest', we are perfectly honest, 'I find them all plain and this one is no exception. What do people find so remarkable about it anyway?' we ask. 'I suppose it is the exceptional craftsmanship and the exceptionally shiny finish', is the obvious attempt to influence our opinion. We examine it more closely: 'No', we stand our ground, 'I don't see any difference between this one and the others – they all look plain to me.' Then, for the winning argument: 'Well, it is an Alessi and Alessi hardly manufactures plain teapots…'

Now, in possession of this knowledge, we are in the same position we were when, in the first sequence with the experienced sales assistant, we were made aware of the designer label. However in this latter sequence, we had openly dismissed the physical teapot as being plain and displaying no exceptional physical characteristic. If we chose to purchase it, an instrumental distinction rides on the justification we will use in order to account for the over-priced purchase. If, in order to justify the purchase we allude to the abstract brand values that the knowledge of the designer label has brought, there are no surprises: we have been, once again influenced by branding. However, if once we know it to be an Alessi we may then begin to see actual physical differences in the teapot, our eyes have been fooled by our knowledge.

Back to the suspended reaction to the knowledge that the otherwise plain teapot was in fact an Alessi teapot, we examine it again… 'Really? It is an Alessi? I love their products…' We turn it round in our hands, stroke it, read the inscribed logo on the bottom. We open the lid, pretend to pour out the imaginary tea and find pleasure in the idea of the Alessi teapot we hold in our hands. 'Yes, I see it now… it *is* exceptional!' we confide in our sales friend 'It is remarkable how Alessi manages to make such a shiny finish… and the craftsmanship is exquisite, is it hand made? I dare say it is well worth the extra money. I'll take it.'

It should be highlighted that this is not a case of the teapot suddenly becoming relevant to us just because it is now desirable. Therefore this is not a case of noticing physical aspects that we had not paid attention to before. In fact, we had paid attention to the shine and craftsmanship before we knew it to be an Alessi because the shop assistant had called our attention to those qualities. We had observed the teapot in terms of those physical qualities – shine and craftsmanship – and had not found any distinguishing physical quality in that teapot. These same physical qualities were the ones that we would later, in possession of the knowledge-of-Alessi, find to be physically distinctive. It is as if the physical qualities underwent a physical transformation before our very eyes. The teapot was not shinier than the rest when we did not know it was an Alessi. The craftsmanship was not remarkable before the knowledge of the desirable brand.

Summary

According to Gregory there are different types of illusions and he has classified them based on various characteristics (Gregory 1994). The one that interests this study is the perceptual illusion. A perceptual illusion occurs when our conceptual knowledge impacts so strongly on our visual perception that we see that which is in line with our knowledge but that departs from the percept itself. Gregory has described our perceptions of what we see as a function of the percept and of our knowledge. He has said that typically, our perceptions are in line with what we are looking at, i.e. we see a teapot when looking at a teapot, a coat when looking at a coat and so on. An illusion occurs when the perception departs from the percept. A perceptual illusion occurs when the perception departs from percept because of our knowledge. An example of a perceptual illusion from the psychology of perception is the hollow mask illusion where we are unable to see that the hollow mask is concave because of our overriding knowledge that faces point outwards and not inwards (Gregory 1997).

What this means in the material culture context is that the physical design of a product may have less impact on our visual perception than the knowledge that we attach to it. Back to the visual perception of the now-Alessi-therefore-shinier-teapot, the possibility of seeing a shine that was not there before the knowledge-of-Alessi can be an example of Gregory's definition of a perceptual illusion. If the teapot was plain before we knew it was an Alessi, but once we know it is an Alessi we see a shine on its finish, our knowledge has caused our perception to depart from the percept itself. The percept is the objective product, dull as we see it when we have no knowledge of its brand. The perception once we have the knowledge of its brand is that it is shiny. The perception has therefore departed from the percept and this has occurred with a designed object. This occurs because, to some degree, we are unable to conceive of a dull Alessi teapot, in the same way that we are unable to conceive of a concave face. Our visual perception submits to our mind and constructs the visual perception that would render true the favourable appearance imposed by the [Alessi] knowledge.

The possibility of a perceptual illusion occurring with a designed object is meaningful. Such a demonstration stands to impact on the practice of design and marketing. This demonstration that knowledge can override visual perception can also be extended into many other academic areas that deal with human thought and behaviour. Although there was evidence for the strong influence of abstract values such as branding on our judgement and valuation of objects (Chapman 2005; Foxall, Goldsmith, & Brown 1998; Hirschman & Holbrook 1982; Karjalainen 2004; Press & Cooper 2003), there were no clear demonstrations that the eye could be influenced by our mind into actually seeing physical transformations. To construct an image around a concept of the desired quality is conceivable, however to see the constructed image is quite another phenomenon. Gregory had proposed an explanation for how this could occur with the generic object.

This paper has applied this experimental knowledge to the perception of the designed object. Mediating the actual visual perception of designed objects will have consequences for object analysis in material culture studies because, although the mediation of perception/understanding/connotation of objects has been recognised (Crozier 1994; Norman 2004; Vihma 1995), it was formerly believed that the visual perception of form was not mediated by knowledge (Hammer & Lengyel 1990; Krippendorff 1998; Shackleton & Sugiyama 1999). This has been shown not to be the case.

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