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# The Appropriateness of Things.

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This paper discusses the concept of design appropriateness as a multisensory and multiperceptory experience. It presents examples and examines key issues related to the perception of design in controlled and free environments. It also comments upon the role of memory in perceived appropriateness.

## **Objectives of Research**

The objectives of this research are to investigate appropriateness, in a design language. It is a woolly overarching term applied to instances where something is seen as being suitable or proper, usually within or as part of a particular application. It normally refers to one element or set of elements in relation to another element (or set of elements) or context, being defined according to personal or recognised benchmarks. The research will look at the meanings and perceptions of 'appropriateness' in contemporary design practice which generally refers to elements existing in harmony that are complementary in style. However, the reliance of advertising on metaphor means that visuals can be abstracted from the product in order to communicate undefined associatable features. This lack of clear definition makes it difficult to formulate evaluative criteria for thorough examination. However, it is evidence that appropriateness is a multisensory and multiperceptory experience selectable from a menu of affective and cognitive perceptions. Designers present menus of experience which are constantly changing according to contexts and constraints – the complexity of which varies with each interaction. The objective of this research is to elucidate the function and perception of appropriateness in design using real examples to develop understanding in this area.

## **Approach Method Used**

Comparative analysis using references from scientific-type experiments conducted in design and academic texts will form the core of this research. With references to the broader field of design perception and methods the research also looks at design contexts within singular products, in urban and rural environments and in virtual and printed texts and images .

The integration of design into visual/physical/conceptual experience and memory provides an actual or mental signifier of place, time, belonging and culture – designed objects as life experiences cannot be judged singularly in relation to their visual presence or physicality. Rather they may in some way reflect a conceptual or perceived appropriateness of the owner or user. For example, a mock Tudor porch at the entrance to a 1980's house may be visually and physically inappropriate but may be appropriate to the owner's perception of self – an exhibition of 'wealth' with references to history and culture. This idea of perceived (as opposed to actual) appropriateness complicates the way it can be defined or judged and suggests that rules of appropriateness can only be developed for single or families of products and that each application can only be judged in relation to its contexts and hierarchies (physical and conceptual).

## **An Indication of the Nature of the Main Findings**

The nature of the main findings will be the creation of a model of perceived 'appropriateness' – how it is affected by user experience and contexts. The various exemplars will be developed and discussed in support of a proposed perception model which looks at the designed world in context and illustrates how contextualisation leads to the creation of corporate and personal benchmarks and fuels our ability to make value judgements based on the appropriateness of one element to another. It demonstrates how perceived appropriateness can be visual, physical and conceptual – and how as designers our evaluation mechanisms exist within the context of the past (as memory) and in the future (as possible outcomes to be derived from visual concepts).

## The Appropriateness of Things

*Keywords: appropriateness, context, character*

We are conditioned to experience the world around us as a result of cultural evolution, individual prior knowledge and experience, cultural context and developing understanding. The translation, and in many instances communication, of our real world via images and objects is restricted by our limited vocabulary which can only partially communicate experiential aspects of location, place, encounter, interaction, perception. Experiencing all environments both natural and designed is multisensory and multiperceptory – and amalgamation of many related (yet strangely also unrelated) elements.

A good example is the Turkish bazaar that integrates a particular combination of elements, described primarily through interpretations of colour, visual and object elements, sound, smell – a perception of ‘shiny’, ‘rich’, ‘handcrafted’ visual noise. It is viewed using a perceptual framework that combines character, values, and associated concepts being multidimensional and incorporating a vast array of elements. Similarly, encountering a new German sports car in a corporate showroom is an integration of elements providing a controlled framework of experience linked to visual, object, and concept-related values. This integration of design elements is again multiperceptory and multisensory - the smell of leather, sports seat ergonomics, expensive door ‘clunk’, and the perception of ‘expensiveness’, ‘prestige’, and ‘exclusiveness’. So, appropriateness can be said to be related to visual, object and concept experience, but is not formulaic – and can only really be controlled in closed applications – although place and location can play a key role in determining how design elements are both brought together and arranged.

In a design language appropriateness is a woolly overarching term applied to instances where something is seen as being suitable or in keeping with its

function or surroundings, usually within or as part of a specific application. Appropriateness must be separated from 'similarity' defined as the perception of similar elements as a single group or chunk<sup>1</sup>. It normally refers to one element or set of elements in relation to another element (or set of elements) or context, being defined according to personal or recognised benchmarks. Appropriateness is both multisensory and multiperceptory and is selectable from a menu of affective and cognitive perceived values which have been developed within benchmarks. These personal benchmarks as codes of understanding and perception in a design and communication arena are conditioned by the interpretation of closed experiences<sup>2</sup> (single objects) and open experiences (a collection of related or unrelated objects/forms).

Twenty first century living has become a user centred culture fed by a design profession that is required to solve visual and functional problems, anticipate the user, assist in the development of personal armouries of experience and is described as 'a broker of ideas and values'<sup>3</sup>. The persistence of the design discipline as a creator of capabilities and developer of experiences extends the apparatus that individuals both possess and catalogue within an ever-expanding man/machine interface portfolio. Today's western world expects, rather than desires, high quality manufacturing, therefore the need to develop products appropriate in their parts and as a whole has become a key element of lifestyle marketing and product development, life experience, human/product interaction, brand awareness, competition issues, and product placement.

Designers present menus of experience, open and closed, that are constantly changing according to contexts and constraints – the complexity of which varies with each interaction. It is suggested the whole object must be more easily interpretable than the elements in order to secure closure<sup>4</sup>. Simple

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<sup>1</sup> Lidwell, W., Holden, K., & Butler, J., Universal Principles of Design, Gloucester Massachusetts, Rockport, 2003, p.184

<sup>2</sup> Wertheimer, M., (1923), *Untersuchungen zur Lehre von der Gestalt* (The laws of Organisation in Perceptual Forms), *Psychologische Forschung*, vol. 4, pp301-350

<sup>3</sup> Dormer, P. The Meanings of Modern Design, London, Thames and Hudson, 1990, p.10

<sup>4</sup> Lidwell, W., Holden, K., & Butler, J., Universal Principles of Design, Gloucester Massachusetts, Rockport, 2003, p.34

objects, natural or manufactured single element artefacts, are normally interpreted within the context of other objects of the same type and their evaluation is defined within simple 'sets' of cognitive or affective descriptors. For example, a stone selected from thousands of others on a beach may be chosen because it makes a good paperweight, or look unusual, or have an interesting soft form and texture. It will normally be judged for a single purpose and in the context of the other stones on the beach – it will be chosen for its appropriateness to fulfil a purpose – visual or physical, decorative or functional.

In many cases complex objects, combinations of a range of visual and physical elements, are designed to be an integrative experience although each user will bring to that product their own set of personal benchmarks and constraints. These object values are in some cases redefined using identifiers within a range of hierarchical codes. It is argued the perception of object elements as a group (i.e. in a closed object) is dependent upon the good continuation of visible segments<sup>5</sup>. Cars in particular are good examples of complex closed products within which a variety of physical, visual and conceptual hierarchies exist. For example, the M model sports version of the BMW 3 and 5 series is a more expensive, more complex, and of a perceived higher order than the numerically top of the range 330 or 540 models. This suggests product definition and appropriateness are conditioned by sets of perceived boundaries of classification. In this sense design follows the codes and conventions accepted in the taxonomies of nature.

However, where individual products or visuals are designed to conform to accepted systems – or are produced to intentionally focus on the elements rather than the whole product these 'open' solutions are often appropriate to solving particular problems. Many contemporary products use systems in this way to ensure marketability and to broaden consumer choice. For example, computer USB ports enable the integration of a multitude of product types into

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<sup>5</sup> Liu, Z., Jacobs, DW., Basri, R., (1999), Convexity in Perceptual completion: Beyond Good Continuation, Vision Research, vol. 39, pp4244-4257

infinite combinations. Similarly, advertising uses apparently unrelated visuals to communicate the difficult to define concepts, values or character of products and services (e.g. Yves Saint Laurent's advertising campaign using model/actress Sophie Dahl). It is suggested the communication order of design appropriateness varies according to both criteria set by the experience and the design of the elements themselves. Where advertisers and corporate designers have control of the communication statement, and it's possible modes of perception, then the mapping of design intention on to user perception can be reasonably easily evaluated. However, the use of undefined associatable features create a lack of clear definition about how design appropriateness works and hence makes it difficult to formulate evaluative criteria for thorough examination.

Appropriateness is also inherently linked to design function - visual, physical, and/or conceptual - regardless of communication mode. However, it is not constrained by the interpretation of function. Where a design is considered to have a high level of affordance<sup>6</sup> (i.e. where the physicality of the object corresponds to the intended function), and there is good natural mapping<sup>7</sup> other considerations above and beyond the unambiguous interpretation of function are vital constituent elements of the full interpreted message. For example, French street signage is equally as readable as its British counterpart but the elements are combined differently according to a related but varying range of constraints (use of language, technologies, information systems, cultural identities and user expectations).

While street signs operate to a certain extent as self-contained units of information perceived as contributing to, but separate in function from, their physical surroundings this is not the case where design elements must operate in close proximity to each other. Although it is clear that functional objects 'are not readily associated with stories, concepts and allegories'<sup>8</sup> like

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<sup>6</sup> Gibson, J.J., *The Ecological Approach to Visual Perception*, Houghton Mifflin, 1979

<sup>7</sup> Norman, D.A., *The Design of Everyday Things*, London, MIT Press, (1988) 1998, p.75

<sup>8</sup> Barnard, M., *Art, Design and Visual Culture*, London, MacMillan, 1998, p.44

other forms of art they nonetheless possess interpretable visual elements that are codified and interpreted in a different (but no less valid) way. By its very nature all design involves the expression of values but is open to positive and negative interpretation, can be viewed as ambiguous or unambiguous, and is subject to changing perceptions both from one person to another and over time.

Where design elements are uncontrolled (in both open and closed situations) so perceptual tensions are created, and hence unclear messages presented. For example, the use of a typeface on a car instrument panel in a closed design system can be gauged by its perceived character in relation both to its surroundings and to the centrally communicated brand values of the product. Research carried out at the University of Ulster showed the numbers used on the speedometer of a General Motors 2 litre 16 valve SRI 'sports' Vauxhall Cavalier (typeface: Pump) when displayed in isolation were easy to read but their visual character was described by participant groups as 'slow' and 'static' – in conflict with the car styling and interior. These relationships (visual, physical, and perceptual) combine to communicate sets of messages which map across related visual elements, physical shape and materials, and notions of brand quality and/or national identity and personal associations with those communicated values. While simple models of interpreted meaning exist<sup>9</sup>: natural meaning, conventional meaning, and intrinsic meaning, these are generally applied to whole visual/object experiences and do not really analyse, compare, or contrast elements within it.

In developing solutions to given problems the designer engages in multi-partner agreements in developing communication statements<sup>10</sup> via two and three dimensional designed objects. For most people initial interaction with a designed object is visual and in many cases interpretation and attributed value are conditioned by this. Barthes<sup>11</sup> for example, compares cars as modern day

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<sup>9</sup> Panofsky, E., *Meaning in the Visual Arts*, Harmondsworth, Penguin, 1955

<sup>10</sup> Dormer, P. *The Meanings of Modern Design*, London, Thames and Hudson, 1990, p.10

<sup>11</sup> Barthes, R. *Mythologies*, London, Paladin, 1972

equivalents of great gothic cathedrals, acknowledging they are 'consumed in image if not in usage'. In a society where products are differentiated and chosen on the basis of corporate image and styling, for most products are now built to high quality standards, the co-ordination of elements that have clear (intrinsic) links will enable the elucidation of messages between designer and perceiver. Take the use of back and forward arrows on a computer desktop.

Appropriate design:           enable clear usage  
  clearly suit general context  
  reinforce visual message/style  
  support values relayed by other visual elements  
  use suitable art direction (colour, tone etc)

Inappropriate design:       difficult to use  
  do not suit general context  
  subverts visual message/style  
  contrasts values relayed by other visual elements  
  use unsuitable art direction

It should be noted the levels of appropriateness to inappropriateness are scalar and each element varies in density with each application. Therefore, while being linked to visual, physical or conceptual function, appropriateness is more wholly associated with the communication of intended and perceived messages. There are strong similarities between this approach and the model suggested by Pile<sup>12</sup> which relates to the communication and interpretation of concepts.

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<sup>12</sup> Pile, JF., Design: Purpose, Form and Meaning, Amherst, Univ. of Massachusetts Press, 1979, p.93



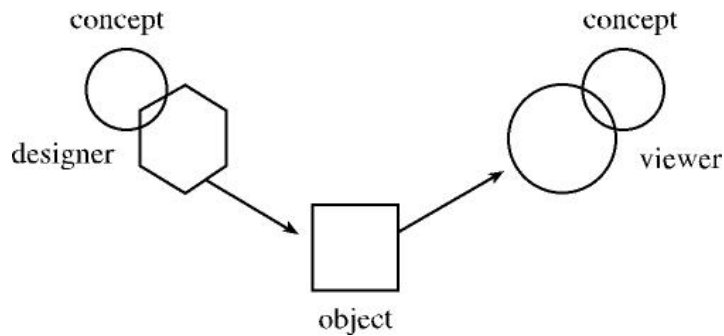


Figure 1: Pile's concept model (Source: Pile (1979) p.93)

However, it is clear this model can be extended to include not only concepts but the communication of values and visual/textural/synaesthetic character. While evaluative mechanisms are used by marketers in a prototype or post-prototype situation to gauge product/service perception there is little evidence of participant testing in product and graphic design. Similarly, most evaluative mechanisms related to design elements normally rely on designer intuition, and are largely untested prior to production. While large organisations have the resources to test pre-production models to evaluate the communication of character, concepts, and values this is not the case with the vast majority of design outputs and almost never occurs during the design process. A rule based model for testing the communication elements of design outputs is proposed.

### **Design Appropriateness: A Rule Based Model**

The following concept for a rule-based model (Figure 2), comprised of three experiment components, is designed for measuring design perception in relation to character, appropriateness and values. It was developed as a result of participant group-based experiments carried out within the School of Art and Design at the University of Ulster. The three components of the model are designed for three separate, but linked, reasons. The conceptual component is designed to measure perceived conceptual appropriateness, the character component for perceived inherent design character, and the visual appropriateness component for perceived visual appropriateness.

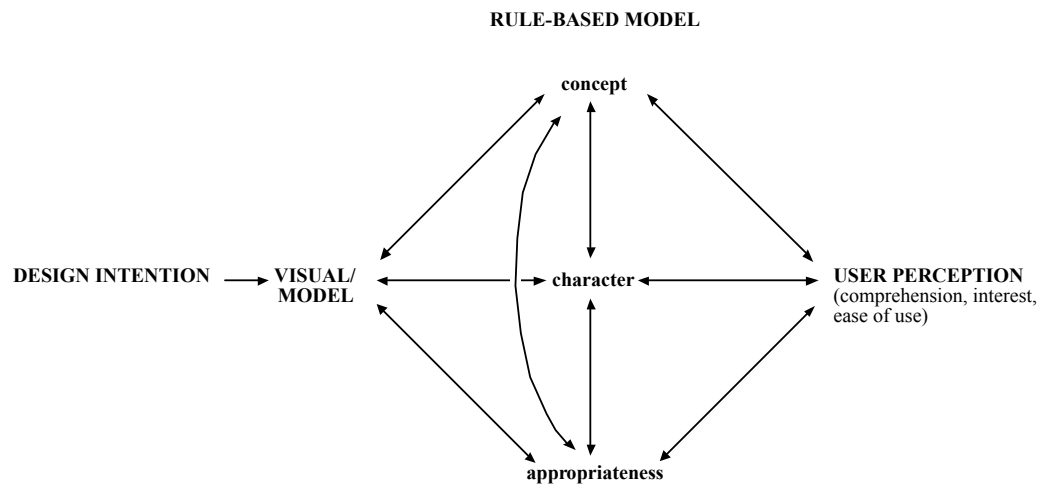


Figure 2: Rule-based model for measuring design perception

Products are externally identified as ‘corporate’ through both their styling and applied graphic identities. Therefore these two elements are integral to the conceptual component of the model. The corporate visual identity (both formal and graphical) provides the link between the visual and the conceptual. The visual identity allows the product, by association with the corporate logo, to communicate qualities which are not normally evident through the senses, the notions of ‘quality’, ‘tradition’, and ‘excellence’ all being conveyed this way.

In professional practice, the use of descriptive keywords (i.e. single word concepts) in visual matching experiments could provide information about the perceived qualities of products and their constituent sub-elements. Where a range of applied graphic elements is under consideration, a conceptual matching method would provide a hierarchical preference order for measuring conceptual appropriateness. This would be particularly useful where combined, but unconnected design elements, are used to communicate a similar ideal or message. As a result of measuring hierarchical preferences (by testing a range of descriptors on a scale with participant groups) design teams have a tool that can help measure the effectiveness of their design intention. A conceptual/visual single matching experiment (looking at value hierarchies within design elements) can be used in order to identify which dependent variable contains key features, i.e. can be attributed single word

concepts hierarchically. This method is of benefit where a limited number of designs, which have close similarities, require further testing in order to identify their key communication feature. For example, graphical elements on products often do not communicate the values attributed to their host product or core brand values. This is because they are often seen as additive elements (applied after the form is created) rather than core design elements which influence perception and are a key conduit in the communication process.

Character has various facets - conceptual, physical and sensory. In design these facets are holistically defined as the inherent (intrinsic) design character. The inherent design character is an amalgamation of perceived use, brand, design output (environment/product/graphic), character, and values.

The character component of the rule-based model enables perceived inherent character, and related degrees of richness, to be measured. It enables experiments to be conducted in order to provide a type of product profiling. The methods used in a semantic differential method (i.e. using keywords to measure the character of design elements and their combinations), can provide information about the conceptual, physical and sensory character of products or graphics.

In the experiments undertaken, descriptive words and their antonyms, were created from keyword elements of design intention which were then tested with various participant groups in order to map design intention onto user perception. These have an application in professional practice in that design teams, in allocating richness values to the products or graphics that they design, can use their keywords to measure perceived richness values from participant groups. These richness values can then be assessed and cross-referenced across the design elements in order to find out if the character of individual elements is appropriate and hence a measure the whole communication statement can be measured and evaluated. It is probable that

character experiments when conducted using single design elements, would produce a set of results which was different, but related to, those of combined elements (forming a graphic or physical product). For example, car design commentators regularly use unrelated elements to describe their multiple-characteristics, Seymour<sup>13</sup> described the Ford Ka as an egg with a Grace Jones haircut.

The visual appropriateness component enables design teams to measure the perceived appropriateness of separate design elements by a matching process. These design elements, created by the design team, can be matched by participants according to their perceived appropriateness. This task is designed to integrate the elements from the conceptual and character components. It allows design elements, which have been reviewed, evaluated and developed through the other two components of the model to be matched. By creating a scenario based solely upon the concept of the appropriateness of design elements a non-prescriptive approach towards gauging design perception can be undertaken. Although it is difficult to develop truly integrated complex products, this type of appropriateness testing would ensure good product communication. This approach could help to eradicate poorly integrated elements – ‘plasticky’ dashboards in expensive cars, ‘cheap’ graphics on expensive imported products, ‘sterile’ letterforms on funky products – and ensure coherent design experiences. It is not a method for creating slick homogenised solutions – rather a way of accurately mapping product ethos onto user perception.

### **Implications for design**

An important aspect of analysing the suitability of one design element to another in a scientific way is the extent to which individual visual form characteristics are appreciated over invisible corporate values. The corporate graphic identifiers are the main communication factor and without them comprehension, interest or ease of use would be limited. It appears that, with a few exceptions, the font or numberstyle used to communicate specific

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<sup>13</sup> Seymour, R., (1996), *Over the Edge*, Blueprint, October

models across many products is generally constructed within the framework of the corporate ethos rather than being designed to be appropriate to the contexts and constraints of the form. In many instances specific model identifiers can be perceived as being inappropriate in style to the form which they identify or do not effectively communicate the corporate values of the manufacturing organisation. An experiment-based approach for testing the appropriateness of design elements can assist in the providing a system for measuring the effectiveness of the design communication and appropriateness of the design sub-elements.

Scientific testing of perception within a design context offers an opportunity for feedback into the design process. It provides a type of validity, based upon the observations of participant groups, presented as evidence. However, the method is always constrained by the accuracy of the measurements, the relationship of the experiment material to its actual context, and the extent to which the participant group reflects the target market audience. Thus, experiment methods which are relatively straightforward, carefully measured and undertaken with specific group types can produce data for statistical analysis with a reasonably high degree of validity, although they are subject to the limitations of the methods themselves.

This method enables a coherent and market-led approach to design development to be taken, and it also provides an information base upon which new combinations and alternatives can be created. The scientific method, incorporated into the design development phase, can reduce risk through miscommunication, while also enabling proposals to be measured. As an aid to the evaluation of innovation and creativity an experiment-based approach to design perception can help to develop design knowledge, test diversity potential, and allow organisations to review, evaluate, and develop their corporate communication programmes and systems.