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## **Designing with Images: using a realism continuum to choose pictures for communication tasks**

### **Keywords:**

Graphic design, picture, perception, type, sustainability, design education

### **Introduction**

Graphic design has historically been concerned with giving identity to clients' projects. Meanwhile its own identity was always split, expressing itself through pictures and type. However, the only traits to be diagnosed were typographic. 'Graphic design' and 'typography' have become interchangeable labels, to the detriment of any theoretical position on pictures. This paper explores one way to develop a theory of pictures specific to the graphic design discipline. Picture theory is required for this field in order to support and sustain design educators in their quest to explain to students the role of pictures in deliberate communication. Students can then go on to practice more sustainably if they can articulate to their clients the pictorial (as well as the typographic) elements of their communication designs.

This paper is concerned with the following questions: Might the different levels of realism within pictures lead to different meanings? If so, can the examination of image in terms of its relationship to realism be a means of evaluating pictures for graphic communication?

This paper seeks to explain how pictures might be chosen to convey an intended meaning. This aspect of graphic design, for many reasons, has been left alone by most theorists, while typographic theory has been adequately explored and explained for graphic designers and educators. My approach will be to explain pictures in terms of their distance from photographic realism. Realism and clear communication have different intentions that only sometimes coincide. Paradoxically, it may be that one can communicate more accurately using less accurately rendered pictures.

Lupton and Miller in *Design Writing Research* (1999) are among the few theorists to try to redress the bias towards type: "a divide persists between words and pictures, high academia and low mass media, authors and designers" (p.91). Even within design, a relatively picture-heavy discipline and a relatively new field for theoretical interest, the textual aspects are easily the most explored. It may be that there are more of the typographically focused theoretical works merely because type is a more quantifiable, more easily measured science: It can be broken down into font sizes, leading and page proportions, for example. For the researcher investigating pictures in graphic design, the trail quickly goes cold, at best leading outside of graphic design discourse and into art history, psychology and sociology. What should picture theory for designers encompass? Type theory is about choice of type appropriate to the communication task at hand. Picture theory for graphic designers might reasonably be expected to do a similar thing: provide a basis upon which pictures can be chosen for the communication task at hand. But how to choose? In

spite of some disagreement regarding *how* type should be classified, it seems to suit type theorists to accept that type *should* be classified. surprisingly, when the focus is switched to pictures, such guidelines are not easily found. The rules that designers seem to need to work within as regards typography are either not there for pictures or have not been defined.

Bamford (2003) says there can't be a vocabulary of images since it would be as limitless as the imagination and graphic skills of humanity. But a search for a vocabulary of images is a red herring for graphic design. Typography is less about *what is spoken* and more about *how it is spoken*. Similarly, picture choice for graphic designers need not concern itself unduly with image; with *what is shown*, but rather with pictures; *how it is shown*. Some definitions will make the previous statement clearer. In a standard dictionary, 'image' and 'picture' can be more or less synonyms. In the specialist discourse of design however, there is a licence and a need to make a clear distinction between the words. Image is what's being depicted, picture is how it's depicted: a picture fixes an image in a particular way. Mitchell describes this image-picture distinction as follows: "you can hang a picture, but you can't hang an image". For example, an image of a bird in flight may be pictured through a photograph or it may be pictured through a water colour painting, a pencil sketch or a range of other means. These are different pictures of one image. As I intend to demonstrate, the medium is less important to the picturing of the image than is the escape from the one medium that has dominated graphic design's pictorial space during its short history: photography.

### **The realism continuum**

There has been a separation in picture theory between photography and illustration, a distinction reinforced through separation of disciplines in art schools: photography from drawing and painting; technical drawing from illustration, and so on. I wish to re-unite these modes of depiction here in terms of their relationship to pictorial realism. An easy way for us to understand pictures is to classify them along a continuum. Broadly speaking, the realism continuum is a visual model that presents any image as a series of pictures, each iteratively reduced in fidelity from its referent. An example is given at Figure i. Knowledge of the continuum and the workings of the human visual system (eyes and brain) can assist the designer or art director to choose pictures pertinent to a communications task, and assist the design educator to explain picture choice to students.

Figure i) A realism continuum (Medley 2009, after Dwyer, et al)

To explain the effectiveness of the realism continuum in evaluating

pictures, we need firstly to know something about vision; namely why we can see and understand pictures reduced in realism from their real world referent. It is difficult to grapple with vision as a problem since we are all so familiar with our sense of sight that we take it for granted. Given that the best estimates are that humans have been drawing only within the last 50,000 years, surely the human eyes and brain have only developed through looking at the real world in all its clarity and detail. One could be forgiven for thinking that photography, the pictorial means which most closely represents the real world, would be the most effective means for communicating anything visual. Its invention roughly a century and a half ago might easily have been expected to solve all of humanity's visual communication problems since, finally, there was a way of capturing the real world unmediated by human hand. Many studies ( ) however, have shown that this does not hold true, especially in the case of visual instruction. The standard answer for this surprising state of affairs is that photography can introduce noise into a communications equation when it takes in impertinent elements surrounding any chosen subject. However, this is only a very small part of the reason that high-fidelity pictures are not suitable for all visual communication tasks.

The real reason is that the brain is not often concerned with the level of precision that a photograph can furnish. Since nothing can be viewed from exactly the same position twice, the image of a thing registering on the human retina will always be of a slightly different size, shape and colour. Accordingly, the mind needs ways of understanding that what the eyes are seeing as new stimuli may have been seen before but from a different angle, different distance and/or under different conditions of ambient light. As a function of mental faculties that deal with these variations, the mind needs to deal only in schema, not pictorial precision. This margin for error means illustrations of varying fidelity can still be effective in communication; sometimes more effective than the fidelity of a photograph.

Psychologists place this margin for error under the heading of 'perceptual constancy' (Walsh and Kulikowski 1998: 492).. Shape, size and colour constancies are aspects of this mental margin for error. Size constancy means that a given object is perceived as having the same size regardless of its distance from us. In other words, our knowledge of its size will override its presentation on the retina. Shape constancy means that an object is seen to have the same shape regardless of its orientation to the viewer. Thus we see things 'as they really are' and are not confused by variations in the information presented to the retina. Colour constancy means that an

object is perceived as having the same colour in spite of changes in lighting conditions. Other visual experiences which exhibit constancy include, but are not limited to, our perception of brightness, motion, and direction. In other words, the reality of how something looks in each particular situation can present a visual problem to be solved, rather than being a solution to the problem of what we understand that thing to look like. It seems that illustrations, as opposed to photographs, can supply the mind with a generalisation of an object that communicates the pertinent information without the sometimes confusing specificity inherent in photographs.

### **History of the continuum model**

While Gibson and Gombrich had long been interested in the separation between the accurate illusion of life and the abstraction of the visible world, *A Guide for Improving Visualized Instruction* (1972, p.95) is the earliest work to directly suggest a 'realism continuum'. In it, Dwyer tabulates variables to be considered when using illustration for instructional use. One of the variables is the level of realism. Wileman, In *Visual Communicating* (1993) Wileman addresses a much broader range of pictures, from photographs to ideographs, in terms of their level of realism. The realistic end of his continuum is labelled 'concrete', and the distilled end, 'abstract'. According to Wileman, "There are three major ways to represent objects—as pictorial symbols, graphic symbols, or verbal symbols" (p.12). Wileman's labels draw from Rudolph Modley's categories for graphic symbols (Modley, 1976). Using his model, Wileman found, somewhat surprisingly, that the most realistic pictorial symbols were rarely likely to be the most readily identified.

McCloud's continuum (1993) is primarily concerned with the drawing of comics characters. He demonstrates that this reduction in pictorial fidelity results in more than one changes in the way the final drawing is perceived in the comics reader. McCloud proposes that drawings reduced in realism move from Complex towards Simple; from Realistic to Iconic; Objective to Subjective; Specific to Universal, closely reflecting Lilita Rodman's (1985) concept that abstraction moves images from the particular to the generic; from a focus on surface to a focus on structure; and from mimetic to symbolic, that is from being a high-fidelity copy of the physical appearance of the thing to a distilled, low-fidelity approximation.

According to McCloud differences occur as an image is rendered less and less realistically. For example, he has a scale which runs from *Specific to Universal*. The continuum theorists above assume a

linearity, not just in the iterative reduction of detail from the original photographic capture of an image but also in the way this reduction causes the pictures along the continuum to change in communicative function. For example, McCloud sees the continuum as serving to describe pictures as Specific to Universal, and so on. This implied linearity of function would suggest that pictures become progressively better at communicating some things and worse at others as they are chosen from one end to the other along the continuum. However, McCloud's measure of Objective to Subjective along the continuum, is refutable. One of graphic design's most influential theorists, Josef Müller-Brockmann, would endorse photography, from one end of the scale, for its communicative objectivity, while another leading practitioner, Otl Aicher, would champion the use of the highly distilled pictograms, the kind of pictures found at the other end of the continuum, also for their clarity and objectivity. These latter pictures are elemental components of information design. A field of design that theorist Robin Kinross (1989) describes as projecting the rhetoric of neutrality.

### **Confounding the linearity of the continuum**

Indeed, there appears to be empirical evidence to suggest that this linearity of affect along the continuum is confounded in particular circumstances. Fussell and Haaland (1978) describe how they put visual tests (containing pictures of "common objects" such as a tree, people, a chicken, etc.) before some 400 Nepalese adults who were unused to pictures. The study was done in order to prepare materials for instructional booklets for non-literate people. The study group was shown 10 different things presented in six different styles. These styles, from realistic to distilled, comprised black and white photographs; black and white photographs with background removed from around the subject ('blockout'); a line drawing with shading and internal detail (a 'three-tone' picture); the same drawing without shading and with minimal interior detail; a silhouette; and a line drawing. Cumulative correct responses to all 10 of the pictured subjects were as follows: Three-tone, 72%; Blockout, 67%; Line drawing, 62%; Silhouette, 61%; Photograph, 59%; stylised drawing, 49%. The authors conclude that:

the lessons to be learned from this part of the study would seem to be that the more detailed and realistic a picture is, the more effective it is. The so called 'simple' stylised drawings are evidently not simple in anything but appearance, making greater demands on the person trying to interpret them. (p.27)

However, the authors make no special mention of photographs, the most 'detailed and realistic pictures' in the sets as having performed the worst bar the stylised drawings. It is by no means a

simple progression towards realism that will solve their communication problem since the most realistic of the picture sets performed almost as poorly as the least realistic, and the best performing sets of pictures in terms of realism actually lay in between these two extremes. Dwyer observed, following one of his studies, that an increase in the amount of realistic detail contained in an illustration will not produce a corresponding increase in the amount of information a student will assimilate from it (Dwyer, 1972, pp. 89-90). However, he also found that "The use of specific types of visual illustrations to facilitate specific types of educational objectives significantly improves student achievement of externally paced instruction" (Dwyer, 1978, pp. 96-97).

The realism continuum is best thought of as helping us to understand two major tasks of the human visual system. At its abstract end the continuum model helps designers to choose pictures which best solve the object constancy problems for the audience. Designers and illustrators should know that objects typical to a class are the easiest for their audience to learn and then recall (Rosch, 1978). At the realistic end, the continuum model assists in the task of solving the homogeneity problem: which specific example of person or thing is the audience being asked to recognise? Between these two ends of the continuum, line drawings seem to be in a cognitive 'sweet spot'. Gooch, *et al*, demonstrated that the processing that takes place in the early stages of human vision appears to produce imagery that resembles line drawings (2002). Perhaps because these drawings seem to mimic aspects of visual perception itself, they seem to be appropriate for a wider range of tasks than the very concrete or the very abstracted image.

As graphic designers and visual communicators, we can begin to experiment, with research grounding, to make pictures which play directly to the psychology of vision: using invariants which acknowledge perceptual constancies; and thinking about the realism continuum as a measure to tell us when we are trying to distinguish between classes of objects or within a class of objects, and therefore when to accentuate the synaesthetic, gestalt or caricature approaches that drawings afford us. In other words, visual communicators can help solve the visual problems of realism on behalf of their audience rather than relying unquestioningly on photography; a medium that tends to re-present the complex visual problems of the visible world. For those picture-makers or designers for whom this seems too prescriptive a method, knowledge of the psychophysics of vision should still assist in the creation of pictures that aspire to confound the viewer through deliberate rejection of perceptual rules. For example, the better known visual

tests such as the Müller-Lyer illusion and the Sanders Parallelogram play on the extremely rare circumstances in which shape constancy fails the human visual system.

## **Conclusion**

This discussion concentrates on perceptual responses to pictures rather than on the role of interpretation. My bias comes in part from a graphic design background where practitioners in the discipline are generally trying to reach a wide audience. The bias is adopted in order to establish whether we may confidently agree, as a design community, on the ways pictures communicate because of their relationship to realism; to ascertain what we have in common in terms of perception before we decamp into visually interpretive factions. Further complicating this issue is that perception, as psychology would have it, is interpretation: of sensation. From experiments conducted with students of varied international backgrounds (Medley, 2009), however, the realism continuum model does seem to have some universal currency. When students were asked to place, from most realistic to least, half a dozen different, unlabelled representations of the same object along a continuum, the responses were uniform. Again, however, we must acknowledge that design students are not laypersons when it comes to the image. Training in aspects of picture-making can change the way one perceives pictures (Noide, et al, 1993, p.219).

Each of these continua are helpful models to begin categorizing pictures, but it should be remembered that they are open to criticism for various reasons. For example, at Figure i, it can be argued that the silhouette with detailed outline belongs in the pictorial symbols category since its appearance is a function of lighting conditions rather than any iconic or symbolic abstraction. That is, a silhouette can occur in the real world; the visual world unmediated by drawing. In other words, it can be an image before it is made into a picture. The silhouette is closer to the colour photograph in that it too can be captured from the real world using a camera. On the other hand, the detailed line drawing is closer to the colour photograph in that it may contain nearly as many salient details as the photograph.

The continuum is a blunt instrument. Pictorial decisions, like typographic ones, are not always easy to make by arranging pictures along a continuum and plucking out the right one. Perhaps the progression along the continuum is problematic because the visual system has more than one task to perform. Psychologists talk of 'Object constancy' and 'homogeneity' problems (Rhodes, 1996). What these mean, respectively, are 'what kind of object am I looking at?'



and 'which one of those particular objects am I looking at?'. The first is a more coarse problem of differentiating between classes of objects; is that a car or a house? The second is a more fine-tuned question intended to differentiate between objects within the same class; what model of car am I looking at? Or finer still, which particular person am I looking at? However, conceiving of pictures along a spectrum is a useful conceptual model that helps designers to understand that different levels of realism are effective for different communication tasks. Using this conceptual model, one can, with some certainty propose that the coarse problem described above is more effectively dealt with by communicating with less realistic pictures, and the fine problem more effectively dealt with using pictures higher in detail, more closely matching their real-world referent.

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