The dimensions of graphic design: in theory

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Abstract: Graphic design is more usually discussed through the material outcomes of the process of graphic designing, rather than process itself. This is common in visual studies of material culture, from Art to Architecture. Yet outcomes of graphic design tell us little about the design process that created them, or the relationships that exist in the field. In this paper we look beyond the artefacts and consider how graphic designers have attempted to represent the subject in terms of diagrams that explain complex relationships and ambiguous terminology. Examples are featured that explore 'intermediate dimensions' of the subject, examining earlier work by Bruce Brown and Katherine McCoy, as well as a wider framework of design and design education, developed by Bruce Archer in the 1970s. The outcome is a theoretical construct that incorporates common concerns attempting to locate graphic design in relation to design, science and humanities.

Keywords: Graphic design, theory, diagrams, dimensions, education.

1. Introduction

It is typical to discuss the nature of graphic design using examples of graphic design—posters, brochures, signs, websites, to name a few outcomes of this ubiquitous design process. This paper avoids this approach. It attempts to present a framework that is free from the subjectivity and ambiguity often associated with outcomes in the field. But, then, how do we depict graphic design? What are the dimensions of the subject? How can the field organise itself, in order to further develop. In the past we have looked to the field's practitioners, historians, and more recently educators. A future may well see increased prominence of critics, researchers, and theorists. How will these important roles—practitioner, historian, educator, critic, researcher, theorist—be located in relation to each other, and the wider context?

Traditional definitions of the field are now recognised as limited at a time when graphic design must have professional as well as academic kudos. Some practitioners, historians and educators have realigned themselves to new descriptors that have emerged from within, and outside the subject. These embrace traditional and emerging fields, often referencing old or new technology and terminology. This has resulted in attempts to redraw perceived boundaries of the subject, whilst core values arguably remain the same. In this contested sphere we are confronted with the question of what the future landscape for graphic design will look like?

It has been suggested by Jessica Helfland and William Drentell that to look ahead, we must look back [17]. This paper extends previous work based on this premise. It builds on research that explored how the traditional definitions from which the subject emerged, and has been represented in visual form, can link to the creation of a model that provides an opportunity to guide future progress. This is achieved by considering key spheres of influence in graphic design, recognizing that there are traditional, and emerging influences, that together can be modelled and mapped, helping to shape future planning and integrate practice, history, and education with the development of criticism, research, and theory in the field.

This paper exposes an applied model that is best described as work in progress. It builds on the development of a basic model previously discussed at the International Association of Societies of Design Research conference in Hong Kong, 2007 (IASDR 2007) [13]. The applied model discussed here depicts what is described as the macro and micro dimensions of graphic design: in theory.

2. Using diagrams to depict aspects of graphic design

Examples of diagrams used to depict theory and research relating to graphic design are now more accessible. In Bennett [8], we see the depiction of theory and research focused on methodology, design process, relationships and cognition. These span a range of approaches that include the development of design methodology [4], the usefulness of activity theory [11], IDEO's approach to human centred research methods [12], design process, audience and user research [22], Richard Johnson's circuit of culture [25], and various approaches depicting 'the cognitive process theory of communication' [26]. These examples can be said to depict aspects of theory in graphic design.

However, using diagrams to depict graphic design as a subject in its entirety is unusual, considering the visual nature of the subject. This is evident in Helen Armstrong's edited book *Graphic design theory: readings from the field* [2]. The book, split into three sections that deal with 'creating the field', 'building on success' and 'mapping the future' respectively, in the main follow the model used by design historians of showing examples of graphic design outcomes accompanying written text. Among the variety of outcomes on display – posters, publications, 'logo systems', and screen-based media, – some experimental work and the occasional use of schematic representation support the text. The content spans a century between 1909–2008 made up from contributions by familiar names such as Marinetti, Tschichold, Warde, Bayer, Rand, Weingart, McCoy; Scher, Heller, Helfland, Manovich and Lupton, to randomly select a few.

The third section of the book, *Mapping the future*, features nine contributions that stem mainly from the turn of the millennium, (with the exception of two from the 1990s). The title of this final section indicates a need to think about the future of the field, and 'map' it. This sentiment builds on what one of the contributors to the book, Jessica Helfland, had to say at a conference in America. During a joint presentation with William Drentell, they apparently commented that 'mapping the future of the profession will be difficult without looking back at our history to get a better idea of where we are going' [17].

In the early part of this millennium, this has been a preoccupation of the author of this paper and is part of a wider research investigation concerned with identifying the 'dimensions' of graphic design. Using the term 'dimension' developed from the use of metaphor to think about graphic design as some kind of 'nation state' [13]. The term is useful for two specific reasons. First, as a useful way to determine what Henwood & Pidgeon [15] describe as 'intersecting properties of core conceptual categories'. Secondly, it allows the opportunity to consider the idea that different core concerns may occupy similar territory, but differ in scale.

3. Depicting graphic design

As previously stated, there appears to have been few formal attempts to use diagrams to explain, or 'model' the field of graphic design, even though there is increasing amounts written about the field. In this paper we consider three attempts that are locatable in the research literature, books about graphic design, and design conference proceedings, that span the last thirty years. First, by Bruce Brown [6], second, Katherine McCoy [20], and more recently by the author of this paper [13].

3.1 The Graphics Triangle

Bruce Brown attempted to explain the three values of persuasion, explanation and identification in model form for the design of communications, referring to it as 'The Graphics Triangle'. This emerged from a need to discuss the communication values taken up when conveying either 'messages' or 'ideas'. The model demonstrates how three facets of graphic design – explanation, persuasion and identification – form a triangle, see Figure 1.
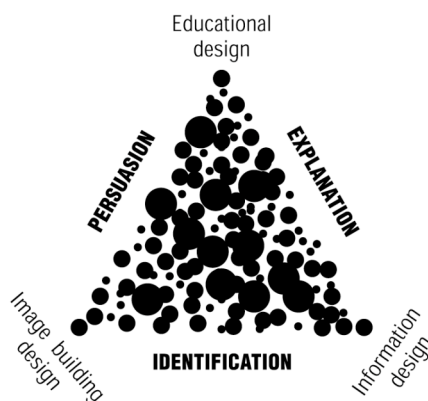

Figure 1: Browns model of values in communication design.
Source: Brown, 1979, pp. 133, (redrawn here).

Brown outlined each of the facets. In his view 'explanation' is concerned with health, safety and welfare. It is suggested that the outcome of designs in this category should result in one preferable solution, rather than a variety of possible options. This is the case with the second facet, 'persuasion', which is more open to alternative outcomes – seeking recognition is very important and a primary motivation here and the possible results are wide ranging. The third facet is 'identification'. This involves the need for distinction when anonymity prevails. Examples used by Brown to illustrate the three facets respectively include illustrations of putting on a life jacket, the design of a book cover, and a logotype.

It is argued that the nature of each of these facets is associated with either an active or a passive communication role, depending on the relationship to the audience. Brown argues that explanation and persuasion possess active values in addressing audiences. Consequently, persuasive values are associated more with trade and commerce, due to the potential emotional appeal, whereas explanatory values appeal to our sense of function, the need for rational decision-making and 'simplification'. However, identification is passive, relying on the audience to search out the communication value.

Brown identifies three further facets that can be described as categories of design. These generic terms, associated with different kinds of material outcome, are labelled educational design, image building design, and information design. In Brown's model, these additional categories (or what are referred to here as 'angles') sit at the three points of the triangle, and emerge from the overlap between the two converging facets. It should be noted that it is not his intention to polarise these values but to acknowledge that the majority of design activity takes place in the space enclosed by these facets and angles.

Identifying these facets and angles, helps us to gain some understanding of some key values in graphic design and communication, and demonstrates equal levels of importance attached to each of them. This is useful, but also restrictive if the aim is to capture a more complete picture of graphic design. The model is limited in its ability cover the full spectrum of graphic design activity and influence, from conception to realisation.

To build his argument, Brown uses many examples of work that derive from the process of graphic design – logotypes, instructional diagrams, advertisements – but these come from what might now be considered a very limited range of two dimensional media, and are very much of their time. Other criticism is that the model does not fully engage with the potential influence and impact of changing technology, and how technology might act as a possible contributor to enhancing values of persuasion, explanation and identification.

3.2 Typography as discourse
The second model we discuss emerged less so from a wider graphic design perspective taken by Brown—his approach did not show favour to any of the traditional activities associated with the subject such as illustration, photography, typography and print, from which graphic design emerged in the early twentieth century.

In the 1980s the phrase 'typography as discourse' surfaced from Cranbrook Academy of Art in Michigan to describe a model that had been developed in education by Katherine McCoy. This has been referred to as 'expressive formalism' [18]. This model appears to have emerged as a reaction to the rational problem solving approach in graphic design that had developed with the maturing of modernist principles, most revealed through graphic design work for large American corporations. Linguistic theories of semiotics provided the platform for this approach by McCoy that reflected the relationship between text and image with the processes of reading and seeing. See Figure 2. The model is underpinned by a series of dual terms adopted by McCoy from the French philosopher Derrida; art-science, mythology-technology, purist-pluralist, vernacular-classical, [23].
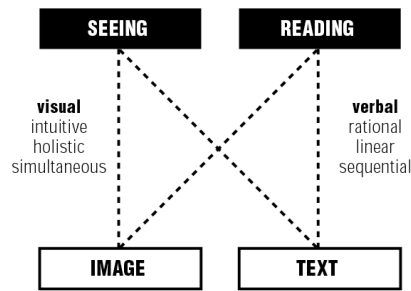
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         ┌─────────────┐   ┌─────────────┐
         │   SEEING    │   │   READING   │
         └─────────────┘   └─────────────┘
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visual
intuitive
holistic
simultaneous

verbal
rational
linear
sequential

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         ┌─────────────┐   ┌─────────────┐
         │    IMAGE    │   │    TEXT     │
         └─────────────┘   └─────────────┘
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Figure 2: McCoys model of 'Typography as Discourse'.
Source: Lupton, 1996, p. 51, (redrawn here).

The background to this work, explained by McCoy [20] suggest that the roots of graphic design in America lie in book printing and type-cutting in Europe spanning the period since the early Renaissance. She explains that in the early twentieth century the artists and designers of modern movements such as cubism, futurism, Dada and surrealism, De Stijl, suprematism, constructivism and expressionism, experimented with typographic layout in expressive ways, introducing a visual quality to typographic design that contrasted with classical approaches. The 'revolutionaries' associated with these movements used typographic shape and overall layout as interpretation, adding further significance beyond the reliance on the meaning of words alone. McCoy states that 'Typography finally became an expressive visual language as well as a verbal one'. Furthermore, she notes that 'Seeing and reading are two modes through which we traditionally think of receiving messages. Image and text are two carriers of those messages.'

We can confirm from McCoy's explanation is that the classical reliance on the power of the word (seeing and reading) had limitations. These limitations were exposed by more expressive (image and text) approaches to typographic design and layout that enabled the senders of such messages to reach wider audiences through combined artistic (expression) and scientific (legibility) approaches to graphic design.

3.3 A comparison of two models

As is the case with Brown's model, McCoy's depiction takes a limited viewpoint that does not demonstrate the breadth of graphic design. Her interpretation accompanies a view expressed under the essay title *American Graphic Design Expression: The Evolution of American Typography*, and she argues that in America graphic design expression is synonymous with the development of typography. This suggests an close relationship between the two, but this is not necessarily an exclusive relationship—we know there are many other equally significant factors that have contributed to the development of graphic design. Illustration and photography are just two. Brown identifies values whereas McCoy deals with the move from objective to subjective approaches to designing, capturing the visual-verbal dichotomy.

Both examples can be described as basic models, but as depictions, neither is extensive enough to capture the complexity of graphic design activity in process, products or personnel. Brown is concerned with the intention of outcomes: image building; information; education. McCoy explains that the combination of image and text is directly linked to seeing and reading. This assumes a sender receiver relationship. Both models consider

audience perspective, but represent these in different ways. We might assume in McCoy's model that the seeing-reading domains represent the action of the audience, or the receiver of the message. The image-text domain is symbolic of the sender of the message. Whereas Brown links intention to outcome in the sense that the intention to persuade, inform or identify leads on to the activities of image building, informing, or educating.

3.4 The dimensions of graphic design

Taking a wider perspective, we now reflect on the development of a model by the author of this paper first discussed at IASDR 2007. The stated intention for this work was to identify core values in graphic design in order to link practice, education and research in the subject around a common set of relationships.

The model proposed four active domains described as Idea Generation, Image Creation, Word Interpretation and Media Realisation. It attempted to demonstrate in visual terms the argument that idea generation is the central concern in graphic design, and this domain acts as a conduit for the creation, interpretation and realisation of graphic design products by utilising images, words and media. This activity is mediated by the communication needs of core contextual domains, listed as; Commerce, Industry, Culture and Society. Industry and Commerce are explicitly identified as important contexts (noteworthy because of the emergence and popularity of the graphic design in the twentieth century). These two contexts are discussed in the graphic design literature under the more generic term of 'economic' [3].

This depiction, shown in Figure 3, attempted to visualise relationships often discussed in the literature, but not ever appearing to be visualised in the form of a diagrammatic model. In this sense, the results of the inquiry were explained in visual terms that did not rely on examples of graphic design artefacts. For this reason, this basic model attempted to fill a gap, and serve an educational purpose.
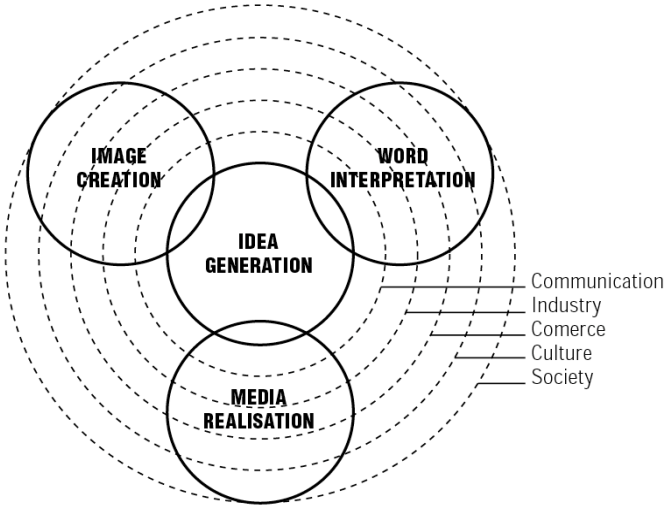

Figure 3: The dimensions of graphic design
Source: Harland, 2007.

Compared with the earlier discussion of models, by Brown and McCoy, this depiction incorporates media as a significant domain in its own right. But in making idea the central concern, we can discuss idea in relation to both graphic design activity as well as ideas that emerge from the wider context. Singling out idea in this way links the practice of graphic design to the context within which it happens. In this sense the diagram supports the philosophical view expressed by Lefebvre [16] that '…the (absolute) Idea produces the world'. This is what Margolin and Buchanan believe when they discuss the idea of Design: 'the core of design thinking remains the ability to conceive, plan, and present ideas about products' [19]. In the diagram shown here, it is argued that we can think of this domain in terms of ideas about how we create images, interpret words and realise material objects through media. Generating ideas is therefore closely associated with the Communication domain. Using a metaphor, the Idea dimension performs a 'respiratory' function, and facilitates the inhaling and exhaling of issues graphic design is concerned with, or the 'messages' and 'ideas' that Brown talks about. Communication might be thought of as the motive for converting 'ideas' into 'messages' and vice-versa.

The intention behind the creation of this model was to identify key practical and theoretical domain. However, on reflection the balance between, and identification of, theory and practice is unclear. Which is which? How do we distinguish between the physical and the metaphysical? What is useful about the model is the opportunity to assign importance to the various domains, depending on personal preferences and abilities. For example, those who view graphic design as part of the wider subject of visual communication are able to highlight the communication domain. Similarly, those who wish to view the more practical concerns of media, (or theoretical issues associated with material culture), might see media representation as the most prominent. Illustrators or photographers might associate more with image creation, or typographers with word interpretation. In this sense the model attempts to identify basic dimensions from where we might begin to extract 'core values', 'spheres of influence', or what Swanson [27] prefers to refer to as 'centres of gravity'. Whatever the focus, all of the dimensions are interwoven.

3.5 Reviewing the three models

The models we have discussed are rare attempts to explain aspects of graphic design without the 'graphic design'. They each take a different view of the field, respectively focusing on distinct values (or facets), discourse, or dimensions. Each results in a different visual manifestation. McCoy specifically deals with visual and verbal language; Brown's identifies active and passive forces; Harland attempts to scope the field. They also scan a period of time when dramatic technological change and the scope of the graphic designer's activities appear to have widened. But none of the models demonstrate a direct link with education, even though each of the authors has a direct link with education. Let us now consider the relationship of these models in relation to education and to the culture of science, humanities and design.

4. Art, science and design

McCoy asks '…is graphic design an art, science, business, craft, or language?' Similarly, the question pervades discussion in the closely associated field of typography. The back cover of Ruari McLean's [21] book How Typography Happens states 'Is typography an art or a science?' It seems that the answer to this question,

according to Frascara [4], is to think of graphic design in terms of its 'basic duality', especially relating to the development of skills in an educational context.

Frascara states that 'Graphic Design is both a rational and an artistic activity', suggesting that two key spheres of influence on graphic design is the sciences and the humanities. But rather than assume that graphic design is merely a construct that emerges from an overlap between the two, in the same sense it has been suggested that design bridges a perceived gap between the sciences and the arts, and occupies an 'in-between realm' [5]. Are the material products of graphic design therefore revealed in some kind of space or overlap between the two? Or, do they exist in their own right? One answer to this question resides in the field of design research, where, building on the work of Bruce Archer in the 1970s, it has been argued by Cross [9] that design is a 'third area' or 'third culture'.

4.1 A 'third culture' and the work of Bruce Archer

When proposing an explanation of the relationship in general education between Humanities, Science and Design, Bruce Archer [1] used a triangle metaphor, and he traces the idea of a third domain back to Plato. Archer's depiction of the relationships, shown in Figure 4, positions Design at the bottom right corner of a triangle and Humanities at the top, acknowledging what he believed represented its dominance in general education since the fourteenth century. Science is located bottom left. The diagram attempts to identify as 'Design' the subjects that Science and Humanities 'leaves out', such as performing arts or physical education. Furthermore, Archer argues that the 'doing and making' relating to 'material culture' is not a concern of Science and Humanities, but is a central feature in Design. Describing the 'essential language' of each of these cultures, Archer refers to Science as 'notation', Humanities as 'natural language' and Design as 'modelling'.
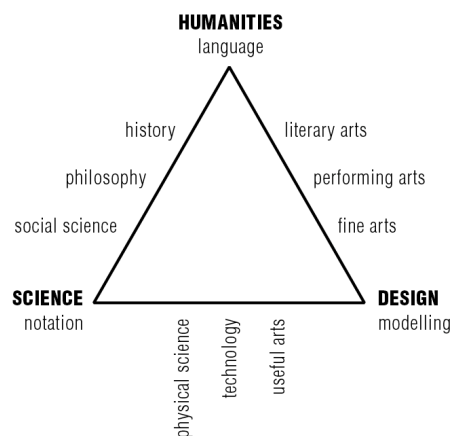

Figure 4: Proposed relationship between Humanities, Science and Design
Source: Archer, Baynes and Roberts, (2005), p. 12.

5.0 Synthesising theories of graphic design with design

Comparing Archer's depiction of the Science and Humanities with McCoy's focus of verbal-visual activities, it is possible to superimpose one on another. The 'verbal' qualities of rational, linear and sequential map onto those

qualities associated with Science, whereas visual aspects link directly to Humanities. Similarly, Brown's suggestion of explanation and persuasion can be respectively mapped onto Science and Humanities respectively. And the terminology 'word interpretation' and 'image creation' used by Harland can also be aligned.

It's worth mentioning that this use of language is a simplification. The use of 'word' and 'image' when trying to define 'signs' makes use of familiar language to describe important ingredients that graphic designers work with. However, the suitability of 'word' and 'image' as terms of reference has also been noted as being too 'simplistic' [10]. The alternative use of 'alphabetical' and 'pictorial' has been used by Adrian Frutiger [10]. Concern about using the terms word and image, according to James Elkins, cited by Crow [10] suggests opposing and incompatible terms that do not capture the intricacy and sophistication of reading. Nevertheless, Crow uses the terms to represent the left and right side of the brain.

If we consider a reorientation of Archer's triangular model, the left/right, word/image, verbal/visual, explanation/persuasion dualities can be over-layed onto Science and Humanities. This allows the opportunity to align the different approaches taken by McCoy, Brown and Harland, with the work of Archer. In doing so we are able to elevate Design to a position of prominence more in keeping with the notion that Design is a bridge between the Science and the Arts. This reorientation has been described and depicted as Design being at the fulcrum of a pendulum that swings between Science and Art, shown in Figure 5 [14]. This is demonstrated using three hexagons. In constructing the diagram, Science, and its association with left-brain activity [7], is positioned accordingly on the left. Humanities is on the right, with Design helping to form a triangle of 'human knowledge and ability' [9].
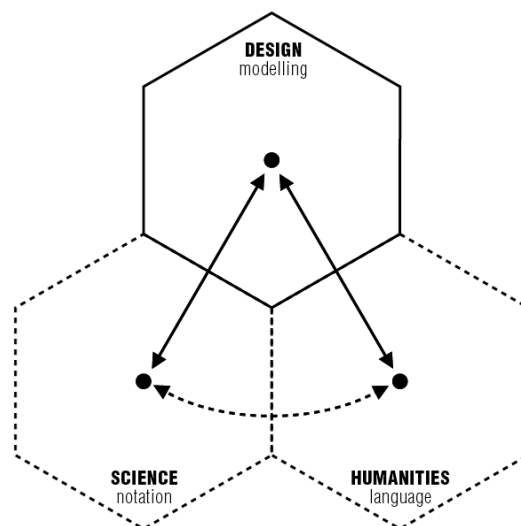

Figure 5: The proposed relationship between design, science and humanities.
Source: Harland, 2009.

Within this visual framework, we can begin locate key domains that make up graphic design. It is logical that the core values associated with the subject should align with human knowledge and ability. We might therefore make the simple assumption that graphic design is located predominantly as part of Design, and the importance attached to the question about whether graphic design is a science or an art is less relevant. This still raises

questions relating to the respective influence of the sciences, and the humanities, in graphic design (the same can be said in reverse). Is one or the other more dominant? Or is this now a futile question that is better answered from the perspective of the context within which graphic design is situated.

Graphic design, at times, must draw on the values associated with the sciences, and the humanities. Often both. In this sense, Figure 5 depicts the physical, material culture dimension of design, and graphic design, located at fulcrum of the pendulum that is constantly swinging between the dual metaphysical domains of Science and the Humanities. The characteristics associated with these dimensions – left and right, verbal and visual, explanation and persuasion, objectivity and subjectivity, orderly to disorderly thinking – are important to designing. But it has been argued that at the outset, graphic design does not necessarily assume the values associated with one or the other [14]. Whereas Cross [9] suggests that design is concerned with 'appropriateness', the same can be said of graphic design. In this sense, we might place more emphasis on the differences between graphic science, graphic design, and graphic art, but this is not space here to explore this more fully.

6.0 Summary and conclusion

In this paper we have explored three different ways that diagrams have been used to depict graphic design. In doing so, we have attempted to 'map' the subject by identifying dimensions on two levels. On one level, what we will call here the macro level, the dimensions are recognised through the work of Archer as Science, Humanities and Design. Science and Humanities, it has been argued [1], is more concerned with the metaphysical. Design, on the other hand is more concerned with physical, or material, culture. On an intermediate level graphic design can recognised through terms often used to describe the basic elements that make up the subject. Word and image are frequently used, if recognised as being general. Although, these words are useful and representative of the various academic and practical use of terms to describe polarised aspirations of the subject. These exist as extreme ends of a continuum. If we combine the triangle of human knowledge and ability, with the intermediate dimensions of graphic design developed earlier by Harland, (and aligned with the approaches of Brown and McCoy), we begin to see the emergence of a 'map' to guide the future, see Figure 6.
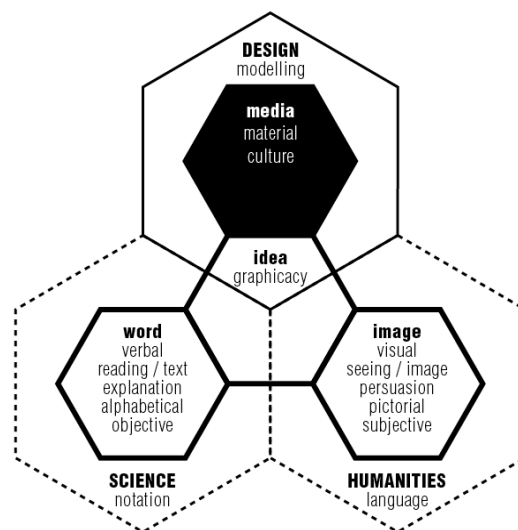
Figure 6. The macro and intermediate dimensions of graphic design.

With regard to using a model to think about the future of graphic design (the starting point for this paper) we can identify the role of individual activities, and occupations, past, present and future. For example, the emergence and recognition of graphic design happened after five hundred years of continuous development in the print trade, starting with the first Guttenberg bible in fifteenth century Germany. According to Nigel Roche, librarian at St Bride's printing library in London, Guttenberg's idea was a mixture of scientific knowledge, humanistic faith, and an ability to synthesise a number of social, cultural and economic factors.

This paper has attempted to respond directly to demands that 'we can no longer chart [graphic design's]… territories solely by the products of its practice', as Silas Munro [17] puts it. In doing so, we have attempted to reaffirm the idea that graphic design is first and foremost part of design, something that critic Rick Poyner [24] thought worth reminding graphic designers about when reviewing the New Views 2 conference in London 2008.

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