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Verbalizing the Visual: Researching and Interpreting Design Contexts

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This paper argues for the importance of linking theoretical and empirical perspectives on design in order to promote wider understanding of design disciplines and the knowledge and capacities that they promote. It considers the problems associated with design articulation, reviewing the literature on this topic to identify the obstacles to effective description of design capacities and understandings. Related questions about the undeveloped nature of the declarative knowledge bases of design subjects are examined, together with the implications of this for academic status. The characteristics of design discourse are identified and the potential of design as an academic subject area considered. Past and current insights on the nature of design knowledge are reviewed, including the perspectives offered by situated views on learning and knowing. These are seen to offer ways of observing and describing capacities that are often invisible and implicit in practice, providing new means of researching design contexts. A case study of graphic design education is offered to illustrate key points of the discussion, leading to further conclusions about aspects of design knowledge that have been unacknowledged in more traditional views of cognition. The conclusions point to the importance of remaining flexible about both the means of researching design and the discourses by which we represent it.

Keywords
Design articulation; design knowledge; graphic design; metaphor

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[1] The problem of finding meaningful ways to discuss and communicate design issues continues to attract interest, not only in research literature but more generally in design circles. These debates have varied focus and emphasis, but there is general consensus that design disciplines have less-developed "declarative" capacity than others and a concern that in the knowledge economy negative consequences may result. In the absence of effective articulation of the knowledge, skills and capacities promoted by design we may overlook its potential to contribute to our thinking about knowledge, practice and learning.

[2] This paper reviews past and current perspectives on the problem, suggesting that the interplay between design knowledge and the means by which it has commonly been developed and expressed by design "insiders" lies at its heart. There is a growing body of literature on this issue derived from different disciplinary perspectives and providing multi-faceted views of design, which results in a somewhat "scattered literature and discourse" (Poggenpohl 226) reflecting its wide constituency. It is particularly important that we recognise the contribution of design practice as well as more academic research in building a stronger interpretive discourse about design, and it is argued here that linking theories of design to the outcomes of empirical inquiry will enable positive ways of interpreting and communicating its strengths.

Design Discourse

[3] There is a substantial body of literature on the topic of design discourse—covering the three dimensions of practice, education and research. The "mystification" involved in design education and the tacitness implicit in design practice provide particular targets for comment, and are rooted in a long history of design being seen as inimical to formal expression in speech and writing—not least by designers themselves, with inevitable consequences for declarative knowledge-building and research.

[4] In the research literature strong links are made between discourse and the processes involved in design practice, and there are some well-established views on this. The effectiveness of the protocol analysis method to reflect design thinking (i.e. "thinking out loud") is considered by Lloyd et al., who conclude that talking about design offers at best only fragmentary and external cues to a "cognitive process ... so deep, abstract" (451) that many aspects necessarily remain implicit. This is partly a function of the large proportion of non-linguistic means employed when designers communicate between themselves, as observed by Bucciarelli ("Between Thought and Object") and Medway ("Language, Learning and Communication"; "Virtual and Material Buildings"). Like Medway, Bucciarelli sees design languages as "linguistic" elements only in terms of their communicative function, so they

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can include drawings or other artefacts as well as words. These domain languages have to be learned by novices, and experienced speakers still have the problem of translating them into a common language of exchange with others outside the domain—for example, to communicate with clients.

[5] It is recognised that the context-tied, highly referential nature of design communication restricts its audience, and the reasons for this have been explored. One account (Mazijoglou et al.) identifies the high instance in design talk of "deictic" words which can only be interpreted within the context of use (e.g. it, this, that, there, here) and which link the discourse to specific physical entities, or sometimes to "abstract design solutions shared by the designers and held in their minds" (397). The context-tied nature of design language is also a focus for Fleming, who describes how utterances are used to modify and regulate production of material objects. More recent accounts use well-developed perspectives from other domains to research design discourse. Among these, Oak assesses the usefulness of both Symbolic Interactionism and Conversation Analysis to research the communicative acts that constitute "the collaborative performance of design practice" (213), while Dong considers the structuring of design language and practice by semantics and grammar. Both writers acknowledge and defend the limitations of their linguistic focus, with Dong noting that not only does "the language of design enact design" (21) but that a focus on discourse questions and potentially widens the range of activities that we deem "design"; Oak also notes that although she did not aim to suggest ways of improving design processes, her research indicates how designers can reflect on taken-for-granted aspects of practice as well as providing a way of seeing how design is done "from the inside" (228). This is helpful, because there are difficulties in reconciling the aims of practice—"a process of planning to make usable and useful artefacts" and those of "enquiry …to discover or hypothesize new knowledge" (Crabbe 13–14).

[6] Many discussions about design pedagogy have focused on the need for increased explicitness about design capabilities, which it is believed will improve students' thinking, self-criticism and employability (Trumbo; Kimbell et al.). This concern is maintained in the growing body of literature reviewing the effectiveness of diverse pedagogies for design. Despite employing distinct approaches such as Gestalt (Jackson), Vygotskian socio-cultural theory (Lawrie), multiple intelligences (Chessin and Garfin), Community of Inquiry and Problem-Based Learning (Barber), many recent accounts focus strongly on the discourses and dialogic nature of design education. There is a general consensus that such dialogues provide opportunities to improve design learning by enhancing its declarative capability and capacity for knowledge sharing.

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[7] The challenges associated with design articulation are also explored by writers concerned by design's impoverished discourses and the effect of these on its academic status. Frascara, for example, contrasts the "fuzziness" and obscurity of design terminology with incisive verbal descriptions of research in other domains; the failure of design to ensure the "…reformulation [of visual phenomena] as propositional knowledge" is viewed as screening "ignorance and intellectual laziness" (64). This analysis perceives design knowledge and design discourse as equally under-developed, which contrasts with the views of others—notably Lloyd, Lawson and Scott ("Can Concurrent Verbalization Reveal Design Cognition?"), Cross et al. (*Analysing Design Activity*) and Cross (*Designerly Ways of Knowing*). Other accounts sympathetic to these problems include Wood, who acknowledges that competing scholastic and craft traditions provide an "ideological fault-line" (181) for contemporary design academics to negotiate, while Poggenpohl suggests ways of developing research communities that can move design from its current position as a poorly organized, emerging discipline to more assured scholarly status.

[8] Debates about design discourse point to some significant conclusions. Traditionally design education and practice have been seen as lacking the communicative power and knowledge base needed to establish design disciplines as bona fide "academic" domains, limiting their influence and status and restricting opportunities for graduates. However there is emerging recognition of the richness inherent in design knowledge and practice, with acknowledgement that usually only designers can appreciate this and that they find it difficult to communicate to others. Recent accounts attempt to find solutions to these difficulties by suggesting ways in which design can be rendered more "scholarly" and practice more effective. It is useful to consider these issues as dimensions of a related problem—that of identifying the nature of design knowledge. Consideration of this aspect helps to clarify how and why such communication problems arise.

Design Knowledge

[9] The perspectives reviewed above go some way to explaining why difficulty in understanding design communication is experienced by non-designers, and why the dissemination of design knowledge in "academic" language has been slow to happen. Negative consequences of this include the perception that design cannot act as a source of significant knowledge that contributes to "human advance" (Lewis); nor is design seen as having the capacity for full engagement in research and theoretical discussion through the usual academic channels (Prentice; Frascara). The appropriate outcomes and products of design knowledge are also contested; although there is increased expectation that the "act" of design will in itself be a form of knowledge production, the gap remains

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between "scientific" research and design knowledge which is practice-based, tacit and "embedded within the very act of designing" (Heylighen et al. 94).

[10] The problems of developing and sharing practice-based knowledge are further outlined by Poggenpohl, who argues that tacitness is not a fully functional knowledge mode for designers operating in unstable and shifting contexts of 21st-century practice; she also envisages increased demands being placed on academics to move from the role of design practitioners to design scholars. This role dichotomy is explored in Crabbe's consideration of the potential for "knowledge transfer" between educational and practice contexts, which raises concerns about divergence between the aims of design practice and those of scholarly research; this paper also considers how a new emphasis on scholarly activity may devalue personalised, individual practice—long a key tenet of design. Nonetheless there is emerging consensus about a decline in the significance of "intuition" and an increasing value being placed on research in design (Fraher and Martinson), which is seen to contribute both to the professionalism of practice and the development of methods that are "teachable, repeatable and understandable … creative activities that actively generate intellectual value" (Kolko).

[11] Although the "academic" limitations of design domains are well-documented, ways to reconsider the problem have emerged from theoretical debates about the nature of knowledge, particularly those associated with "socio-cultural" and "situated" perspectives. These are particularly challenging to traditional views because they see knowledge not as a body of facts or information to be acquired but as comprising a social identity to be entered into. This theoretical stance envisages significant learning happening informally in work and everyday settings as well as in education (Rogoff; Wenger; Lave and Wenger; Lave) and provides new opportunities for research by suggesting that rather than being an abstract entity "in the head" of individuals, knowledge is created in social participation. Close observation of the routines, tools and established ways of doing things in communities of practice is therefore likely to illuminate the knowledge privileged by a community.

[12] Although not consistently referenced by authors, the influence of situated views is discernible in approaches to researching and interpreting design and in the learning innovations recorded. The literature concerned with specialist design knowledge has increasingly emphasised the importance of recognising the "situated" and contextual influences of local design environments (Busby; Etelapelto) and the need to "re-energize the categorization of knowledge by introducing its situations" (Ma et al., 2009). This is in contrast to well-established approaches, usually based on a traditional cognitive perspective on knowledge, in which attempts were made to provide abstract, theoretical accounts of

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design as a general process (Cross et al.; Taylor). Reservations have long been expressed about the use of such "theoretical" models, derived more by "thinking about design than by experimentally observing it" (Lawson 29) and recommendations to embrace more practitioner-centred, empirical perspectives emerged (Dorst and Cross). This empirical tradition gave rise to classic accounts of design learning and practice, including Bucciarelli's account of engineering design and Schon's of architects' education, the latter giving a detailed description of the learning potential of the practicum—"the setting designed for the task of learning a practice" (37)—and providing an articulating framework for understanding studio teaching and learning across many design fields.

[13] The literature on knowledge suggests that recognising the characteristics of "local" situations gives a better understanding of design than trying to develop and apply abstract frameworks. It also provides expanded definitions of "knowing", pointing to the ways in which this is developed and giving opportunities for its more effective recognition and discussion; these include an appreciation of implicitness—"... factual knowledge is of very limited use without tacit knowledge ..." (Wood)—and the need to balance "tacit sensibility" with "ideas that can be made abstract and explicit" (Poggenpohl 216). These broader perspectives suggest we should relinquish the idea that there is any one effective way to research, observe or talk about design, and that we can learn much from "local" observations of design in practice, using "grounded" research methods (Ma et al.). However, for the reasons indicated above, the challenges involved in researching design situations can be formidable; to illustrate these I will outline my experience of undertaking research in one of design's then most poorly documented disciplines.

A Case in Point: Graphic Design Education

[14] The research was undertaken between 2002 and 2005 in order to explore how knowledge was developed in a graphic design course, how this knowledge was represented to undergraduates and where its sources were to be found (e.g. in art and design disciplines or in professional practice). It involved an in-depth investigation of one undergraduate course in a specialist arts institute in the north of England, using a case study approach to investigate everyday learning and teaching. It was regarded as important to elicit both what participants had to say about graphic design understanding and to gain a purchase on the unarticulated meanings that might emerge in daily interactions, so semi-structured interviews and observations became the main means of gathering qualitative data. All five tutors working on the course were included in the study and twelve students were sampled for interview from across the three years of the course. Twenty three observations of studio learning and teaching activities were undertaken (e.g. briefings, critiques, tutorials and other teaching sessions),

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planned to cover all years of the course and including approximately 90 students (some of whom were interviewees). Predominantly verbal data were gathered and analysed to reveal the discourses involved in learning and teaching; respondents were asked to check transcriptions for accuracy, and subsequently invited to consider the interpretations made. Ongoing respondent validation, together with triangulation of the research diary and field notes, was used to improve the reliability of the study.

[15] Despite careful planning there were several unexpected challenges. These included the lack of a research base to inform the project, as it is only within the last few years that a body of literature covering graphic design has begun to emerge (e.g. Schenk; Hill and Anning; Lawrie; Raein; Jackson; Chessin and Garfin; Tan et al.; Barber). However, the tacit nature of design knowledge was the most difficult feature to cope with. Without having a practitioner's insights into visual, practice-based activities I had real problems understanding what I was seeing and hearing. I soon realized that this was shared by most people "outside" graphic design and that a key feature of the situation was its impenetrability to "outsiders". There were two aspects to this—both the tacit understandings involved and the problems of articulating these beyond the "inner" graphic design community.

[16] Ultimately an effective means of inquiry emerged out of features of the empirical situation, together with suggestions from the knowledge literature. In particular, the "situated" perspectives on knowledge outlined above pointed to the importance of observing how participants engaged in practice, and there was ample evidence of this in graphic design studios where tutors and students focused on "doing" graphic design. It was also clear that respondents discussed their ideas through informal talk about their work and this talk was distinctive, rich in images and metaphors and shared by participants—that is, a shared discourse was in evidence through which participants "talked the talk" together. There was a good theoretical match here to situated views about knowledge-building discourse, which encouraged me to focus on the kind of talk in use.

[17] In observing studio interactions I was struck by the vivid images and metaphors used to express ideas. During data analysis I came to realize that their use of metaphor had an important function for respondents—that of enabling them to discuss difficult and demanding concepts in an accessible form. The literature on metaphor in education provided key insights on its use in graphic design learning, including metaphor's knowledge-building capacity and its role in "bridging" learners into new ideas and concepts (Lakoff and Johnson; Cameron). This was the "key" that opened up graphic design for me and enabled my interpretation, leading to development of a metaphor-based form of analysis (as reported in Burgess et al. 84–85). The findings of this research have been more fully

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reported elsewhere (Logan, "Circles of Practice"; "Metaphor-Based Research and Analysis"; "Metaphor and Pedagogy") and here I will only provide sufficient detail to illustrate my argument about the importance of linking empirical and theoretical perspectives to reveal and describe design knowledge.

Key Graphic Design Metaphors

a) Sense-based understanding

[18] This characteristic discourse referred to the physical body and senses, included ideas about "sensitization" and "vitality" and discussed the type of design knowledge that has gained least recognition in research and theory. Elsewhere (Logan, "Metaphor-Based Research and Analysis") I have referred to this as "deviant" knowledge as, despite its significance for designers, there is a long history of its marginalization in western culture. However, it proved essential in graphic design and participants in the study used metaphors of the body and physical senses to refer to the highly developed aesthetic sense needed by designers, and the tacit sensations that they rely on to guide the progress of designs and the physical making of artefacts. Related discourses also referred to the animation and vitality viewed as essential for designers, and with which they needed to imbue their designs in order to personalize and individualize them.

[19] Tutor participants emphasized their belief that graphic design was an intensely pleasurable activity and consistently described designs in terms of their physical effects—as being "delicious", "making my tummy flip over" or (if unsatisfactory) "I'm left hungry". Students also exhibited a grasp of the importance of this kind of sensual understanding, rapidly assimilating its significance and talking freely in similar terms by the second and third years of study. Although students lacked confidence in public discussion of designs, they used metaphors that described sense-based knowledge in an assured way, indicating the accessibility of such concepts. The studio setting thus promoted a view of design knowledge as involving the integration of "thinking, feeling and acting" that Rogoff (9) sees as blurring traditional distinctions between cognitive, affective and social processes. This was part of a learning process aimed at sensitizing novice designers to the potential of the physical world by look, feel, touch and enjoyment. Sensitization became an important element of domain knowledge, alerting students to the effects they could exert through their designs, and was presented to them as something intensely pleasurable, that furthered their own visual and creative interests and that they could enjoy.

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b) The elusive nature of graphic design knowledge and learning

[20] Another consistently used metaphor illustrates the difficulties experienced in articulating graphic design knowledge, and suggests why this should be the case. This was the characterisation of design learning as a challenging "hunt" or "quest". Other commentators have observed its use in design settings—a similar account of students pursuing the "Holy Grail of design knowledge" is given by Frascara (62) and the way in which designer's ideas are apparently "magically derived" is recorded and challenged by Kolko (16) and it describes a tacit perception about design learning that is probably widespread. When a tutor described graphic design learning as a "treasure hunt" he provided a key insight into his view of domain knowledge; it subsequently emerged that other tutors shared this perspective that gaining graphic design expertise was more of a "hunt" or a "quest" than a straightforward progression. These metaphors expressed the high value placed on knowledge innovation and individuation in graphic design, so that progress in learning was seen as exploration, and tutors identified successful students as those who "pushed boundaries" and "did a lot of searching for themselves". Students also acknowledged these challenges, describing design expertise as "elusive" and "tantalizing" in nature.

[21] This belief was accompanied by a superstitious fear that searching too rigorously after knowledge may be detrimental; for example, one student expressed concern that her friend " … by consciously trying too hard to get it [i.e. expertise] … might have lost it by trying." Tutors voiced similar reservations about articulating and "quantifying" graphic design knowledge, analytical processes regarded as damaging to its subtleties, personal configurations and creative potential and as "anathema to the way we work"; these characteristics were seen to make design knowledge fragile and easily submerged in unfavourable conditions. There was a shared sense that students undertaking a quest for knowledge were likely to turn up the unexpected and surprising (to tutors as much as to themselves) and that this knowledge innovation was accepted and welcomed. The personal pursuit of learning goals by students, together with tutors' responsiveness to the needs of individual learners, were significant factors supporting the personalization of knowledge.

[22] The terms in which respondents discussed graphic design knowledge were distinctive and unusual, and the use of key metaphors aided the discussion of cognitively complex issues as part of the discourse by which participants shared, formed and disseminated knowledge. These discourses reflected aspects of cognition usually unacknowledged, such as affect, sensual appreciations and tacit insights, and made them "visible" to research. Once these discourses were identified and understood, privileged values and prized characteristics of graphic design knowledge came clearly into view. Although these insights were based on a then unusual research method—that of identifying informal

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learning discourses and the metaphors they employed—they enabled the description of a distinctive pedagogy and the articulation of key areas of graphic design knowing. It is worth recording that nowadays metaphor is frequently fore-grounded in theoretical and empirical accounts of design (Melles; Lasserre). More generally the study enabled recognition of design discourses that (although embedded in a formal learning situation) derived from practice, as all but one of the tutor participants had practitioner backgrounds. A companion study conducted in practice settings confirmed this feature, providing an in-depth study of discourse *within* rather than *about* practice—a key distinction drawn in situated theory (Lave and Wenger).

Conclusions

[23] We can conclude that it is the kind of knowledge underpinning design activities that leads to problems of articulation. This type of knowing involves the "... tacit sensations of the tool in our hand ..." (Schon 23), and is intimately connected to physical sensation and to the emotions that such "feelings" engender; these subtle, sense-based understandings represent cognitive capacities largely unrecognized in mind-oriented views of cognition, thus difficult to express in formal terms. Practice-based knowledge also has characteristics that make it difficult to divorce from context, which can mean that "the wheel is invented many times over" (Eraut 56), with adverse effects for cumulative knowledge development over time. However, situated perspectives illuminate features of practice and acknowledge the role of the "whole person" in knowing (Lave and Wenger 53), enabling better description of capacities traditionally disregarded.

[24] A persistent difficulty is that the outcomes and products of design knowledge are predominantly non-verbal and are embodied in artefacts—that is, they are "productive" not "cognitive" outcomes (Heylighen et al.)—which exerts a negative effect on design's declarative potential. Additionally, and despite widely-voiced concerns about the "mystification" and "obscurity" involved in design understanding, individuation and personalized knowledge remain highly prized. These features make it difficult for design domains to develop their knowledge bases along more stable, declarative lines; indeed, there are long-standing tacit agreements that the absence of such declarative statements is not a lack but a requirement of design. This has discouraged design practitioners from making a fuller contribution to knowledge creation in "academic" and research terms, but there now appears to be a new imperative to clarify and comment on practice, evidenced in the growing body of literature that reflects on design learning (including graphic design). The literature is empirical as well as theoretical in nature, and many commentators are practitioners who are finding innovative ways to talk about their own design contexts, describing their students' learning and contributing to a

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disciplinary research base. The importance of ensuring that design practitioners (and academics from practitioner backgrounds) find this growing knowledge base useful to and reflective of their experiences has been pointed to (2008) and this involves giving due significance to practice while acknowledging its potentially personalized, individuated nature. The graphic design study outlined above was successful in achieving this aim, albeit after initial challenges, and was fully endorsed and appreciated by participants.

[25] This paper began by pointing to the need for a lingua franca to allow discussion of design. We do not have this yet, but there is a growing discourse outlining the positive steps being taken. As we develop our capacities in design articulation we will need to remain flexible about the representations we offer, for as Schon reminds us, " … our descriptions … are always *constructions* … attempts to put into explicit, symbolic form a kind of intelligence that begins by being tacit and spontaneous" (25). Finding ways to reflect such elusive qualities is challenging, but these descriptions are needed if we are adequately to represent the strengths of design and ensure wider recognition of its unique academic and cultural contribution.

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