

Learning by Design: Visual Practices and Organizational Transformation in Schools

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Introduction

Design of an organization usually takes place through incremental and ongoing processes of re-design,¹ however occasionally there are moments when more radical changes and re-framings become possible. From a “practice-based” perspective, we investigate the crucial roles that visual practices play in these moments of organizational transformation, observing how people manipulate, combine, and use visual representations as part of their discussions about the future of organizations. In particular, we draw attention to the circulation of images and to how icons and exemplars are used in the design of both physical environments and organizational forms.

Our empirical study is located within the UK’s Building Schools for the Future (BSF) program—a deliberate attempt to transform organizational practices across the publicly funded (state) schools in the UK by re-building the physical environments that house those schools. In this setting, Gil² notes the tension between the rhetoric of innovation, with strong commitments to design features such as rationalized science labs, open spaces, and community clusters; and the participatory intentions, with a focus on inputs from users, head-teachers, staff, pupils, and other stakeholders. Acting as consultants, architects are central to the negotiation of the tension between innovation and participation and have significant input into the design quality of new schools.

Starting from our theoretical interests in design, we approach the data with the research question: *what are the roles that visual representations play in organizational transformation?* In the next section, we discuss visual practices and design and further articulate the rationale for this research question. The subsequent sections describe the Building Schools for the Future program and the methods used in the study. We then describe two vignettes from practice in this context: 1) the enrollment of the user-brief in an architect-bid; and 2) the presentation to a school entering the program. These vignettes are discussed in the following section, which highlights the circulation of visual representations and the salience of iconic exemplars in the discussion of organizational design and its physical forms. The paper concludes by suggesting directions for further research.

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- 1 K. E. Weick, “Designing for Throwness,” in *Managing as Designing*, ed. Richard J. Boland Jr. and Fred Collopy (Stanford, CA: Stanford University Press, 2005); Youngjin Yoo, Richard J. Boland, and Kalle Lyytinen, “From Organization Design to Organization Designing,” *Organization Science* 17:2 (2006), 215–29.
 - 2 Nuno Gil, “Democratizing New Infrastructure Development: The Case of Teacher Involvement in School Design” (paper presented at the DRUID, Copenhagen, 2008).

- 3 Silvia Gherardi, *Organizations Knowledge: A Practice-Based Approach to Learning in the Workplace* (Oxford: Blackwell, 2006); Wanda J. Orlikowski, "Sociomaterial Practices: Exploring Technology at Work," *Organization Studies* 28:9 (2007), 1435–48; Antonio Strati, "Sensible Knowledge and Practice-Based Learning," *Management Learning* 38:1 (2007), 61–77; Dvora Yanow and Haridimos Tsoukas, "Reflecting in/on Practice" (paper presented at the EGOS [European Group on Organizational Studies], Berlin, 30 June–2 July 2005).
- 4 For the foundational work on the "reflective practitioner," see D.A. Schön and G. Wiggins, "Kinds of Seeing and Their Functions in Designing," *Design Studies* 13:2 (1982), 135–56; Donald A. Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983). While this empirical work was conducted in the design studio, more recent studies are exploring design in commercial practice, e.g. Boris Ewenstein and Jennifer Whyte, "Knowledge Practices in Design: The Role of Visual Representations as 'Epistemic Objects'," *Organization Studies* (accepted).
- 5 For work on discourse in organization see, for example, C. Hardy, I. Palmer, and N. Phillips, "Discourse as a Strategic Resource," *Human Relations* 53:9 (2000), 1227–48; Nelson Phillips, Thomas B. Lawrence, and Cynthia Hardy, "Discourse and Institutions," *Academy of Management Review* 29:4 (2004), 635–52. For discussion of visual practices in organizations see J. K. Whyte et al., "Visual Practices, and the Objects of Design," *Building Research and Information* 35:1 (2007), 18–27. The findings on user/architect relations are in Rachel Luck, "Using Artifacts to Mediate Understanding in Design Conversations," *Building Research & Information* 35:1 (2007), 28–41, and further discussed in Davide Nicolini, "Studying Visual Practices in Construction," *Building Research and Information* 35:5 (2007), 567–80.

Visual Practices and Design

From a number of perspectives, social scientists have become interested in practice, with a commitment to observing what people actually do in organizations³. Recent work on design has built on the tradition of empirical studies in the design studio, but it has begun to explore design practices in more complex organizational settings, such as the firm⁴.

Practice is embodied in and involves a range of aesthetic and kinaesthetic sensibilities, with different organizations having distinctive aesthetic cultures in which sensory forms of knowledge are mobilised. "Visual practices" are characteristic of design and involve the practices of interacting with visual materials, such as drawings, photographs, sketches, and computer graphics. Just as discourse theorists use verbal and written conversations to interrogate organizations; in studies of visual practices, a focus on representations and how they are mobilized and used within organizations provides a means to interrogate broader organizational phenomena. For example, recent work exploring design through its associated visual practices has highlighted the asymmetrical understandings and power relationships between architects and end-users in discussions about design⁵.

The broad literatures on organizations have highlighted the importance of the visual sense more generally as we enter "a society of spectacle, where a great deal of organizational knowledge assumes the form of visual representations" and where a proliferation of images becomes "a mediating and alienating factor in social relations." For some writers in these literatures what is interesting is the circulation of images in which images provide a "linked, directional chain" or "cascade" of representations transporting or translating ideas across contexts⁶.

In this paper, we consider the role of visual practices in organizational transformation, which raises the question: what is organization design? Galbraith's pioneering work argues that the conscious choice of organizational forms can improve effectiveness. He focuses attention on the strategy, mode (structures and decision-making processes) and integrative mechanisms of the organization; and highlights potential organizational responses to task uncertainty, which may involve slack resource, self-contained tasks, vertical information systems, and lateral relations. Recent work has shifted the conversation from organization design—as a static choice between self-contained options—to organization designing with a focus on the managerial practices and design rules involved in making and evaluating organizational design choices in ongoing operations. An analogy between organization design and the movement of a mobile sculpture illustrates this shift in emphasis to dynamic systems⁷.

However, a new or refurbished building may provide an occasion in which more radical changes and re-framings become

- 6 The first quoted text in this paragraph is from Yiannis Gabriel, "Against the Tyranny of Powerpoint: Technology-in-Use and Technology Abuse," *Organization Studies* 29:2 (2008), 255; the second is from Sherry McKay, "Spectacle: From Critical Theory to Architectural Propositions," *Building Research & Information* 36:5 (2008), 536. Other references are to Charles Goodwin, "Practices of Seeing: Visual Analysis: An Ethnomethodological Approach," in *Handbook of Visual Analysis*, eds. Theo van Leeuwen and Carey Jewitt (London: Sage Publications, 2000); Bruno Latour, "Visualization and Cognition: Thinking with Eyes and Hands," *Knowledge and Society: Studies in the Sociology of Culture Past and Present* 6 (1986), 1–40.
- 7 For the seminal work on organization design see Jay R. Galbraith, *Organization Design* (Reading, MA: Addison-Wesley, 1977). More recent work on organization designing includes Yoo, Boland, and Lyytinen, "From Organization Design to Organization Designing," and R. J. Boland and Fred Collopy, *Managing as Designing* (Stanford, CA: Stanford University Press, 2004). The work on design rules is by A. G. L. Romme, "Making a Difference: Organization as Design," *Organization Science* 14 (2003), 558–73. The analogy with Calder's mobiles is in David Barry and Claus Rerup, "Going Mobile: Aesthetic Design Considerations from Calder and the Constructivists," *Organization Science* 17:2 (2006), 262–76.
- 8 T. J. Allen and M. S. Scott Morton, *Information Technology and the Corporation of the 1990s: Research Studies* (New York: Oxford University Press, 1994); A. Backhouse and P. Drew, "The Design Implications of Social Interaction in a Workplace Setting," *Environment and Planning B: Planning and Design* 19 (1992), 573–84; Frank Duffy, *The New Office* (London: Conran Octopus, 1997); A. Penn, J. Desyllas, and L. Vaughan, "The Space of Innovation: Interaction and Communication in the Work Environment," *Environment and Planning B: Planning and Design* 26 (1999), 193–218; B. Bordass, A. Leaman, and P. Ruyssevelt, "Assessing Building Performance in Use 5: Conclusions and Implications," *Building Research and Information* 29:2 (2001), 144–57. DfES, "Building Schools for the Future: A New Approach to Capital Investment" (London: Department for Education and Skills, 2004).

possible. There is growing interest in this within organization and management studies, related practitioner theorizing, and scientific studies in the architecture field⁸. These literatures suggest links between spatial configuration, frequency of contact, frequency of work-related conversations, and innovative activity. It is in this context that we use the term "organizational transformation" to describe a radical organization re-design.

The Building Schools for the Future Programme

The aim of the Building Schools for the Future (BSF) program is to rebuild or refurbish every secondary school in England by 2020. Launched by the UK government in 2004, the public investment in school buildings reached £5.5 billion (~\$11 billion; €6.9 billion) in 2006. The documentation⁹ sets the aim as providing schools that:

- include a diverse curriculum for students aged 14 to 19;
- acknowledge new ways of teaching and learning taking into consideration the impact of ICT;
- are open to the community;
- include students with special educational needs into mainstream schools;
- use the building as a tool for teaching and learning (e.g. sustainability); and accomplish the pertinent ventilation requirements.

Although this is the largest school-building program since the post-war period, it comes on the back of a significant investment in schools in the 2000 to 2005 period with joint public and private sector funding through the private finance initiative (PFI). There were concerns about the quality and cost of these PFI projects; and in the forming of BSF much was made of how to address this. Current and future developments in education and technology were considered in developing these aims and requirements to inspire new ways of learning and provide "excellent" facilities that benefit the whole community¹⁰. Many decisions that affect design quality are taken at the national level as images and words get circulated and reproduced, and there are many stakeholder roles in non-government and professional organizations that have a significant impact on the parameters for and appraisal of design quality. Architecturally trained professionals hold many of these roles and are also involved at more local levels in both the demand side (or client side) and the supply side; as well as in liaison with local authorities and schools regarding both the organizational design and the physical layout.

Data Collection and Analysis

The research reported here is based on a multi-method interpretative study involving observation, formal and informal interviews with key professionals involved in the provision of schools, and secondary data analysis of program-related documents and reports. The second

author collected data through her participation in related events, including international visits to schools in Denmark and Sweden, a conference called Building Schools Exhibition and Conference in Manchester, and the Design Quality Indicators facilitators' annual conference. She also conducted seventeen semi-structured interviews with key stakeholders at the national level and analyzed more than forty national reports and documents.

In using this case to study questions about organizational transformation, we build on a long tradition of using schools as an appropriate setting for research on organizations¹¹. The analyses presented here were developed through both authors' separate and joint coding of the data to understand visual interactions and their role in the decision-making about organizational and physical designs. There was an ongoing conversation between the authors about the data-set and its interpretation. Literatures are being revisited to understand and develop the emerging themes in the data-set¹² and there is a process of constant comparison between different parts of the data-set and the themes and the literatures. In working on this paper together we have conducted a detailed analysis of visual practices within the program, identifying and discussing in detail a number of vignettes of practice in relation to the literatures on organization design and visual ways of working.

Circulation of Images: The Heart of the Organization— From the User-Brief to the Architect-Bid for a School

The first vignette highlights visual images that circulate from the user to the architects in the briefing stage. Around a version of Figure 1, on his laptop, the Head of Design for Partnership for Schools (the government agency charged with the delivery of BSF) explained the user-brief for an exemplar school:

The starting point ... they want to be able to have an organization that broke the school down into digestible chunks and this is where they started from. If we can organize ourselves over here [pointing at the drawing] through the stages, and if they could relate with each other, but they are actually independent and they can go outside and, we are not sure how to work it out, but we want the students to come in and work with specialist staff. As an organization that is how we see it. And there are several things we want, we want the heart space, we want it somewhere for our school, is a social thing, and we want to have an identity, we want to be a good school, and this space should be the main point of access, should be for break time, for lunch, for exhibition, for assembly.

The user-briefing process involves the understanding and shaping of the organization design. This process engages the local authority and the consultants in partnership with the head teachers, teachers,

9 DfES, "Building Schools for the Future: A New Approach to Capital Investment" (London: Department for Education and Skills, 2004).

10 Concerns about PFI are in Audit Commission, "PFI in Schools" (London: Audit Commission, 2003); CABE, "Creating Excellent Secondary Schools. A Guide for Clients" (London: Commission for Architecture and the Built Environment, 2007).

11 John W. Meyer et al., "Bureaucratization without Centralization: Changes in the Organizational System of U.S. Public Education, 1940–1980," in *Institutional Environments and Organizations: Structural Complexity and Individualism*, ed. W. Richard Scott and John W. Meyer (London: Sage Publications, 1994); Brian Rowan, "Organizational Structure and the Institutional Environment: The Case of Public Schools," *Administrative Science Quarterly* 27 (1982), 259–79; W. Richard Scott and John W. Meyer, "Environmental Linkages and Organizational Complexity: Public and Private Schools," in *Institutional Environments and Organizations: Structural Complexity and Individualism*, ed. W. Richard Scott and John W. Meyer (London: Sage Publications, 1994).

12 K. M. Eisenhardt, "Building Theories from Case Study Research," *Academy of Management Review* 14:4 (1989), 532–50.

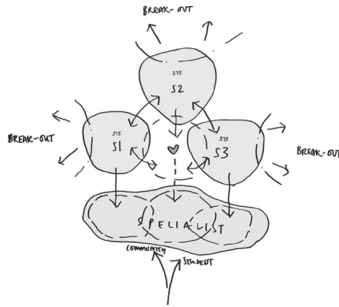


Figure 1
 Sketch of the organization design proposed
 in the user brief.
 © Gensler and BSF Kent

and pupils of each of the participant schools. The consultants include design, educational, legal, and technical advisors. The design advisor is a skilled, experienced architect who advises the local authority on all aspects of design and supports the achievement of high-quality buildings and environments. The client design advisor is involved in the process from the inception of a BSF project through to its completion.

In the above example presented by the Head of Design, who is himself architecturally trained, the local authority's "vision" is centered around the educational strategy of "nurturing autonomous and creative learners," he argues that this is to be addressed in the organization of the school building. He further argues that BSF is about fundamentally changing the organization design within each of the participant schools. As he sees it, a major problem is that "today's learners have inherited yesterday's schools and although the world has changed dramatically, school buildings and organization have largely stayed the same."

Figure 1 shows the sketch of this organization design. While this drawing is not intended to be unchangeable or "immutable," it sets down ideas on paper that are then there to be negotiated around and may also be appropriated. This is a generic view of the organization of the school. The heart of the school is represented as an icon and is clearly intended to be central to the organization design.

This spatial layout is further elaborated in the user brief. Figure 2 shows the detailing of the zone S1, as shown in Figure 1. The briefing process continues to unfold by breaking down the generic organization of the school into "digestible chunks." Each of the spaces subdivided from the general sketch are detailed. This sketch allows the organization of the school in the particular area to be analyzed from an educational point of view. It is called the "learning pattern" adjacency diagram. This sketching exercise serves to develop the brief. It is about translating the users' concept of educational transformation onto a visual representation. During the presentation, the Head of Design for Partnership for Schools argued that users should aspire for these spaces to be

... learning areas, we want classroom areas, we want enclosed spaces, group work, individual work, smaller group work, quiet work ... so, that, we can function. So, they get 3 of those (s1, s2, s3) and they say where do we get the areas from ... look at Building Bulletin '98 and we can manipulate that.

In Figure 2, the space is divided into 3 different sub-spaces where: 1) the dedicated learning spaces (on either side in yellow) allow for a maximum of 30 students while the flexibility of the spaces can accommodate larger teaching sizes up to 90 students; 2) the middle learning zones (in light green) can accommodate approximately 60 students, this zone is open plan and flexible furniture layouts allow

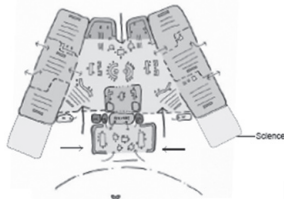


Figure 2 (above)
Detailed sketch of one of the stages of the school organization.
© Gensler and BSF Kent

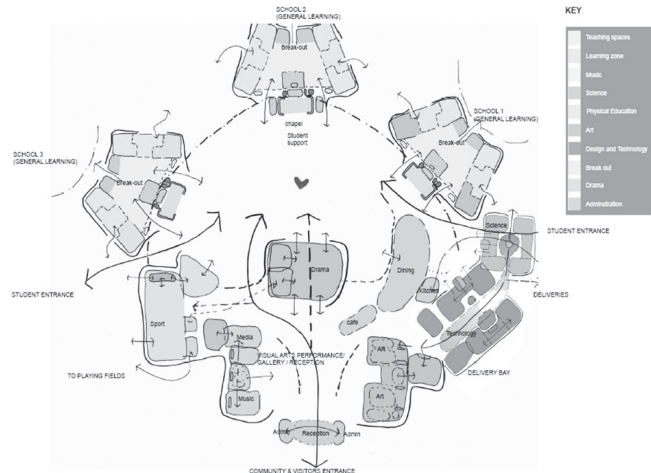


Figure 3 (above right)
Detailed sketch of the school organization proposed in the user brief.
© Gensler and BSF Kent

for smaller learning zones to be created; and 3) the break-out/social area and student resources are located off the central learning zone towards the heart of the school for minimal disruption of learning.

The Head of Design argued that after the detailing of the different areas has been completed, all these sketches “need to come together as an organization.” The final version of the diagram includes all of the sketches detailed separately. Figure 3 illustrates the general organization of the school. At this point in the presentation, the Head of Design pointed out that this “general adjacency diagram” is not the school building, but is the school organization. This diagram is a visual representation of the organization design of the school from the point of view of the local authorities and the architect consultant. The use of different colors and shapes visually contributes to clarify the intentions. This is the type of sample scheme that is issued to the designers charged with designing the school building.

The sketches and relevant written documents are issued to the designers for them to interpret and design their view of the organization design. The Head of Design for Partnership for Schools explains the process of interpreting the sketches in the client brief by the bid architect. This is visualized in the architect’s design proposal in Figure 4:

The market gets hold of this . . . bidder A says I see the 3 schools and that is how I think it could work, [space in the middle figure 4] this special space is your heart space, I have changed it. This is the real BSF process . . . compare contrast, that one with that one [with brief].

The representation of the heart of the school becomes apparent in the design proposed by the architect’s bid. The design does not rework the basic articulation imposed in the sketch presented by the client. On the contrary, the organization design is transformed to become the spatial layout as the architect’s bid develops. The circulation

Figure 4
School building design proposed
by the architect bid.
© Gensler and BSF Kent



and enrollment of visual representations across contexts becomes apparent.

In another context, an architect involved in BSF argued that the user briefs that are issued are not clearly framed. She described these documents as “. . . sometimes they are so nebulous, so strange.” From her point of view it is difficult to translate the “educational” vision into the design of the school. She argued that “. . . the vision is often an educational vision, so it’s very slanted towards education.” The language utilized by the client is educationally contextualized, which in the design world can have different meanings or interpretations. She felt that the role of the architect was to translate the educational concept into a visual representation. In her view, the type of visual information that was easier to replicate in the architect’s building design was to look for examples in other buildings and say: “We went to school that had a central atrium and this is what we loved about it.”

The Head of Design in Partnership for Schools had a very different opinion. He stated that this sketching exercise enables the client to have a clear visual representation of the organization design. These sketches would serve to clarify the client’s thoughts about education. This would enable two very different sectors to talk the same language:

And in fact, because I hear from the document that they want this heart space, somewhere to come together then I am going to suggest that that does not happen here, it happens over here. In this way the school could see what they asked for.

This vignette shows the role of visual representations in the circulation of design ideas across contexts during organizational transformation. Ideas about organization design that are developed in the user-brief become transformed and embodied in the proposals for an architect’s building design.

Entering the Building Schools for the Future Process: Re-combinations of Precedents and Exemplars

The second vignette is of a presentation to a school that was about to enter the BSF program. It was held in a BSF design meeting for a borough council. The architect consultant for Partnership for Schools based his presentation on a set of iconic images of school buildings based on the visual concept of a “good” school. What is extraordinary about the observed presentation is the link between representation of precedent and exemplars in the discussion about organizational design and its physical forms.

In one interview, an architect director involved with BSF noted the importance of looking at how other schools have translated their organization design into a building in one of the interviews. This process encourages the local authority to think about what they want from the school, their likes, and dislikes:

... it forces the people who are commissioning this to really sit down and think about this school, to go and see others, we hope, to say what they like and what they don't like.

After a brief introduction to BSF, the presentation quickly moves on to focus on the iconic images. The presenter is passionate about encouraging clients to start thinking about design from the very beginning of the BSF process. He argues that local authorities should visit a variety of different schools buildings in the UK and abroad. The aim is to build an image in the viewer's mind about what their own school could look like. The use of these contrasting images, building on the dichotomy between “ugly looking” schools and “good” schools is intended as a powerful warning about the need to understand how the building will contribute to the organization design:

I am telling now is the time, not when you are in the middle of it, now go and have a visit. So you are going to spend 25 million pounds and you don't even start to understand what this building could do for you.

Figure 5

Set of photos presented to the school contrasting a good from a bad school design.

© Andrew Beard Architect, Ltd.



However, the presenter insists that the BSF program is not about “pretty buildings” nor is it about “big architecture awards.” Instead, he argues, it is about “kids doing better, kids moving on

to better things.” He adds that “it is about enabling maximum impact on education achievement.” Building on this argument, he presents more sets of images that contrast the “good” school from the “bad” school building. Figure 5 shows two of the contrasting slides. The set of slides have a written message that emphasizes the idea of questioning the ability of the first image to “raise the school aspirations.”

In the next slide (Figure 6), the consultant argues that the recently built school on the left “looks like a prison.” This argument intends to ultimately build some passion into the client’s visual image about their school design. He goes as far as to question the audience about the type of building they think this image is, and in his words, “no one says a school.” He explains that amazingly the images shown in Figure 6 followed the same organization design:

... they are fingers, they both have wings, the concept is the same, the organization is the same, but look what you end up with? So the schedule is the same, the area is the same ... what is missing? Can anybody say what is missing? ... the value of design.

The presenter insists on the importance of highlighting the value of design when entering the bidding process. He wants to make sure that clients have a clear picture of what the school should be. Therefore, the presentation continues to build on the idea of contrasting images. He highlights the importance of how to translate the educational vision onto the building shape:

Translate that vision which could be a very long, “woolly wordy,” some of this visions a very thick, we want to be the best school in the world ... all intentions. That is the “what,” but where is the “how”? So, that vision, what does it mean for the design? Lets develop that through, and if we get that right we will end up with a very good organization for the school, good pedagogy, good flexibility, we are going to get very good environments. And when we talk about environments, we talk about good layout, good lighting, good ventilation, low carbon, and flexibility ... all the things which I think we want in schools.

Figure 6
Set of images contrasting the ‘looks’ of schools. © Andrew Beard Architect, Ltd.



When local authorities go out and look at precedents in exemplar schools, they come back with relevant features from other schools. However if they rely on iconic images of other schools they may underemphasize the social organization of the school and overemphasize what can be easily put into pictures. As these visual images are circulated and used in different contexts, they become used as “shorthand” by the professionals involved. They become seen as having a shared ownership across the community. Such visual images are used by the architecturally trained professionals as a way of building cognitive ability and client capacity. They are understood as a good source to rely on to make the case for design quality when decisions arise about value and money.

This vignette shows how visual representations are used to enroll stakeholders in the wider agenda of the BSF program. The representation of precedent and exemplars become used in the discussion about both organizational design and its physical forms. These images are recombined in PowerPoint to become examples that can be widely mobilized and distributed across different organizational contexts as more schools become involved in the national program.

Discussion and Conclusions

The findings highlight two roles that visual representations play in organizational transformation: they circulate design ideas across context and enroll stakeholders into a broad set of ideals. This circulation and enrollment can be both intended and unintended, for example as elements of the user brief become quite literally interpreted in an architect’s bid; or through different interpretations of the images shown as precedents and exemplars. The vignettes draw theoretical attention to the iconic nature of visual representations and the way they are used to discuss both organizational and building design.

Overall our study tracks the political, cultural, and aesthetic judgments that are being made around visual representations within the BSF program. At this level, architects and other professionals play significant roles in developing the discourses and images associated with transformation. The central government, local authorities, and professions are involved in significant work to negotiate the tension between prescriptive and participatory approaches to the design of new schools and are involved in design decisions that lead to transformations in the organization of schools. There are clear pressures that exert an influence on organization design—visual representations are used to show the desired outputs, convey precedents and exemplars, and develop the professional attitudes and approaches through professional activities.

One question that our data raises is around the dilemmas of visual literacy and expertise. Our data suggest that the representations used by users and designers do not simply visualize

their understanding but are actively used in constructing this understanding. Hence, the types of representations used are not neutral to the types of designs that are constructed. This is an area that is particularly interesting in complex contexts such as BSF, as there are a wide range of advisors that have been introduced into the program to elicit user requirements and involve users in the process.

The analyses presented raise intriguing new questions about the roles that visual representations play in organizational transformation. The data shows the use of both diagrams—that are analytic and used to represent and interrogate potential organizational structures—and more directly mimetic representations that are exact representations of what things look like. Hence, in Vignette 1, organizational designs are articulated in diagrammatic form and these visual representations become the basis for the architectural design of the school. In Vignette 2, images of existing schools are re-combined in PowerPoint and become iconic examples across the organizational field.

There are a number of areas for further research. One theoretical question is the way that the aesthetic culture of the architectural practice affects the organizational design for the school. Different professional practices have different strategies and have codified design knowledge into different sets of design rules¹³. Yet we know little about how these get mobilized in particular design interactions and how they affect both the quality of the outcome and the criteria that are seen as valid for judging this outcome.

13 G. M. Winch and E. Schneider, "Managing the Knowledge-Based Organization: The Case of Architectural Practice," *Journal of Management Studies* 30 (1993), 923–37; Graham M. Winch, "Internationalisation Strategies in Business-to-Business Services: The Case of Architectural Practice," *The Service Industries Journal* 28:1 (2008), 1–13; Romme, "Making a Difference: Organization as Design."