# *The mechanisms of value transfer in design meetings*

*Christopher A. Le Dantec,* School of Interactive Computing, College of Computing, Georgia Institute of Technology, GVU Center, 3rd Floor TSRB, 85 5th Street NW, Atlanta, GA 30308, United States
*Ellen Yi-Luen Do,* College of Architecture and School of Interactive Computing, Georgia Institute of Technology, GVU Center, 3rd Floor TSRB, 85 5th Street NW, Atlanta, GA 30308, United States

*Values play an integral role in design: they inform the kinds of trade-offs the designer makes when considering different solutions; they create a basis for the client to assess how a particular artefact may fit into their lives; and they are an important part of negotiating a common understanding in collaborative design settings. In this paper, we examine the interactions in meetings between architect and client to better understand how different values are brought into the design discourse. By analysing the verbal content and non-verbal communication between the architect and client, we identify patterns of discourse that imbue design problem-solving with the language and concepts that express values. From this analysis, we develop a theory of value transfer and describe the social mechanism that facilitates this transfer during design negotiation. This work provides an observational basis for understanding value transfer in the context of collaborative design and is relevant to design domains beyond architecture.*


*Keywords: values in design, design processes, collaborative design, design rationale, architectural design*

Values play an important role in design; tracing back to the Roman architect Vitruvius, the values of 'firmitas, utilitas, venustas'—stability, utility and beauty—were imbedded in the early codification of architectural practice (Pollio, 1914). Looking beyond architecture, design practice, from industrial design to interaction design, is deeply steeped with questions of values. It is through the process of design that values are exposed and negotiated in the search for potential solutions. The presence of different values in turn affects the adoption, use, and social impact of a particular designed artefact.

The kinds of design inquiries that encourage a broader consideration of values in design have only emerged in the last decade. Going back to the early 1990s, Lawson (1990) and Rowe (1995), for example, have each contributed to work

**Corresponding author:** Christopher A. Le Dantec ledantec@cc.gatech.edu

www.elsevier.com/locate/destud
0142-694X $ - see front matter *Design Studies* ■■ (2009) ■■–■■
doi:10.1016/j.destud.2008.12.002

focussing on design process and the act of designing. These works largely considered design as an individual activity performed by a designer and as such, do not provide a good perch for considering the collaborative nature of design. But by the middle of the 1990s the notion of design as a collaborative activity had become a topic of study. During this period, Brereton et al. (1996), Cross and Cross (1996), and Radcliffe (1996) all studied the affects and mechanisms of team-based design; yet in these studies, the focus was still on small teams of designers and not on the interaction designers have with clients or other stakeholders.

Looking specifically at visual design, Frascara (1995) and Tyler (1995) addressed the role of values and audience. Frascara considered graphic design primarily as an activity of persuasion and asserted that graphic artefacts should be considered on more grounds than aesthetics alone. Tyler echoed a similar view in the scope of visual communication design, and further discussed how the values of the audience influence their interpretation of the design and the persuasive power it possesses. Both of these views are borne of a semiotic understanding of visual design and the rhetoric of the image (Barthes, 1977). By considering design in this manner, Frascara and Tyler each elevated the discussion of design to include the human values expressed by the designer and interpreted by the consumer.

Despite these moves to acknowledge the human values imbedded in a designed artefact, the fact that these values are an integral part of the process continued to be overlooked. In Brereton et al.'s (1996) Delft Protocol analysis, designers were noted to make appeals to values, for example Kerry, one of the designers working on the design of a bicycle rack, made an appeal to elegance. This appeal to a design value was bold, yet at the time, there was no deeper analysis of how appeals to such values contributed to the design. Similarly, Cultural Probes have received much attention in the interaction design community for their ability to generate inspirational responses from a user population, yet there has not been much investigation into how the results of the probes are incorporated into the design process (Gaver et al., 1999). In both cases, the presence of different types of values is tacitly understood, but the role those values play during the act of designing has not been thoroughly investigated.

Much of the work considering human values comes at a time when the broader field of design is in the middle of an evolution: the consumer is becoming a 'co-designer' (Sanders, 2005). This change indicates a shift in how values are reflected in the design process. Where a consumer once took what was given, the co-designer is empowered to accept and reject design choices much earlier in the process, thus exercising an increased influence on the shape of the final product (Sanders, 2006).



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

In the domain of Human-Computer Interaction (HCI), more researchers are considering 'value' as an integral part of design and evaluation. The conversation about values in design started with Suchman's (1997) seminal article *Do Categories Have Politics?* where she lays the foundation for discussing how values are built into software systems. Suchman's work is rooted in the participatory design tradition that emerged in the 1960s and 1970s (Sanoff, 1973). This same tradition provides the underpinning which Sanders (2005) identifies as motivating design disciplines towards co-design. The relevance these works have to exploring values in design is the collaborative nature of participatory design; it is through these roots that asking questions about values becomes easier since the collaboration between designer and client (or user) is explicitly recognised as a goal of the process.

As a result, work in HCI has produced different approaches for coping with values in the design and evaluation of software systems. Friedman's (1996) Value Sensitive Design (VSD) is a methodology that proposes engaging design with conceptual, empirical, and technical investigations to identify and address values in software systems. Another framework, from Blythe and Monk (2002), suggests that technology designed for the home—a nascent context of inquiry for HCI—be analysed using three scales: enjoyability, inclusivity, and recodification, which stand in contrast to the traditional scales used in HCI of efficiency and productivity. What these efforts demonstrate is a recognition of human values as crucial to the experience of using technology and a concerted effort to account for them across different contexts of use.

Looking outside HCI, social researchers have examined how technologies emerge in society. Social Shaping of Technology (SST), a theory put forward by Williams and Edge (1996), asserts that technology is developed through the negotiation of social, technical and economic factors. In this regard, VSD and SST are similar as they both emphasise the interplay between the development of a technology and the social context that gave rise to, and eventually adopts that technology (Friedman and Kahn, 2003). We consider technology, here, as any intentionally designed artefact and do not limit the definition to computational devices. The compelling argument in theories like SST is the light they shine on the intersection of human values and designed artefacts. It is a move away from technological-determinism towards a more nuanced understanding of how society shapes design as much as design shapes society.

In looking at the architectural design meetings of the DTRS7 dataset (described in more detail in the editorial section of this issue), our goal was to establish a better understanding of how architectural practice incorporates values into the design process. By analysing one specific design activity, we sought to create an understanding of value transfer that can be applied to other design domains.



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

## 1 Definitions

Before presenting our analysis of value transfer in an architectural design meeting, and after already having used the word 'value' extensively, it is important to acknowledge the breadth of meaning encompassed by the term. For some, values are ethical considerations; in Lloyd's (in this issue) account of values in the design process, he calls attention to judgements that are made in relation to ethical considerations. Other considerations of value may involve economic factors and whether something is, or is not, a good value (for the money). We are considering a set of motivations that may be ethical in nature, as well as those that could be construed as a value-add (for example a professional skill or experience that might be sought for inclusion on a development team).

Broadly, we define values as the *principles, standards, and qualities that guide actions*. These may be personal, cultural, or professional. For example, the decision to avoid disrupting the habitat of local floral and fauna during the design of the crematorium crosses both ethical and professional value lines: the ethics of preserving the natural environment and the professional judgement of how to integrate the design within the physical constraints (Lloyd, this issue). Regardless of where the emphasis is placed, values motivate the decision and guide the actions of the designer and client. Ultimately, values serve as the basis for how designer and client assess the design.

The kinds of instances that we are associating with the communication of values include: assertions of form or aesthetics, descriptions of how people are to use the space, and anecdotes that illustrate the human condition behind the function. We are referring to communication about these aspects of the design as 'design discourse'.

Finally, we use the word 'client' to refer to the person who conveys the needs of end users and owners. The client represents stakeholders and communicates concerns of value assessment or judgement with the designer.

In looking at value transfer, we need to understand the different types of values contributed by designers and clients. The values the designer brings to the design meeting include professional expertise, knowledge of the design domain, and the personal values that make up their individual character. Likewise, the client comes to the design meeting with notions about how the artefact will be used and how it will fit into their lives. Some of the client's values will correspond with those of the designer, while some values will be foreign to the designer. It is our assertion that in order for the designer and the client to come to agreement on a suitable solution, each must begin to understand the other's values. As we will see, this exchange of values occurs more vigorously during analysis and synthesis phases of design. As the design evolves towards completion, these values are used



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

in the design meetings to further define, validate, and assess the proposed design solutions.

It is instructive to consider our notion of value transfer in the light of Nelson and Stolterman's (2002) taxonomy of design judgements. Many of the values that we are pulling out of the design discourse may appear to be various forms of design judgements—especially those that designers would recognise as the result of training and experience. We believe, however, that these values are the *underpinning* for design judgements; they complement the Nelson and Stolterman taxonomy and present a way of understanding how design judgements develop in the context of exchange that occurs between designer and client.

## 2 Data and method of analysis

We chose to focus on the two architectural meetings of the DTRS7 dataset because they consisted of direct contact between the lead designer, Adam, and the clients, Anna and Charles. Over the course of the two meetings we were particularly interested in identifying how each party talked about values. In order to begin to understand the type of social transactions that enable value transfer, we undertook an approach based on Grounded Theory. Grounded Theory is a systematic methodology of qualitative data analysis where the analysis begins without any pre-supposition of what results will be found in the data. Instead, patterns that exist in the data are brought forward through rigorous iterative coding. The goal of Grounded Theory is to end up with one central code, the theory, which relates all observed behaviours (Miles and Huberman, 1994; Strauss and Corbin, 1998). In applying this approach to the protocol data, we examined the transcripts iteratively, applying open coding, shown in SMALL CAPS, where we identified and categorised phenomena observed in the transcripts, and axial coding which focused on identifying causal relationships between the set of open codes.

We had some idea of a hypothesis—that values are an important part of design discourse—and we were looking for events in the data that might support that; therefore, we diverged from adhering to Grounded Theory in the strictest sense because we were interested in paying specific attention to the following events:

- verbal exchanges that explicitly revealed values to be reflected in the final design,
- verbal exchanges that were implicitly about values and their relation to the design,
- verbal cues that indicated one or the other party understood a particular value.



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

**Extract 1 A1, Example of DESIGN VALUE, PURITY**

| | | |
|---|---|---|
| 817 | Adam | well it's not as pure a summation as I was looking for but I mean |

**Extract 2 A1, Example of HUMAN VALUE, JEALOUSY**

| | | |
|---|---|---|
| 140 | Anna | police attendants quite often you know you'd think it would bring |
| 141 | | them together but it actually makes it worse |
| 142 | Adam | really gosh |
| 143 | Anna | yeah and they sit separately in the chapel as well it's all to do with |
| 144 | | money and you know they've left someone something wonderful |
| 145 | | that's most of the time what it is or the other family are cross because |
| 146 | | one family has arranged it and they used they never visited her while she |
| 147 | | was alive and how dare they get involved with this and it all escalates |

Phrases were the key unit of analysis. In some cases, a concise phrase communicated a value clearly, as in Extract 1, where Adam's assertion of 'design purity' is clear on its own.

In other cases, our comprehension of the significance of the coded phrase benefits from considering a larger section of verbal exchange to provide context or clarity. Extract 2 is an example of such a situation where Anna's description of the human values involved during a ceremony start with a short phrase (A1, 140), but benefit from considering the discourse that follows to further illuminate the details of the human values involved.

We used the video recordings of the design meetings to clarify ambiguous statements in the transcripts. Through this iterative process, we categorised the social transactions into a set of codes describing the types of exchanges of interest. These open codes were in turn refined into a set of five axial codes (see Table 1) that enabled us to clearly delineate subjects of discourse.

The first axial code is labelled DESIGN VALUES and includes the open codes AESTHETIC, UNIQUENESS, PURITY, FORM, SOLITUDE and MATERIAL. These codes describe parts of the discourse that touch on values primarily originating from the designer. FORM and MATERIAL specifically address physical characteristics of the building. AESTHETIC, UNIQUENESS, and PURITY address values of how the building relates to its surroundings. SOLITUDE was used to capture the phenomenological experience of the crematorium and represents an aggregation of values like privacy and reclusiveness.



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

**Table 1 Axial and open codes**

| Axial codes | Open codes | Description |
|---|---|---|
| DESIGN VALUES | FORM, MATERIAL, AESTHETIC, UNIQUENESS, PURITY, SOLITUDE | Applies to comments about architectural purity or vision, to form and material, as well as perceptual awareness. |
| HUMAN VALUES | SPIRITUALITY, RESPECT, JEALOUSY, FAMILY, RELIGION, MOURNING, COMFORT, TRADITION | Identifies phenomenological experience and symbolic meaning comments that may or may not directly result from the designed space. |
| REQUIREMENTS | ACTIVITY, SPATIAL, PHYSICAL, REVIEW | Reserved for comments that addressed functional needs or activities that take place in the designed space. |
| NARRATIVE | DIRECT SUPPORT, INDIRECT SUPPORT, PROCESS DETAIL, JUSTIFICATION, TANGENT | Used to identify anecdotes that either designer or client engaged in during the discourse. |
| PROCESS | COMMUNICATION, PROBLEM-SOLVING | Delineates meeting activities concerning meeting mechanics or when additional research would be needed. |

The HUMAN VALUES axial code includes codes for SPIRITUALITY, RESPECT, JEALOUSY, FAMILY, RELIGION, MOURNING, COMFORT, and TRADITION. Each of these codes were used to represent either the desired phenomenological experience of the designed space, or a description of how the human condition impacts the activities that take place in the building. In Extract 2 above, Anna identified the emotional tenor of the waiting area. Her description of tension between family members exposes some of the values that accompany mourning—in this case, JEALOUSY over an inheritance and inequity in care-giving during illness. Adam, as the designer, must consider how these values will relate to the built space. What is revealed here, as Lloyd (this issue) points out in his analysis, is an alignment with a particular understanding, or valuing, of space that enables privacy.

The axial code REQUIREMENTS contains codes for ACTIVITY, SPATIAL, PHYSICAL and REVIEW. These codes were used when the design discourse touched on the basic functional requirements of the design and were noted as being the target for value-laden statements. ACTIVITY and SPATIAL requirements captured, for example, the flow of pedestrian and vehicle traffic, and the spatial requirements that would enable that flow. The PHYSICAL code captured requirements like needing a re-usable space to display religious objects (see Extract 3).

NARRATIVE codes include DIRECT SUPPORT, INDIRECT SUPPORT, PROCESS DETAIL, JUSTIFICATION, and TANGENT. These codes identify pieces of text in the

**Extract 3 A2, Example of REQUIREMENTS, PHYSICAL**

| | | |
|---|---|---|
| 1756 | Charles | yeah what about religious () religious symbols |
| 1757 | Anna | yeah I mean we'll be inviting the inter-faith groups and we've just |
| 1758 | | had the Sikhs donate err- a symbol to us as well er and so it's just |
| 1759 | | trying to think about how we would allow a symbol to be shown that |
| 1760 | | would be removable in a sense or something like a cross because it |
| 1761 | | can't be + one faith |
| 1762 | Adam | well there's a couple of ways of doing it you could add the symbol on |
| 1763 | | the plasma TV screens |



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

transcripts that support functional requirements for either of the axial code groups for values. They represent the anecdotes and justifications offered in support of a particular idea.

The final axial code, PROCESS, contains the codes COMMUNICATION and PROBLEM-SOLVING. The code COMMUNICATION was used to identify instances when either client or designer referred to communication with stakeholders who were not present at the meeting. PROBLEM-SOLVING was used to identify design discourse that centred on defining functional requirements. The codes in this grouping do not share a particularly strong affinity and indicate the need to consider a more comprehensive study of collaborative design, particularly one that includes all designer–client interactions, from project start to completion.

These codes were refined through four repeat processes that analysed the data from scratch. Each iteration occurred after spending several weeks away from the data and had a high degree of test–retest.

## 3 *Results*

In developing a theory of value transfer during design meetings, we found it useful to examine trends of code occurrence across the two meetings. By looking at these trends, we were able to identify large-scale phenomenon and relate it to the specific design discourse that indicated value transfer. The summary of events for each axial code for A1 and A2 can be found in Tables 2 and 3, respectively. These tables display the number of behaviour codes contributed by each participant and the percentage of their total contribution; e.g. in Table 2, Adam contributed 53 instances of codes in the DESIGN VALUES code which is 45.7% of his total contribution to the coded discourse. The right-most

**Table 2 Axial code summary for A1**

| | DESIGN VALUES | HUMAN VALUES | NARRATIVE | REQUIREMENT | PROCESS | Total |
|---|---|---|---|---|---|---|
| Adam | 53 (45.7%) | 9 (7.8%) | 26 (22.4%) | 13 (11.2%) | 15 (12.9%) | 116 (51.6%) |
| Anna | 16 (17.4%) | 15 (16.3%) | 32 (34.8%) | 24 (26.1%) | 5 (5.4%) | 92 (40.9%) |
| Charles | 1 (5.9%) | – | 2 (11.8%) | 10 (58.8%) | 4 (23.5%) | 17 (7.6%) |
| Cat. total | 70 (31.1%) | 24 (10.7%) | 60 (26.7%) | 47 (20.9%) | 24 (10.7%) | 225 (100%) |

**Table 3 Axial code summary for A2**

| | DESIGN VALUES | HUMAN VALUES | NARRATIVE | REQUIREMENT | PROCESS | Total |
|---|---|---|---|---|---|---|
| Adam | 31 (41.3%) | – | 22 (29.3%) | 6 (8.0%) | 16 (21.3%) | 75 (46.9%) |
| Anna | 16 (20.5%) | 11 (14.1%) | 30 (38.5%) | 18 (23.1%) | 3 (3.8%) | 78 (48.8%) |
| Charles | 1 (14.3%) | – | 1 (14.3%) | 3 (42.9%) | 2 (28.6%) | 7 (4.4%) |
| Cat. total | 40 (30.0%) | 11 (6.9%) | 53 (33.1%) | 27 (16.9%) | 21 (13.1%) | 160 (100%) |



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

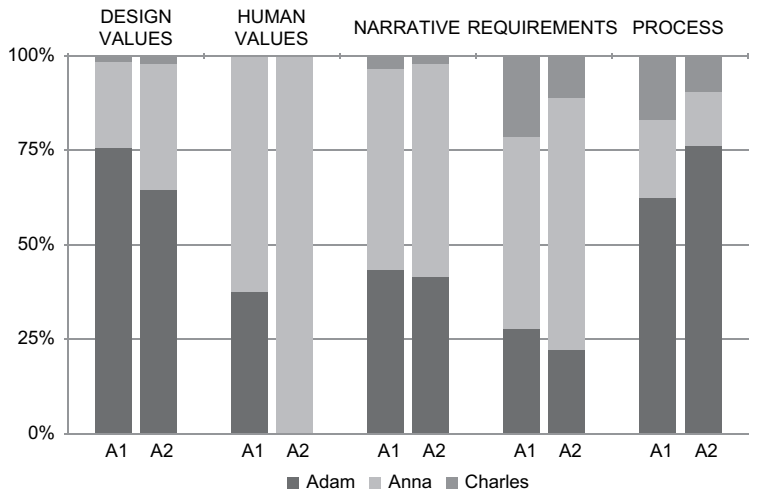


*Figure 1 Comparison of category contributions in A1 and A2*

columns in Tables 2 and 3 show the distribution of all codes between the participants and give an idea of where the action took place during the design discourse (Figure 1).

Both meetings exhibited roughly the same pattern. Across the two meetings about 30% of the coded events were DESIGN VALUES, 10% HUMAN VALUES, 30% NARRATIVE, 20% REQUIREMENTS and around 10% PROCESS. The total contribution of coded events was roughly even between architect and client as seen in Tables 2 and 3. A closer examination of Tables 2 and 3 shows that in meeting A2 there was a decrease in the number of coded DESIGN VALUES (30% down from 31.1%), HUMAN VALUES (6.9% down from 10.7%), and REQUIREMENTS (16.9% down from 20.9%), and an increase in events coded as NARRATIVE and PROCESS (from 26.7% to 33.1% and from 10.7% to 13.1%, respectively). Broadly, these numbers show that by the second meeting there was a decrease in discourse about requirements and values.

## 3.1 Indications of value transfer

Another, perhaps better, indication of the content of the meetings can be found by breaking down contributions by axial code. Tables 4 and 5 show how each participant contributed to the content of the meeting. The percentages in these tables are derived from the data in Tables 2 and 3; for example, from Table 2, Adam's 53 DESIGN VALUE codes are 75.7% of the total 70 DESIGN VALUE codes recorded in A1.

In Table 4, 75.7% of the coded DESIGN VALUES came from Adam, 22.9% from Anna and 1.4% from Charles. The HUMAN VALUES in A1 came primarily from Anna at 62.5%. Adam contributed 37.5% of the HUMAN VALUES while Charles contributed no events coded as HUMAN VALUES.



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

**Table 4 A1, axial code contribution**

| | Adam | Anna | Charles |
|---|---|---|---|
| DESIGN VALUES | 53 (75.7%) | 16 (22.9%) | 1 (1.4%) |
| HUMAN VALUES | 9 (37.5%) | 15 (62.5%) | – |
| NARRATIVE | 26 (43.3%) | 32 (53.3%) | 2 (3.3%) |
| REQUIREMENTS | 13 (27.7%) | 24 (51.1%) | 10 (21.3%) |
| PROCESS | 15 (62.5%) | 5 (20.8%) | 4 (16.7%) |

Coded discourse labelled as NARRATIVE was fairly evenly split between designer and client with Anna and Charles accounting for 56.6% together, and Adam claiming the remaining 43.3%. REQUIREMENTS were mostly driven by Anna (51.1%) and Charles (21.3%). The business of running the meeting, noted by PROCESS, fell primarily to Adam (62.5%).

Table 5 shows the contributions for meeting A2. Adam's contribution to DESIGN VALUES decreased to 64.6% while Anna's increased to 33.3%. The contributions to HUMAN VALUES were one-sided with Anna contributing all events coded for HUMAN VALUES.

NARRATIVE events were again fairly evenly split with Adam contributing 41.5% and Anna 56.6%. In combination, Anna and Charles contributed 77.8% of events coded as REQUIREMENTS, while Adam clearly drove the business of the meeting with 76.2% of the events coded as PROCESS.

To better understand these trends, it is important to consider the context of each design meeting. During A1, the details of the design were still being refined. Adam spent the meeting 'walking' Anna and Charles through the design, and at each step clarified requirements and suggested modifications. The discourse throughout A1 was a volley of values between architect and client where each asserted, listened, and responded to statements of values from the other.

In examining the change from A1 to A2, we suggest that the transfer of values can be seen as a process of osmosis where higher concentrations of each type of value begin to permeate a lower concentration of those values. This progression

**Table 5 A2, axial code contribution**

| | Adam | Anna | Charles |
|---|---|---|---|
| DESIGN VALUES | 31 (64.6%) | 16 (33.3%) | 1 (2.1%) |
| HUMAN VALUES | – | 11 (100%) | – |
| NARRATIVE | 22 (41.5%) | 30 (56.6%) | 1 (1.9%) |
| REQUIREMENTS | 6 (22.2%) | 18 (66.7%) | 3 (11.1%) |
| PROCESS | 16 (76.2%) | 3 (14.3%) | 2 (9.5%) |



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

can be seen in A2 where Anna contributed more discourse to the DESIGN VALUE codes (33.3% in A2 up from 22.9% in A1).

Adam's contribution, however, presents a problem. During A2, Adam did not contribute a single HUMAN VALUE coded event during the discourse. This result frustrates our attempt at creating a coherent theory but may be explained by examining where, in the design process, meeting A2 took place. The amount of time that passed between A1 and A2 was significant at seven months, and by A2 the design process had progressed considerably. The lack of HUMAN VALUE statements from Adam could be because his focus had moved to advancing the design towards a planning application (in fact, this intention of moving the design on to the planning phase was repeated several times by Adam during A2). What this situation suggests is that the big design problems, with a few exceptions, had been solved and Adam no longer needed to synthesise new information about the design space.

## 3.2 *Value transfer and problem solving*

In examining the transfer of values between client and architect, we have said little about the contributions made by Charles, the second 'client' present at the meetings. Charles's role in the meetings was slightly different from Anna's. Through both meetings he typically let Anna lead the conversation, commenting only sparingly. His contributions came primarily in the form of REQUIREMENTS or PROCESS. He was specifically engaged in discussions about building features that were less well defined. One such instance occurred in A1 during a long discussion about the audio-visual system. Throughout this part of the design discourse, Charles presented functional requirements and engaged in problem solving with Adam:

**Extract 4 A1, Example of REQUIREMENT, ACTIVITY**

| | | |
|---|---|---|
| 628 | Charles | and the other bonus of them not being actually sitting in there was that |
| 629 | | they could communicate then outside the other issue we looked at was |
| 630 | | because this person erm [*begins to point*] also is monitoring in the ideal |
| 631 | | world what's happening out here and what's happening out here so ah |
| 632 | | they're not only dealing with this the current funeral but the previous one |
| 633 | | and the one to come |
| 634 | Anna | see when they're arriving |
| 635 | Adam | [*begins to sketch*] the answer is then to have a door there |
| 636 | Charles | a door |
| 637 | Adam | maybe a window |
| 638 | Charles | a window |
| 639 | Adam | and they can |
| 640 | Charles | and a window this way |



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

The pattern of discourse between Charles and Adam was different in that a specific remedy satisfying the requirement was not immediately apparent. As a result, the discussion did not touch HUMAN or DESIGN VALUES much at all. This suggests that before the discussion of values occurs, the functional requirements of the building must be met, at least in part, so that the proposed solution can be judged against those values. The absence of statements about values during problem-solving is consistent with the findings of Luck and McDonnell (2006); in their investigation of architect and user interaction, discussions that occurred early in the process did not touch on phenomenological experiences but focused on the functional and structural needs of the design.

### 3.3 *The mechanics of value transfer*

Throughout both A1 and A2 a consistent discourse pattern emerged around value transfer. The pattern begins with a REQUIREMENT introduced by either client or designer. A VALUE concept is then associated with the REQUIREMENT, and finally, NARRATIVE elements support and further expound the VALUE. At the end of this exchange, there is often some kind of affirmation of understanding. This mechanism sits at the centre of our theory of value transfer in design. It is an iterative interaction that enables either party to negotiate aspects of the design based on their values and provides a framework for understanding how those values are exposed and responded to within the design activity.

In characterising the types of responses we observed, we found that Adam's affirmative response usually came in the form of a specific change to the design, which is consistent with ideas about how architects effectively communicate through drawing (Robbins, 1994). Anna's response often came as a restatement of the idea, as seen in Extract 5.

Extract 5 begins with Adam reasserting a requirement communicated to him previously (A1, 1039). Anna and Adam then negotiated and agreed on the HUMAN VALUES present in the staff room (A1, 1046–1054). In this exchange both Anna and Adam were synchronised in their understanding of the phenomenological experience of the space and they traded comments that support and validated the shared understanding. This can be seen in how Anna repeated or restated what Adam said (A1, 1049; A1, 1052; A1, 1054).

Extract 6 highlights segments from a longer section of conversation regarding the need for office space and its relationship to the vestry (A2, 448). The functional requirement was followed by a number of comments, mostly from Anna, describing the needs of the minister or officiating person and how they would feel in the space. Anna also discussed how to help these officials provide the best support for arriving mourners waiting for the service to start (A2, 464; A2, 469; A2, 502). Anna's comments and narrative describe the human elements of the activity, adding necessary details so Adam can accurately judge what an appropriate solution might be. Adam closed this



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

**Extract 5 A1, Example of value transfer discourse**

| | | |
|---|---|---|
| 1039 | Adam | well last time we spoke you thought it was comfortable to have a space |
| 1040 | | like this because you said that there might be large families visiting |
| 1041 | | wanting to arrange a funeral and if you couldn't get them into the office |
| 1042 | | for that purpose you could bring them in here |
| 1043 | Anna | Yes |
| 1044 | Adam | so just like this space this space here would double up as a kitchenette |
| 1045 | | staff room and meeting room for large meetings |
| 1046 | Anna | you'll be able to see like we can we can see the cremators from here |
| 1047 | | at the moment which is always |
| 1048 | Adam | no you can't see them from here |
| 1049 | Anna | no you can't see them so that's not a that's an issue yeah that's well |
| 1050 | | some people you know |
| 1051 | Adam | don't want to see them |
| 1052 | Anna | don't want to see it you know |
| 1053 | Adam | yes I can understand that |
| 1054 | Anna | they also see that there's been you know we're sitting here chatting |
| 1055 | | having tea coffee and lunch and that's so that's quite nice that you |
| 1056 | | don't actually see it although you're near to it |
| 1057 | Adam | just like this room you get a view out over the gardens in this |
| 1058 | | direction OK |
| 1059 | Anna | OK |
| 1060 | Adam | and er the staff wing this area if you like has all the staff (support) |
| 1061 | | accommodation they have their own disabled loo cleaners store |
| 1062 | | shower changing area at the end here you have a (coat) store couple of |
| 1063 | | ordinary loos and on the front of house the really posh bit you get |
| 1064 | | lovely views from both the vestry and the office over the pond and you |
| 1065 | | get a formal entrance lobby on this axis the vestry has its own WC so |
| 1066 | | that the clergyman or priest whoever's taking the service can change |
| 1067 | | and so on and so forth |

segment by agreeing to the change and asserting a DESIGN VALUE of form, which was formulated as a comparison to the current building to help Anna and Charles judge the appropriateness of the change.

Going back to Extract 2, the discussion of the tensions in the waiting room (A1, 140) motivates the way Adam responds to the requests for changes in the waiting room.



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

**Extract 6 A2, Example of problem-solving discourse**

| | | |
|---|---|---|
| 448 | Charles | and I think you need an out-and-out office here |
| 464 | Anna | here ++ I mean we've got the bigger waiting room but the vestry we |
| 465 | | we felt had to be this size for some reason we just felt it was rather |
| 466 | | than coming all the way through here + |
| 469 | Anna | they'll say first thing they'll say when we get the consultation is they |
| 470 | | don't want to be over there walking across the water or coming in |
| 471 | | through this way they would probably prefer to be around this edge |
| 472 | | where the the ordinary people are so they can mingle with the people |
| 473 | | sort of here before the service starts |
| 501 | Anna | but I j- I just have a feeling that they will not they will feel although |
| 502 | | there's the reasons why tha- that's quite a good idea I think they will |
| 503 | | feel too far away from the arrival of the cortege and the people |
| 504 | | milling around I think that would be one of the things they will say |
| 505 | | ++++ I would think they would feel that they were sort of out of the |
| 506 | | way a bit and they'd like to sort of be hanging around here especially |
| 507 | | if this is now covered and especially if they're sort of sitting in there |
| 508 | | they can see that's such a nice idea they don't have to move +++ |
| 529 | Anna | I'm not too sure that I wanted it over there and I don't think they |
| 530 | | would perhaps want it over there either but down here that's quite a |
| 531 | | nice idea I quite like that if that's possible |
| 532 | Adam | yeah that would make it very similar to the existing building |

The REQUIREMENT for the change to the waiting room size is associated with the VALUE statement that started in Extract 2. This association develops in Extract 7 to motivate Adam suggesting how to enlarge the waiting room (A1, 160). Anna then responds with another REQUIREMENT for outside seating that has connections to the HUMAN VALUE of JEALOUSY expressed in Extract 2 (i.e. the need for facilitating personal space) as well as an expression of additional HUMAN VALUES, RESPECT and MOURNING (motivating the desire to provide comfort to family members at the crematorium) (A1, 163). Adam then responds to the outdoor-seating REQUIREMENT by connecting it to attributes in the design that are already present (A1, 169).



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

**Extract 7 A1, Example of value transfer discourse**

| | | |
|---|---|---|
| 158 | Anna | so I'd like it a little bit bigger I think + not hugely because there is it is |
| 159 | | a wasted space most of the day really |
| 160 | Adam | yeah well I would have thought another couple of metres on there [*writes* |
| 161 | | *on drawing*] would do the trick so shall we agree a two metre extension |
| 162 | | yes or thereabouts hmm |
| 163 | Anna | I mean the other suggestion that perhaps I could make at this stage |
| 164 | | would be perhaps for a small amount of outside seating because people |
| 165 | | like to smoke at funerals they like to have a and the seat that we've got |
| 166 | | out by the car park at the moment the half seat even if it's cold and not |
| 167 | | very nice is actually people feel more happier out there then they do |
| 168 | | sometimes in the waiting room |
| 169 | Adam | yes well we can certainly add some outdoor seating out here if you |
| 170 | | wish we have got some outdoor seating here we've got a number of |
| 171 | | benches there erm but we can add- |

The examples provided here show the intricate nature of value transfer in a design meeting. Although in Extracts 5 and 6 the progression is somewhat linear, Extract 7 shows how the interaction around value transfer goes both forward and backward as the values in play (JEALOUSY, MOURNING, RESPECT) are connected to a larger set of REQUIREMENTS and a NARRATIVE that develops the complex social interactions and tensions present in the waiting area of a crematorium. It is only through understanding these factors that Adam is able to develop a response that both he and Anna will be able to recognise as appropriate.

## 3.4 Evidence of mutual understanding

The mechanics of value transfer described above facilitates the generation of mutual understanding between the designer and the client. As evidence of this, we looked for occurrences where either the designer or the client demonstrated increased comfort when discussing aspects of the domain that were initially the purview of the other.

Starting with the first meeting, when Anna was contributing DESIGN VALUES, she typically spoke in deference to Adam. Her concerns were about the uniqueness of the project and specifically, the PURITY of the final form. While these were her goals, she deferred to Adam's judgement as to how those goals could be met and what the right design decisions might be.



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

**Extract 8 A1, Example of DESIGN VALUE—Anna's deference to Adam**

| | | |
|---|---|---|
| 816 | Anna | OK is that too heartbreaking for you [*all laugh*] |
| 817 | Adam | well it's not as pure a summation as I was looking for but I mean |
| 818 | | maybe there's another way of doing it maybe if I keep my thinking cap |
| 819 | | on because you can see I'm trying to keep the spaces pure the |
| 820 | | purer the space the more spiritual I think it will be the more you mess |
| 821 | | around with it |

In Extract 8, Anna was concerned by the impact a required change would have on the overall design (A1, 816). The joke, and nervous laughter (A1, 816), belie her desire for a coherent design even as she is unsure how to achieve it.

Looking at A2, Anna asserted DESIGN VALUES in a more confident manner, indicating her comfort with those values.

The conversation of Extract 9 shows Anna expressing AESTHETIC remarks (DESIGN VALUES). She began by expressing a goal for creating a certain phenomenological experience (A2, 803; A2, 806) and she presented a specific idea of how the design could meet that goal (A2, 825; A2, 829).

Our quantitative analysis of coded occurrences shows that Anna contributed more DESIGN VALUE discourse events in the second meeting. The shift in speaking more often about DESIGN VALUES was accompanied by a qualitative change marked by the ability to speak more fluently about those DESIGN VALUES. Taken together, these two changes indicate to us that DESIGN VALUES had been internalised by Anna, and that a transfer of values from Adam, the designer, took place by way of their interaction in the design activity.

## 4 *Conclusion*

We are encouraged that our findings are congruous with other analyses of the same architectural design meetings (McDonnell and Lloyd, in press). While several others examined the social aspects of the design process, two specific analyses exhibit traits similar to our understanding of the social interaction that facilitates value transfer Luck (in press) and McDonnell (in press). What Luck refers to as 'design in talk' incorporates both the kinds of social interaction we are associating with value transfer, and an analogous outcome that leads to a more comprehensive understanding of the design space. McDonnell's analysis of negotiation during the design process brings to light additional characteristics of the fluid exchange between designer and client; in particular, the blurring of established boundaries of expertise and identification with certain design problems is consistent with the idea of value transfer. These analyses, taken together, complement each other and present a rich



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

**Extract 9 A2, Example of DESIGN VALUE—Anna's stronger expression of form**

| | | |
|---|---|---|
| 803 | Anna | will that be coloured or will it be- |
| 804 | Adam | could be if you wanted it I hadn't thought of that but if that was |
| 805 | | something you you'd er be interested in us looking at we could do that |
| 806 | Anna | mood lighting I think they call it don't they ++ |
| 813 | Anna | as well I was looking at something for stained glass or |
| 814 | Adam | yes no |
| 815 | Anna | something that was sort of |
| 816 | Adam | we're with you one hundred percent I think /we we\- |
| 817 | Anna | /the sun\ comes up this way and sets sets this way so it would be sort |
| 818 | | of erm that would be you know quite nice to do but then I mean that |
| 819 | | obviously adds more expense |
| 825 | Anna | so we're of thinking something like COVENTRY CATHEDRAL |
| 826 | Adam | yes |
| 827 | Anna | you know with that sort of effect in a way more |
| 828 | Adam | yes |
| 829 | Anna | and EDINBURGH's got sort of quite similar erm sort of ss- ss- streaks of |
| 830 | | light coming through erm and that was the sort of- not that- this is sort |
| 831 | | of slightly bigger but you know something + in a sense that has some |
| 832 | | sort of feel of sort big- of something attractive I mean thinking of that |
| 833 | | but obviously that would add extra expense |

description of the depth of exchange that takes place during collaborative design. Our analysis adds to them by developing an explanation of value transfer as an underpinning that motivates both 'design in talk' as well as the dynamism in expertise and problem identification. But more than describing the motivational factors for actions taken in a design interaction, our analysis provides an explicit way to talk about a variety of external influences that both designer and client bring to bear during the course of collaborative design.

By focussing on how values are transferred in design discourse, we are able to understand more about the significance of designer–client interaction. The core components of this transfer are the presence of a REQUIREMENT, the expression of VALUES that relate to the REQUIREMENT, and finally, a supporting NARRATIVE that helps convey how the REQUIREMENT and VALUES are situated together. Through the interplay of these elements, participants consider and exchange information about the design space and the users who will inhabit it. It is during this exchange that value transfer takes place. Within the data that we analysed, the transformation is apparent from meeting A1 to meeting A2. In A1, while the design was still under revision and the details supporting each



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

requirement were still unclear, the transfer of values was in full swing. The designer contributed DESIGN VALUES to which the client responded and the client contributed HUMAN VALUES to which the designer responded. During A2, the client contributed more expressions of DESIGN VALUES; moreover, the client expressed those values in a more fluent manner. This transformation demonstrates that the client was able to internalise new information in the form of DESIGN VALUES.

In looking for similar phenomena from the designer, we are left only to speculate about what might have happened earlier in the design process. We did not observe a similar increase or mastering of HUMAN VALUES expressed by the designer from meeting A1 to meeting A2. This may be a characteristic of where in the design process each meeting took place—it is possible that the transfer of HUMAN VALUES to the designer started at an earlier point in the design process that we did not have access to. This hypothesis is supported by the fact that by A2 the building design was largely finished and the goal of the meeting from the designer's point of view was to advance onward to planning. Regardless, the lack of strong evidence from the designer encourages us to further investigate this kind of design interaction and include in our data meetings that take place earlier in the process to clarify our theory of value transfer.

As designers of all disciplines continue on the path towards co-design, it is important to examine how different domains accommodate values in the design process so that those same values may be present in the final artefact. It was with this in mind that we began our investigation of the architecture meetings. Our grounded analysis of the two architecture design meetings identified an important pattern during the communication of values between designer and client and sets a foundation for understanding how values are woven into design discourse.

## *References*

**Barthes, R** (1977) *Rhetoric of the image: image, music, text* Fontana, Glasgow pp 32–51

**Blythe, M and Monk, A** (2002) Notes towards an ethnography of domestic technology in *Proceedings of the Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques*, ACM Press, London pp 277–281

**Brereton, M F, Cannon, D M, Mabogunje, A and Leifer, L** (1996) Collaboration in design teams: how social interaction shapes the product in **N Cross**, **H Christiaans and K Dorst** (eds) *Analysing design activity*, John Wiley & Sons pp 319–341

**Cross, N and Cross, A C** (1996) Observations of teamwork and social processes in design in **N Cross**, **H Christiaans and K Dorst** (eds) *Analysing design activity*, John Wiley & Sons pp 291–318

**Frascara, J** (1995) Graphic design: fine art or social science in **V Margolin and R Buchanan** (eds) *The idea of design*, MIT Press pp 44–55

**Friedman, B** (1996) Value-sensitive design, *Interactions* Vol 3 pp 16–23

**Friedman, B and Kahn Jr, P H** (2003) Human values, ethics, and design in *The human-computer interaction handbook: fundamentals, evolving technologies and emerging applications*, Lawrence Erlbaum Associates pp 1177–1201



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002

**Gaver, W, Dunne, T and Pacenti, E** (1999) Design: cultural probes, *Interactions* Vol 6 pp 21–29
**Lawson, B** (1990) *How designers think* Butterworth, London
**Lloyd, P** Ethical imagination and design, in **J McDonnell and P Lloyd** (eds) *About: designing – analysing design meetings*, Taylor & Francis (in this issue)
**Luck, R and McDonnell, J** (2006) Architect and user interaction: the spoken representation of form and functional meaning in early design conversations, *Design Studies* Vol 27 pp 141–166
**Luck, R** ''Does this compromise your design?'' Socially producing a design concept in talk-in-interaction, in **J McDonnell and P Lloyd** (eds) *About: designing – analysing design meetings*, Taylor & Francis (in press)
**McDonnell, J** Collaborative negotiation in design: a study of design conversations between architect and building users, in **J McDonnell and P Lloyd** (eds) *About: designing – analysing design meetings*, Taylor & Francis (in press)
**J McDonnell and P Lloyd** (eds) *About: designing – analysing design meetings*, Taylor & Francis (in press)
**Miles, M B and Huberman, A M** (1994) *Qualitative data analysis: an expanded sourcebook* Sage
**Nelson, H G and Stolterman, E** (2002) *The design way: intentional change in an unpredictable world: foundations and fundamentals of design competence* Educational Technology Publications, New Jersey
**Pollio, V** (1914) *Vitruvius, the ten books on architecture* Harvard University Press
**Radcliffe, D F** (1996) Concurrency of actions, ideas and knowledge displays within a design team in **N Cross**, **H Christiaans and K Dorst** (eds) *Analysing design activity*, John Wiley & Sons pp 343–364
**Robbins, E** (1994) *Why architects draw* MIT Press
**Rowe, P G** (1995) *Design thinking* MIT Press
**Sanders, E B N** (2005) Information, inspiration and co-creation in *Proceedings of the Sixth International Conference of the European Academy of Design*, University of the Arts, Bremen, Germany
**Sanders, E B N** (2006) Design research in 2006, *Design Research Quarterly* Vol 1 pp 1–8
**Sanoff, H** (1973) *Integrating user needs in environmental design* National Institute for Mental Health, Raleigh North Carolina State University
**Strauss, A and Corbin, J** (1998) *Basics of qualitative research: techniques and procedures for developing grounded theory* Sage, London
**Suchman, L** (1997) Do categories have politics? The language/action perspective reconsidered in *Human values and the design of computer technology*, Center for the Study of Language and Information, Stanford University pp 91–106
**Tyler, A C** (1995) Shaping belief: the role of audience in visual communication in **V Margolin and R Buchanan** (eds) *The idea of design*, MIT Press pp 104–112
**Williams, R and Edge, D** (1996) The social shaping of technology, *Research Policy* Vol 25 pp 865–899



Please cite this article in press as: Christopher A Le Dantec, Ellen Yi-Luen Do, The mechanisms of value transfer in design meetings, Design Studies (2009), doi:10.1016/j.destud.2008.12.002