

The Mechanisms of Value Transfer in Design Meetings

Christopher A. Le Dantec
School of Interactive Computing, College of Computing
Georgia Institute of Technology, USA
ledantec@cc.gatech.edu

Ellen Yi-Luen Do
School of Interactive Computing, College of Architecture and College of Computing
Georgia Institute of Technology, USA
ellendo@cc.gatech.edu

Abstract

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 artifact may fit into their lives; they are an important part of negotiating a common understanding in collaborative design settings. In this paper, we presented a grounded analysis of a collaborative architectural design process. We examine the interactions between architect and client to better understand how different values are brought into the design discourse. By analyzing 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. Our theory provides an observational basis for understanding value transfer in the context of collaborative design and is relevant to design domains beyond architecture.

1. Introduction

1.1. Values in 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 artifact.

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 1990's, Lawson and Rowe, each contributed to work focusing on design process and the act of designing (Lawson 1990; Rowe 1995). 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 1990's the notion of design as a collaborative activity became a topic of study. During this period, Brereton, Cross, and Radcliffe all studied the affects and mechanisms used in team-

based design (Brereton, Cannon et al. 1996; Cross and Cross 1996; Radcliffe 1996), 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 artifacts 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 audience's values influence their interpretation of the design and the persuasive power it possesses (1995). 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 Tyle 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 artifact, the fact that these values are an integral part of the process continued to be overlooked. In Brereton's 1996 Delft Protocol analysis, designers were noted to make appeals to values, e.g. 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 (Brereton, Cannon et al. 1996). 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, Dunne 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 have 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).

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 seminal article "Do Categories Have Politics?" where she lays the foundation for discussing how values are built into software systems (Suchman 1997). Suchman's work is based in the Participatory Design tradition that emerged in the 1960's and 1970's (Sanoff 1973). This same tradition provides the underpinning Sanders identifies as motivating design disciplines toward 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 recognized 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 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 (1996). Another framework, from Blythe and Monk, suggests that technology designed for the home —a nascent context of inquiry for HCI —be analyzed using three scales: enjoyability, inclusivity, and recodification, which stand in contrast to the traditional scales used in HCI of efficiency and productivity (2002). 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 of HCI, social researchers have examined how technologies emerge in society. Social Shaping of Technology (SST), a theory put forward by Williams and Edge, asserts that technology is developed through the negotiation of social, technical and economic factors (1996). In this regard, VSD and SST are similar as they both emphasize 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 artifact 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 artifacts. It is a move away from technological-determinism and toward a more nuanced understanding of how society shapes design as much as design shapes society.

In looking at the architectural design meetings, our goal was to establish a better understanding of how architectural practice incorporates values into the design process. By analyzing one specific design activity, we sought to create an understanding of value-transfer that can be applied to other design domains.

1.2. Definitions

In this paper, we examine the role values play in design. Before presenting our analysis, 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 account of values in the design process, he calls attention to judgments that are made in relation to ethical considerations (this volume). Other considerations of value may involve economic factors and whether something is, or is not, a good value. In our investigation, we consider values to include *the principles, standards, and qualities that guide actions*. These may be personal, cultural, or professional. Ultimately, values are the basis for how the designer and the 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 judgment with the designer.

In looking at value transfer, we need to define 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 artifact 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 toward completion, these values are used in the design meetings to further define, validate, and assess the proposed design solutions.

2. Data and Method of Analysis

We chose to focus on the two architectural meetings because they consisted of direct contact between the 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 category, the theory, that relates all observed behaviors (Miles and Huberman 1994; Strauss and Corbin 1998). In applying this approach to the protocol data, we examined the transcripts iteratively, applying open coding, line-by-line analysis, and axial coding. We diverged from adhering to Grounded Theory in the strictest sense because we were interested in paying specific attention to the following events (i.e. 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 illuminate that):

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

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.

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

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.

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

We used the video recordings of the design meetings to clarify ambiguous statements in the transcripts. Through this iterative process, we reified the social transactions into a set of codes describing the types of exchanges of interest. These behavior codes were in turn refined into a set of five main categories that enabled us to clearly delineate subjects of discourse.

The first category is labeled "Design Values" and includes the 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 funeral home and represents an aggregation of values like privacy and reclusive.

The “Human Values” category 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 pointed out in analysis, is an alignment with a particular understanding, or valuing, of space that enables privacy (Lloyd, this volume).

The category, “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. *Activity* and *spatial* requirements captured, for example, the flow of foot 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:

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

Table 1. Behavior Categories and Codes

<i>Behavior Categories</i>	<i>Codes</i>	<i>Description</i>
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.

“Narrative” codes include *direct support, indirect support, process detail, justification, and tangent*. These codes identify pieces of text in the transcripts that support functional requirements for either of the categories of values. They represent the anecdotes and justifications offered in support of a particular idea.

The final category, “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 centered on defining functional requirements. The codes in this category 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 beginning to completion. See Table 1 for a summary of the categories and codes used in the analysis.

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 category for A1 and A2 can be found in Tables 2 and 3 respectively. These tables display the number of behavior 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 category which is 45.7% of his total contribution to the coded discourse. Tables 2a and 3a show the distribution of all codes between the participants and give an idea of where the action took place during the design discourse.

Table 2. A1 Category Summary

	Design Values	Human Values	Narrative	Requirement	Process
Adam	53 (45.7%)	9 (7.8%)	26 (22.4%)	13 (11.2%)	15 (12.9%)
Anna	16 (17.4%)	15 (16.3%)	32 (34.8%)	24 (26.1%)	5 (5.4%)
Charles	1 (5.9%)	-	2 (11.8%)	10 (58.8%)	4 (23.5%)
Cat. Total	70 (31.1%)	24 (10.7%)	60 (26.7%)	47 (20.9%)	24 (10.7%)

Table 2a. A1 Distribution

	Contribution Total
Adam	116 (51.6%)
Anna	92 (40.9%)
Charles	17 (7.6%)
Total	225 (100%)

Table 3. A2 Category Summary

	Design Values	Human Values	Narrative	Requirement	Process
Adam	31 (41.3%)	-	22 (29.3%)	6 (8.0%)	16 (21.3%)
Anna	16 (20.5%)	11 (14.1%)	30 (38.5%)	18 (23.1%)	3 (3.8%)
Charles	1 (14.3%)	-	1 (14.3%)	3 (42.9%)	2 (28.6%)
Cat. Total	40 (30.0%)	11 (6.9%)	53 (33.1%)	27 (16.9%)	21 (13.1%)

Table 3a. A2 Distribution

	Contribution Total
Adam	75 (46.9%)
Anna	78 (48.8%)
Charles	7 (4.4%)
Total	160 (100%)

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 contribution of coded events was roughly even between architect and client as seen in Tables 2a and 3a. 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 category. 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; e.g. from Table 2, Adam's 53 Design Value codes are 75.7% of the total 70 Design Value codes recorded in A1.

Table 4. A1, Category Contribution

	Adam	Anna	Charles
Design Values	53 (75.7%)	16 (22.9%)	1 (1.4%)
Human Values	9 (37.5%)	15 (62.5%)	- (0%)
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%)

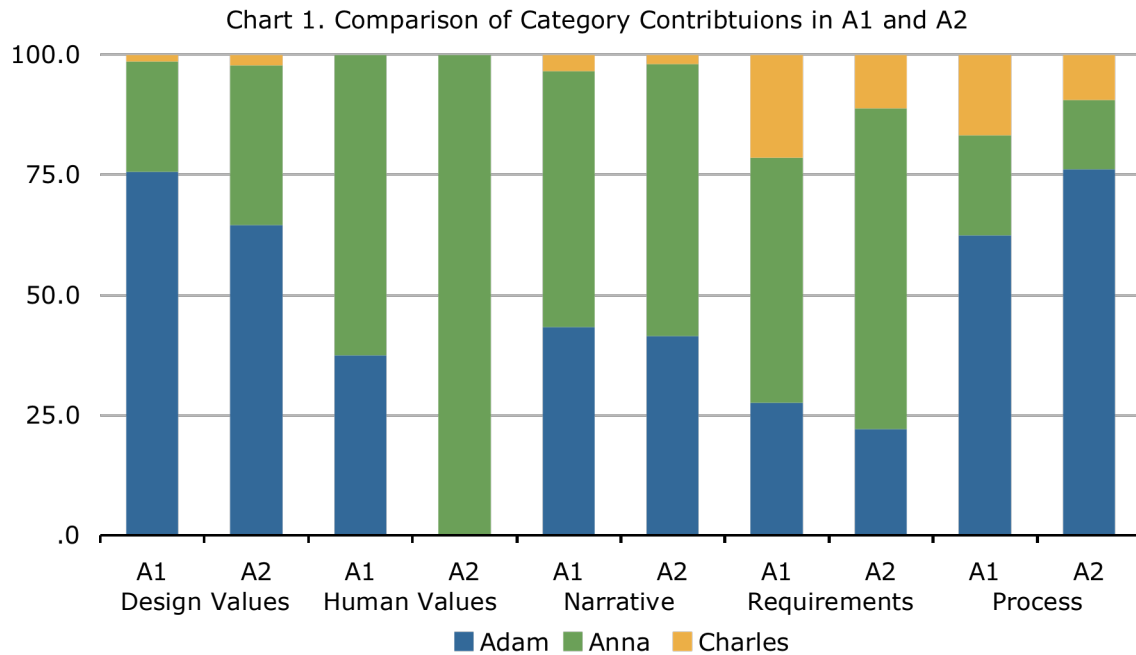
In Table 4, 75.7% of the coded Design Values came from Adam, 22.9% from Anna and 1.4% from Charles. The Human Values in A1 came primarily from Anna at 62.5%. Adam contributed 37.5% of the Human Values while Charles contributed no events coded as Human Values.

Coded discourse from the Narrative category were 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. A2, Category Contribution

	Adam	Anna	Charles
Design Values	31 (64.6%)	16 (33.3%)	1 (2.1%)
Human Values	- (0%)	11 (100%)	- (0%)
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%)

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 category of values begin to permeate a lower concentration of those values. This progression can be seen in A2 where Anna contributed more coded discourse to the Design Value category (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 marched considerably onward. The lack of Human Value statements from Adam could be because his focus had moved to advancing the design toward planning (in fact, this intention of moving the design into a 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 synthesize 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 discourse, 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 [<i>begins to point</i>] 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	[<i>begins to sketch</i>] 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

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 of values during problem solving is consistent with the findings of Luck and McDonnell; 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 (Luck and McDonnell 2006).

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 mechanic sits at the center 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 characterizing 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 of 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, 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

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 synchronized 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, A2, Example of problem solving discourse

448 Charles and I think you need an out-and-out office here
...omitted
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 ...
...omitted
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
...omitted
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 +++
...omitted
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

Extract 6 highlights segments from a longer section of discourse 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 officiant 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 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.

3.4. Evidence of Mutual Understanding

The mechanic 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 judgment as to how those goals could be met and what the right design decisions might be:

Extract 7, A1, Example of Design Value - Anna's deference to Adam

816	Anna	OK is that too heartbreaking for you [<i>all laugh</i>]
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 7, 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:

Extract 8, 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?++
		...omitted
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
		...omitted
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

The design discourse excerpted in Extract 8 shows Anna expressing *aesthetic* 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 show 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 internalized 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 presented in this volume. While several papers presented here have 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, McDonnell, this volume). 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; the blurring of established boundaries of expertise and identification with certain design problems is consistent with the idea of value transfer (McDonnell, this volume). These analyses, taken together, compliment each other and present a rich description of the depth of exchange that takes place during collaborative design.

By focusing on how values are transferred in the 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, 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 analyzed, the transformation is apparent from meeting A1 to meeting A2. In A1, while the design was still under revision and the details supporting each 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 internalize 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 meetings that take place earlier in the process to clarify our theory of value transfer.

As designers of all disciplines continue on the path toward 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 artifact. 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.

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