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## Seeing design stances

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### ABSTRACT

In this paper, we investigate the stances that designers take in relation to one another in design critiques. Analysis of audiovisual recordings of critiques between students and professional designers in industrial design in the DTRS 10 data-set reveals that design concepts not only are verbally narrated but also come to life in gesture, gaze, orientation and body movement. In these bodily performances, participants adopt and shift between several identified stances, which we call *inscriptional*, *third-person*, *first-person* and *phenomenal*. In social relations, these stances are mirrored, taken up, responded to and elaborated by the other participants. The critique itself, then, can be seen as a dialogical movement by the participating designers through a set of stances. By comparing a case in which participants are collocated to a case in which the participants are at a geographic distance facilitated only by real-time audio and shared computer display, we conjecture that this responsive mirroring and elaboration of stance can be hindered when participants do not have visual access to one another and thus increase the chances of communication breakdowns.

### ARTICLE HISTORY

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### KEYWORDS

Design stance; embodiment;  
gesture; design critique

## 1. Introduction

Design critiques are common elements in design education, emerging from the studio tradition in fields such as architecture, graphic design, and industrial design. Design critiques are characterised by a focus on discussions of designs that students have created, mediated by inscriptions or artefacts. In addition to the student designer, participants in these discussions include one or more of peers, teachers, expert practitioners and other design stakeholders (Oh et al. 2013).

In this paper, we investigate the design stances that participants in a design critique take in relation to one another. To pursue this, we undertake a multi-case analysis of design critiques between student designers and professional practitioners in industrial design drawn from the DTRS 10 data-set (Adams and Siddiqui 2013). In undertaking this analysis, we take into account the audiovisual recordings in addition to verbal transcriptions, carrying out analysis across a range of semiotic modalities (Murphy 2012).

This analysis reveals that design critiques are not simply *linguistic genres* (Dannels 2005) or verbal conversations, but bodily performances in which designers' gesture, gaze, body placement, movement and orientation manifest their stance towards design objects. In relations with others, these stances are mirrored, taken up, responded to and elaborated by the other participants and appear to be a salient part of design critiques (Socha, Roth, and Tenenberg 2015). The critique itself, then, can be seen as a dialogical movement by the participating designers through a set of stances. We conjecture that this responsive mirroring and elaboration of stance can be hindered when participants do not have visual access to one another. We base this conjecture on a comparison of a case where participants are collocated with another one in which the participants are at a geographic distance mediated only by real-time audio and shared computer display.

## 2. Design stances

Our conception of design stance draws from two communication theorists. From Goodwin (2007), we borrow his use of the term *stance* in describing 'how participants mutually position their bodies toward each other and the environment that is the focus of their work' (61). Goodwin highlights bodily activity that not only orients actors to the people and things around them, but also displays this orientation to others through gesture, gaze, body positioning and movement. These displays of stance serve as cognitive resources that interlocutors use for developing joint attention, essential for their coming to share an intersubjective world (Tomasello 1999).

From an analysis of gesture in communication (McNeill 2005), we borrow the notion of *viewpoint*, of which, we identify two: third-person and first-person. Although spoken languages provide syntactic markers indicating viewpoint, with gestures, viewpoint is determined from the position – inside or outside – of the speaker's hands and body relative to the spatial discursive frame that she/he has established. The relative positioning of the speaker's body, hands and arms to signal viewpoint is similarly used for disambiguating pronominal references by American Sign Language speakers (Liddell 2003). In signing 'you two', an ASL speaker points to the individuals who are being referred to, while in signing 'us two', the speaker points to the self and other person who are the targets of reference. ASL speakers thus use their hands to move into and out of a referential space that is established by the frame of the bodies of the participants in the conversation.

To McNeill's first-person and third-person viewpoints (which we take as two of the *basic* stances that designers exhibit), we add a third, which we call *inscriptional*, since in it, the speaker makes reference and orients to design drawings and sketches. Finally, as McNeill also notes, '[i]n some gestures the two viewpoints are combined' (McNeill 2005, 34), and we note the same situation in design conversations. We describe here the general characteristics of each stance and how we classify behavioural displays into each stance, providing concrete instances of each in the analysed cases in the following section.

### 2.1. Third-person stance

Third-person stance takes an objective or outsider viewpoint on the design artefact under discussion. This stance concerns what can be seen from in front and at a distance, impersonally, as anyone might see while looking at a design. Vision is the primary sense invoked, often

with verbal reference to properties of size, shape and material. Gesturally, participants point at the three-dimensional foam models on the table in front of them, handle the artefacts while making verbal reference to them, or employ ‘the hand(s) [to] represent one or more of the entities in the narration’ (McNeill 2005, 34). In manifesting the third-person stance, designers treat design artefacts as having context-free material properties, what Heidegger (1962) referred to as *present-at-hand*, present to the designer as objects in the world.

## 2.2. First-person stance

In first-person stance, ‘the speaker him/herself is inside the gesture space’ (McNeill 2005, 34). Touch or ‘feel’ is the primary sense that is verbally invoked to signal first-person stance. First-person stance also occurs when participants take on some aspect of the role of a person who is using the envisioned artefact. In manifesting the first-person stance, designers treat artefacts as something that Heidegger (1962) referred to as *ready-to-hand*, things that people simply ‘deal with’ or unreflectively use in their coping in the world, ‘something-in-order-to’. Rather than an object that is present *qua* object in the world, in first-person stance, an object disappears in its very use.

## 2.3. Inscriptural stance

In this stance, the designer orients and makes reference to sketches and diagrams, whether projected on the screen, printed on paper or displayed on a computer monitor. Roth and McGinn (1998) refer to these externalised representations as *inscriptions*, appropriating this term from the sociology of science (e.g. Latour 1987) to highlight the in-the-world signs that people make public and hence perceivable by others. The inscriptural stance orients ‘to the page’. Inscriptions often abstract or ‘filter’ a number of design details so as to make salient only particular characteristics of the design (such as shape or form) for ideational and conversational purposes (Lim, Stolterman and Tenenberg 2008). The inscriptural stance is signalled by verbal reference to parts of an inscription, deixis or gaze orientation to an inscription, and/or moving the hand over or in relation to an inscription.

## 2.4. Phenomenal stance

The phenomenal stance is one in which a participant takes on both a first- and third-person stance at the same time. In doing so, the participant combines viewpoints to enact the essence or entirety of the entire phenomenon of the design concept; hence, we name this the *phenomenal* stance. This stance is usually performed when the hands animate some part of the design in use indicating third-person stance, while the trunk and/or head animate a person using the design.

In employing hands, arms, voice, gaze, movement and body orientation, designers position themselves in relation to design artefacts and, as seen below, the other participants in a design critique. As McNeill (2005, 99) suggests,

[b]y performing the gesture, a core idea is brought into concrete existence and becomes part of the speaker’s own existence at that moment ... Following Heidegger’s emphasis on being, a gesture is not a representation, or it is not only such: it is a form of being.

Stances are thus not so much states of mind, ‘designerly ways of knowing’ (Cross 2001), as they are ‘designerly ways of being’. Although the stances are characterised here abstractly and statically, participants manifest these stances and change stance throughout a critique. The stances, changes between them and most particularly, the way in which stance is mirrored or not mirrored by others, are illustrated in the cases analysed in the next section.

### 3. Stance in interaction

In this section, we provide detailed description and analysis of three cases that demonstrate the relation of design stances between participants in a critique.

#### 3.1. Method of analysis

With respect to method, we situate our work within design research that investigates the ways in which design participants discursively organise their activity through speech-in-interaction (e.g. Murphy 2012; Oak and Lloyd 2014). Using exploratory case studies, we carry out fine-grained analyses of the simultaneous use of multiple communicative modalities enacted by participants as they work together. This type of analysis has been referred to as *multimodality*:

in contrast to frameworks that analytically sequester communicative modes like speech and gesture both from each other and from the material world, the multimodal approach instead assumes semiotic complexity as the prerequisite, irreducible condition for communicative social action’ (Murphy 1966, 2012).

When working with a large and rich data-set, the question arises as to how to choose episodes of recorded activity to analyse? As researchers, we have experience in undertaking research both with expert practitioners in the workplace (e.g. Roth and Mavin 2015; Tenenberg, Roth, and Socha 2015) and with students in the classroom (e.g. Roth 2011; Tenenberg and Murphy 2005), though rarely with students and practitioners in interaction. We therefore chose to investigate those parts of the DTRS 10 data-set in which students present their designs to expert practitioners for critique. We further narrowed our analytic focus by concentrating on the two courses in Industrial Design in the data-set, one at the undergraduate level and one at the graduate level.

Our method of analysis is case-oriented. We delineate each case as a contiguous sequence of activity by the participants in the design critiques in which a design student or expert practitioner uses one or more gestures – a modality used in all cultures at all ages and even by blind people speaking to each other (McNeill 2005) – as part of their communicative activity. We chose gesture as a focus of our analytic gaze because these constitute those times at which participants bodily display stance, communication resources they make visible to one another and to us as researchers. We also have considerable past experience in gesture analysis in situated activity (e.g., Roth 2001).

We proceeded by isolating all cases of gesture in the student–practitioner critiques in industrial design (14 in all), and then viewed together the audiovisual recordings of several of these cases, often repeatedly and at slow speed or frame-by-frame. In doing so, we iteratively and discursively generated a number of theoretical conjectures that we used as

the basis for falsification, confirmation, elaboration and extension while viewing additional cases. We wrote up the analyses of the individual cases that we examined together, refining our analysis through viewing the remaining gestural cases.

This paper includes the analyses of three of these cases. The first case illustrates each of four stances that we identify and how these are signalled. The second case provides an analysis of face-to-face interaction between designer and critic, showing how these participants build on and mirror one another's stances. The third case illustrates how communication breakdowns between designer and critics appear to be related to when they do not align their stances. We preface these cases with a brief discussion of the settings in which the design critiques were enacted.

### **3.2. The settings of the design critiques**

The brief for the undergraduate industrial design course was to design 'impromptu seating' for private offices, shared workspaces, breakout areas or lounges, 'accessories that can bring excitement to the office'. Participants in each undergraduate design critique included a student, the instructor and two industrial designers: a product group manager, and a lead engineer from the furniture manufacturing organisation that served as a client for the course. The recording shows a few other people in the classroom where the critiques took place, though these other people are not active participants in the critiques. The data-set contains recordings of critiques of seven undergraduate students presenting to expert design practitioners, ranging in length from 4'52" to 7'14".

The design brief for the graduate course called for students to 'explore the laundry process for homeowners, specifically focusing on the laundry procedure outside of the "laundry appliances". They [students] will develop concepts and designs that help enhance the experience'. Participants in each graduate design critique included a student, whose designs were critiqued, another student assisting as a note taker, and two practicing designers from a manufacturer of laundry appliances. Because of weather conditions, the participants were not all collocated. Instead, the student being critiqued was at one location in front of a table that contained a computer, large storyboards illustrating design concepts, a telephone through which the student talked with the remote designers, and the note taker sitting beside the presenting student. The professional designers were at a remote location, apparently collocated, with a telephone and computer. The presenting student used the computer to display a sequence of images representing his or her design concepts, which were also displayed on the designers' remote computer. Audiovisual recordings of these critiques are only available depicting the student site. The data-set contained recordings of design critiques of five graduate students presenting to expert design practitioners, ranging in length from 8'49" to 15'14".

### **3.3. Progressing through design stances**

During the design process or during a design presentation/critique, a designer may move through a progression of design stances. We exemplify these stances, and movement through them, with a four-second fragment of speech and movement by Darren,<sup>1</sup> one of the expert design critics in response to a presentation by Adam, one of the undergraduates.

Standing at the front of the room, with slides of his design concepts projected on the wall behind him, Adam spends approximately one minute describing the design brief and the context for his designs, and another minute discussing each of his three concepts. Darren, one of the design professionals, faces both Adam and the projected images of Adam's design concepts. While Adam's third design concept is still displayed, Darren and Adam have a brief discussion concerning this concept.<sup>2</sup>

- 1.1 Darren: so I take it in the bottom of that there is a (.) void (.) that (.) takes the  
 ((extends right arm and points index finger at the projected display))  
 shape of the seat



- 1.2 Adam: yeah yeah  
 1.3 Darren: there's a  
 ((moves pointing hand closer to body with a loose grasping hand position))  
 and that



In turn 1.1, Darren points to the displayed image, and at the same time, discusses the bottom surface of the stool that cannot be seen because the stool is on the floor, 'the bottom [where] there is a void'. The image displays two identical stools nested one on top of the other, with the bottom stool's top cushion fitting into this concave 'void' of the top stool. In pointing to the inscription and making verbal reference to it ('bottom of that'), Darren is in the *inscriptional stance*.

As Darren continues, though, he quickly changes his stance. In 1.3, Darren continues to speak, moving his hand position from a deictic to a loose grasp, as if he were grabbing the object from the inscription and bringing it into the space in front of him. In this gesture, he rapidly moves from an inscriptional stance to a third-person stance on the represented artefact, as if the stool were right there in front of him. In this stance, the object – from Lat. *ob* – before, in front of + against *jacere*, to throw – exists before and separate from the person creating it.

Having the imagined object in front of him, Darren continues to probe it and in doing so, takes on yet another perspective.

He first moves his right (grasping) hand closer to his body (1.4), and opposes it with his left hand, with fingers open and hand curved as if meeting the stools' rounded shape and



- 1.4 ((moves grasping hand closer to body and brings left hand to oppose it in a similar position on the other side of the body)) and that keeps it



- 1.5 from ((slides hands right, moves head left))



- 1.6 sliding ((slides hands left, moves head right))



- 1.7 off ((slides hands right, moves head left))



holding the nested stools. The stools are no longer out there, but here, up close. Keeping his hands equidistant, he slides them first to the right, then the left and back to the right (1.5–1.7). In doing so, the hands move in the way the upper chair might move, held in place



by the lower chair that is lodged into its void thereby preventing ‘it [the top stool] from sliding off’ even if they are shaken back and forth. The hands literally become the chairs in the hands of a user while stacking them and feeling the way in which the sideward movements would be stopped by the intrusion into the ‘void’ by the chair below. At the same time, Darren’s head moves in the opposite direction as his hands, so that he enacts the kind of movement that a user would take sitting on the stool and moving in the opposite direction of any sideways ‘sliding’ that the stools would otherwise exhibit were they not designed to partially nest one inside the other. In his movement, Darren takes on a *first-person stance*.

This *first-person stance* manifests a user experiencing a design, from the inside, subject and subjected to – from Lat. *sub* – under + *jacere*, to throw – its affordances and constraints. This stance relates to the way a design feels and, thereby, contrasts to the outsideness of the third-person stance, more concerned with how the design looks. While in this stance, however, Darren does not relinquish his third-person stance, since his hands still represent the stool in front of him, moving in one direction, while his head and trunk move in the opposite direction. In taking on both the first- and third-person stances simultaneously, we say that Darren is in the *phenomenal stance*, in that he represents the entire design phenomenon: jointed stool, user, gravity and motion all at once. Within a four-second time interval, he has not only brought the symbolised design concept out into the world, and then moved it close to him to experience first-hand. He has encompassed the entire system of person and artefact in dynamic interaction, and in so doing, conveyed the essence of the concept.

### 3.4. Making stances visible in interaction

A ubiquitous feature of human communication is the way in which speakers mirror one another’s bodily talk-in-interaction. For instance, speakers frequently repeat (sometimes with modification) the words and phrases of their interlocutors, passing these symbolic tokens back and forth between them, thereby signalling their mutual involvement in one another and in their conversational activity (Tannen 1989). ‘Ongoing discourse is thus woven of the threads of prior talk. When fishing for words, speakers cast a net in the immediately surrounding waters of conversation’ (83).

People in interaction also frequently display *postural congruence*, where the specific placement of head, arms, legs, mannerisms, facial expression and similar mirror those of their speech partners in face-to-face talk. This mirroring is often interpreted as a display of empathy, affinity or affection (Chartrand and Bargh 1999; Maurer and Tindall 1983; Vinciarelli, Pantic and Bourlard 2009). And some scholars speak of *interaction rituals*, where the entire nexus of talk, intonation, body movement and gestures among the participants in interaction come to be coordinated in the case of solidarity or dissociated in the case of conflict (Collins 2004; Roth and Tobin 2010).

Stances are part of the bodily talk-in-interaction that designers and critics make visible to each other during design critiques. As participants move through stances, thereby being and taking-up positions in the world of the emerging design, their stances adjust to each other for mutual understanding to be manifested (Heath 1986). Interlocutors do not only orient and refer to the same objects in the scene; they often also mirror the same stances as one another, mirroring the same ways of orienting to the design as it becomes elaborated during conversational activity. In the following case, we exhibit the interaction of stances when two participants, a critic (Darren) and an undergraduate student (Addison), mirror and build on one another’s stances. Within this setting, not only are the design artefacts accessible to all participants, but also so are the gestures, body movements and gaze orientations of each.

These all become resources that the participants create *for* one another in communicating about and responding to the design under discussion.

On entering the speaker's position at the front of the room, Addison places a foam model on the table for each of the three design concepts that she will discuss. After a four-minute presentation of these design concepts, Darren comments on one of these. The presence of the 3D model facilitates Darren's bringing it to hand in initiating the discussion and immediately moving into third-person stance.

- 2.1 Darren this guy  
((reaches to a model on the table))



- 2.2 ((lifts a model from the table with his right hand and places it on his left hand))  
you know the first (.)  
the first (.)



- 2.3 a lot of your images (.)  
((points index finger of right hand to one of the boards that holds images related to the design concept that Darren holds))



- 2.4 Addison ((gazes momentarily in the direction of the concept board at which Darren points))

- 2.5 Darren almost come off (.) like there is a wire (.)  
((moves right hand upward in a spiral motion, index finger extended while his left hand holds the foam model))



In 2.1–2.2, Darren starts the discussion by taking a model from the table and, in holding it, makes explicit indexical reference to it ('this guy'). The speech and the holding are intelligible only with respect to one another. As a three-dimensional model, the model is both viewable by each of the critics and Addison, and can be and is picked up and manipulated as an object, in the third-person.

In 2.3, Darren augments this third-person stance with the inscriptional stance, pointing to the concept board with the images of the stool that stands on the desk between himself and Addison. While taking the inscriptional stance, he continues to hold the third-person stance, thereby cross-referencing and relating to different representations, from 'this guy', the three-dimensional model, to 'a lot of your images' on the concept board.

Darren's stance is made publicly visible through his gestures and gaze, and Addison shifts her gaze and orientation to align with Darren's stance. As Darren picks up and holds the foam model in 2.1 and 2.2, Addison orients towards that model; as Darren points towards the concept board, Addison momentarily glances towards that concept board. Darren thus moves through a sequence of stances that Addison mirrors in her own stances.

In 2.5, Darren moves back into the third-person stance. After stating that 'a lot of your images almost come off like there is a wire', he stops speaking entirely, and uses the upward spiral movement of his hand in the visual space in front of him as a speech turn, gazing at his hand as he gestures. In making this movement, he captures with his gesture not the experience of sitting on the stool, but one of the stool's essential features, using his hand motion iconically to mirror the structural feature of the spiral apparent in several of the drawings.

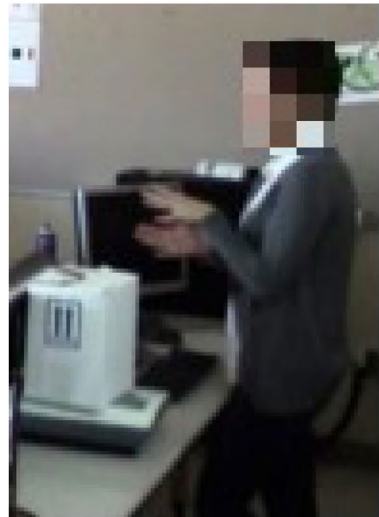
- 2.6 Addison: structure  
 2.7 Darren: structure that expands like  
           ((brings right hand to the level of his head,  
           rotates hand about wrist))  
           that (.)  
           ((makes wave-like motion where his hand opens and  
           closes))  
           that  
           ((opens and closes hand again as he moves it  
           lower))  
           flexible lycra-type material or something were you  
           were you ↑thinking about that ori  
 2.8 Addison: um  
 2.9 Darren: originally or

In 2.6, Addison completes Darren's sentence fragment from 2.3 to 2.5 ('a lot of your images almost come off like there is a wire') with the word 'structure', thereby reflecting back to Darren this visual characteristic of his gesture, which Darren repeats in confirmation. In 2.7, Darren continues with his third-person, gestural movements, using his hand metaphorically in wave-like openings and closings as he talks about a 'structure that expands like ... flexible lycra-type material'. In 2.10, with a deictic gesture directed to the model that Darren holds, Addison's response begins in the same (third-person) stance that Darren had ended his utterance with – a communicative feature typical when participants are in accord with each other (Roth and Tobin 2010).

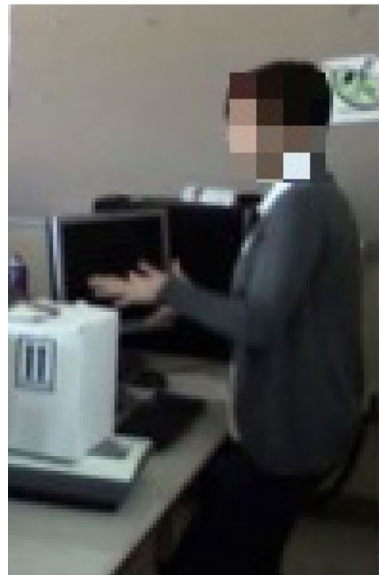
2.10 A more for  
 ((extends her right arm and  
 hand, index finger pointing  
 to the foam model that  
 Darren continues to hold))  
 that one  
 ((draws extended hand back  
 toward her body))  
 I wanted especially  
 ((orients several degrees to  
 her left, re-extends her  
 right arm and points thrice  
 more in quick succession to  
 the foam model that Darren  
 holds while gazing toward  
 the models on her left))



2.11 that one I wanted there  
 ((draws right arm closer to  
 her body, covers left palm  
 over right))  
 to be (.)  
 ((opens hands apart))  
 enough GIVE  
 ((brings hands together as  
 she says GIVE))  
 that when  
 ((moves hands together and  
 apart twice as she speaks))  
 you do sit on it (.) you



2.12 ((moves right hand to the  
 side at the same time as she  
 pushes her left palm  
 downward and also bends her  
 knees as if she is starting  
 a sitting motion))  
 kind of  
 ((moves her left palm up and  
 then down as she straightens  
 her legs and then slightly  
 bends her knees again))  
 feel the difference but (.)  
 ((straightens her legs))  
 because the piece  
 ((waves left hand toward  
 foam model))  
 looks like thats what it would  
 do  
 ((brings hands together  
 close to her body))



Moving from 2.10 into 2.11 Addison then discusses a behavioural characteristic of the envisioned stool when it is compressed, ('enough GIVE'), emphasising the word 'give' by increasing her speech intensity from 64 dB on the prior word to 88 dB (24 dB  $\cong$  factor of 256). As she says this word, she moves her hands closer and farther apart, enacting the springiness, the 'give' of the stool. That her hands are in front of her and visible to her suggests a third-person perspective. And in her use of her hands to enact the stool's give, she takes up this third-person use of the hands that Darren had just displayed in enacting the stool's spring-like structure. Darren and Addison are thus, in their co-presence, bodily manifesting the artefact under discussion. That is, they are not simply telling one another about their designs, they are *performing* it (Fleming 1998), not as solo performers in monologue, but as co-participants in dialogue, mirroring and building upon the contribution of the other.

As Addison continues, she elaborates her prior performance by taking on an additional stance towards the design, in both speech and bodily display. In 2.12, she speaks about the 'feel' of the stool when someone sits on it. In going from talking about the stool's springiness to the felt experience of a person sitting on it, she changes stance from the third- to the first-person, and at the same time, moves her entire body through a sitting motion, going down and up twice to show the feeling of compression and decompression that the 'give' imparts to someone who might sit on the stool.

As with Darren in the first case discussed, Addison does not simply manifest a first-person stance. While making the sitting movements with her legs, Addison's left-hand enacts the third-person perspective by pushing down to represent the stool's 'give' when sat upon. Body and hands manifest first- and third-person perspectives simultaneously, the entire phenomenon of person-sitting-on-stool. Addison configures and is configured by the phenomenal stance.

In summary, as the exchange unfolds, the back-and-forth between Addison and Darren constitutes more than the simple turn taking of mundane conversation (Sacks, Schegloff, and Jefferson 1974). These designers are, in addition, exhibiting particular stances in relation to the design, displaying the stances for one another, and mirroring these stances as part of the ongoing performance of the design. Stances are thus ways of configuring people in relation to artefacts that are reflected in and elaborated on by other participants in a design conversation.

### **3.5. When stances are invisible: stance fixation and communicative troubles**

In the above case, communication between participants in a design critique is enabled when the participants follow and build on each other's stances. By contrast, if one or more of the participants in a design critique remains fixed with respect to the stances taken, unable or unwilling to take on the stances of others, we may anticipate communicative trouble to occur (Roth and Tobin 2010). This is so because taking a stance manifests a particular way of being-in-the-world. If design critique participants do not follow each other in their stances, then they may literally inhabit different worlds allowing misunderstanding or non-understanding to arise. Such situations occur when communication participants are not co-located, leading to what some have termed 'disembodied conduct' that lead to interactional asymmetries (Heath and Luff 1993).

An example of this situation can be seen in the following case, in which the critics, Peter and Chuck, repeatedly invite a graduate student, Walter, to enter the first-person stance or the phenomenal stance, but Walter does not follow. He stays in the inscriptional or



3.1 Peter: if you go to number (.) 6

3.2 Walter: number 6  
 ((uses touchpad to display the bicycle design concept on the computer monitor, which also displays it on the remote computer that the critics are using))

3.3 Peter: I I think there is something here: er th the physics of it would never work (.) uh as far as balance

3.4 Walter:



um hm

3.5 Peter: it its (.) or it would be incredibly difficult (.) but if this was more of a stationary thing

3.6 Walter: uh huh

3.7 Peter: I think theres something there

3.8 Walter: okay okay

3.9 Peter: more of a stationary bike

3.10 Chuck: and I got to tell you Peter would know:

3.11 Peter: Yeh

((laughs))

I've worked in bikes for a long time so (.) uh (.) it's it's (.) it would be <<len> very heavy and very tricky>

3.12 Walter: okay=

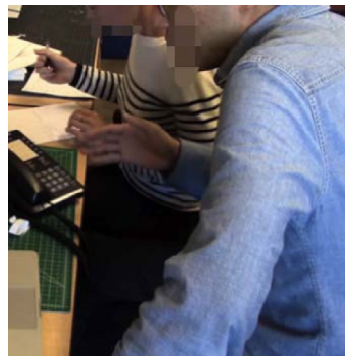
3.13 Peter: although I love the thinking

3.14 Walter: (.) okay

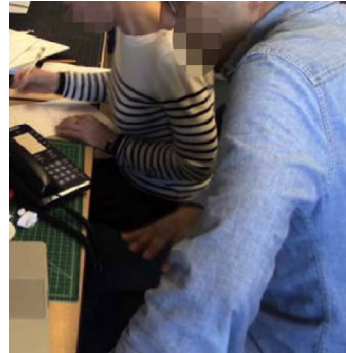
3.15 Peter: but I think if you did something like this that was more in a stationary kind of work out th[i:ng]

3.16 Walter: [but] I mean but I mean if I move the dryer or washer into the: into the <<all pp> I mean the> REAR wheel

((Walter raises his right hand to chest level and moves it from right to left))  
 it will be BETter do you think so



third-person stance, describing the physicality of the design but not the experience of the user, and does not appear to hear the expert's critique or take up the expert's suggestion for improvement. This discussion occurs following Walter's presentation of his design concept 'number 6', a bicycle-driven washing machine in which clothes are placed in a large front wheel with water and then washed while riding the bike. Unlike the case with Addison and Darren, Walter's critics are at a remote location. Although Walter and his critics share real-time audio and can both view the same computer display, the body movements, gaze and gesture that each generate are not available as resources to one another in communicating their stances.



- 3.17 Peter: (.) uh:::  
 ((exhales audibly))  
 (.) Iee: (.) this one just seems (.) so far fetched
- 3.18 Walter: okay okay (.) makes sense ( . . . ) so ( . . . )
- 3.19 Peter: if it were me thats what I would do (.)  
 ((Walter begins to use his fingers on the  
 trackpad to move the computer cursor across the  
 diagram))  
 so you keep all your cool styling you just kinda  
 make it (.) more (.) of a stationary thing
- 3.20 Walter: okay

In 3.1, Peter references the number on one of Walter's concept drawings, which Walter repeats and then brings onto the shared computer display. From 3.3 to 3.15, Walter gazes at the concept drawing suggesting an inscriptional stance, not altering his body orientation or gaze. Walter's only speech is to utter occasional *response tokens* (Gardner 2001) such as 'um hm' and 'okay', which serve to signal that the other person has been heard while preserving that person's turn at talk (Sacks, Schegloff, and Jefferson 1974). In 3.3, Peter then makes an assessment with a mildly positive valence ('I think there is something here'), followed by a negative critique in the latter part of this statement ('the physics of it would never work') and elaborated in 3.5 ('it would be incredibly difficult'). In talking about 'the physics of it', Peter comes off the page, into *this* three-dimensional physical world with all of its properties. Peter is no longer simply relating to a drawing on a page, the inscription layer. He manifests a first-person stance in describing qualities that he implies to be problems for a person using this bicycle. These are problems of 'balance' (3.3) that would 'never work' (3.3), that the bicycle 'would be incredibly difficult' (3.5) and 'very heavy and very tricky' (3.11), this last phrase emphasised through the slow and deliberate way in which Peter



speaks it. In some senses, Peter is inviting Walter to ride the very bicycle that Walter has designed, and in that way to feel the problems with this design. Walter does not respond to Peter's first-person stance by mirroring it, but rather continues to gaze at the concept diagram, suggesting an inscription stance, and only minimally displays his understanding of the critique with his response tokens.

In 3.5, 3.7 and 3.9, Peter suggests an alteration to Walter's design by making it stationary, this way avoiding the problems of balance while still preserving 'the thinking' (3.13) from the original design that Walter presented. Walter continues with his minimal response tokens, not yet signalling that he has taken up Peter's suggestion or understands the basis of Peter's concerns. In 3.10, Chuck underscores the authority of Peter's comments ('and I got to tell you Peter would know'), affirmed in 3.11 by Peter who indicates that he has considerable experience in designing bicycles. Peter reiterates the physical challenges of using the design, that 'it would be very heavy and very tricky'. In 3.16, rather than accepting either Peter's critique or his design fix, Walter counter-offers with the suggestion that he move the washer into the rear wheel rather than the front as he currently has it. In making this suggestion, Walter explicitly signals that he is not (yet) willing to accept Peter's critique, to accord it legitimacy. Walter also briefly enters a third-person stance as his hand emphasises this possible move, then briefly shifts his gaze to the phone as he asks 'do you think so' before returning to gaze at the inscription layer while waiting for the critics' reply.

In turn 3.17, one may observe considerable hesitation on Peter's part at the start of his response, which is typical of disagreements and non-acceptance of offers (Pomerantz 1984). This hesitation serves as a harbinger of the non-acceptance that will follow, and in this way softens it. Given Peter's repeated attempts in 3.3–3.15 to convince Walter that his design will not work in the physical world because of the difficulties for the human user, in 3.17, Peter makes his strongest statement yet about Walter's design: it is 'so far fetched', which applies regardless of whether the front or rear wheel is used for the washer. It is only at this point that Walter signals some amount of explicit agreement, in that Peter's comments 'make sense' (3.18). In 3.19, Peter responds to Walter's offer of acceptance by conceding that Walter can keep what Peter takes to be Walter's cardinal value, the 'cool styling' as long as Walter trades the violation of physics and makes the bicycle stationary. In focusing on the 'cool styling', Peter acknowledges Walter's orientation to the inscription and the visual properties of a third-person perspective, while at the same time attempting to attune Walter to the first-person experience of the person who would ride the bicycle.

In this entire episode (3.1–3.20), we observe the communicative trouble that arises in design communication together with the misalignment in the stances taken on by different participants. Peter appears to be taking third- and first-person stances throughout this episode, while Walter remains almost entirely in an inscriptional stance. Given that the design critics are not collocated with the student, an asymmetry arises from the situation of disembodied conduct (Heath and Luff 1993): invisible, both to us as researchers and to the design participants themselves, are the ways in which the remote critics manifest their stances. Peter thus cannot demonstrate with his body the 'incredibly difficult' (3.5) way in which human bodies might have to work with the bicycle as currently envisioned. Nor can Peter see Walter's fixation on his design inscription. We may conjecture that having such visible markers of stance helps designers fluidly move from one stance to another as they take up one another's perspectives, even as it might help them shift their stances to that of their interlocutors. Only at the end does Walter state that Peter's critique 'makes sense'

(3.18), to which Peter responds by acknowledging Walter's inscriptional orientation and focus on visual properties ('cool styling', 3.19), but that these can only be preserved if the first-person concerns of difficulty of use are addressed.

#### 4. Conclusion

The purpose of this paper is to investigate the stances that designers take in their embodied performances in relation to the artefacts of design and one another. In this regard, we extend the work of design researchers who have recently begun to explore the role of embodied activity along with speech in design activity. In describing critiques, Fleming (1998, 48) notes how students establish mutual attention to physical features of a designed object, manifesting itself in coordinated speech, gesture, and gaze, characterising this as '*performing* the object [emphasis in original]'. In a study of design critiques as discipline-specific speech genres, Gaffney (2010) describes a number of instances when participants gestured to direct the visual attention of interlocutors, often in relation to an inscription: 'During this explanation, Lydia consistently gestured to the diagrams, moving the audience not only verbally, but also visually, through the explanation' (139). In analysing a design conversation between two practicing architects, Glock (2009) notes a similar use of gesture in relation to an inscription: 'As he says "obviously" he points at a drawing; the pointing gesture directs the recipients' attention to the part of the drawing where the content of the statement "obviously" can be seen' (8). Glock also describes how gestures can illustrate dynamic aspects of the imagined world that an inscription represents:

Consider Adam's spatial directional gesture as he traces the itinerary on the drawing where 'we're arriving' (see Figure 1) – presumably by car: 'the new car park'. Adam forms his hand as if he moves a toy car; this supports the interpretation that a keying is occurring, that is, there is an 'as if' scene on the drawing, a kind of stage with figures and an imaginary car: 'we're arriving (in) the new car park'. (10)

In an ethnographic study of practicing architects, Murphy (2005) discusses a similar use of gesture for displaying the dynamic activity of objects that are being collaboratively imagined by a group of architects in discussion over a design drawing on the table at which they are grouped:

In this example, one of the architects mimes the action of a truck moving into the building under design, making his hand roughly into the shape of a flatbed truck. His hand, for the purposes of this bit of communication, acts like an imaginary truck and moves through a 'gate' that is drawn on the plan, mimicking the action of a real-world truck passing through a real-world gate. (117)

And Visser (2009) provides an analytic taxonomy of how gestures *function* in architectural design meetings, which include *representing* imagined objects, *organising* the talk, *focusing* mutual attention and *disambiguating* between multiple referents.

Our work complements this research on gesture in design, first, by inquiring into the *relations* that designers establish with respect to their designs, and second, by examining the mirroring of one another's stances in design conversations and how this enables the creation of a shared, imagined world. In this regard, our analysis reflects the perspective of McDonnell and Lloyd (2014) who probe the phenomenological aspects of discourse between client and architect over a seven-year period, using a taxonomy drawn from Medway (2003):

His classification allows us to distinguish what is said or written about structural or functional aspects of the building ... from three further categories which relate to architectural experience, that is, how people are to, or do, experience (say) a building. (329)

By extending beyond the spoken word, we demonstrate how experience, ways of being in relation to designs, manifests in bodily displays.

We identify four distinct stances that designers exhibit. Designers exhibit the basic stances of *inscriptional*, *third-person* and *first-person*. In addition, they enter the *phenomenal* stance when combining third-person and first-person stances. These stances represent relations that designers establish between themselves, their spatial discursive frames and the objects that they envision as they 'imagine that-which-does-not-yet-exist, to make it appear in concrete form as a new, purposeful addition to the real world' (Nelson and Stolterman 2003, 12). In the inscriptional stance, the designer orients to, points to or verbally references a sketch, concept board or display on a monitor or projection screen. In the third-person stance, the designer locates the design in the three-dimensional world as a visual object in the space in front of him or her, visible to her and others in the participation framework. Foam models are grasped and pointed to, visual properties are verbally described, hands perform iconic gestures in the space in front of the body. In this stance, we can think of the designer as carrying on a 'conversation' with the design, speaking with it 'out there' as a dialogical partner as Schön (1983) suggests. In first-person stance, the designer describes the tactile and proprioceptive characteristics of a design, moving inside the design frame, incorporating her own body proper or head in iconic gestures mirroring the actions of a human user or animating 'from the inside' some aspect of the designed object. In this stance, we can think of the designer not as speaking *with* the design, but as speaking *for* the design. And in the phenomenal stance, the designer inhabits both the third-person and first-person perspectives at the same time, and in doing so, communicates the entirety of the design phenomenon: object, person and context.

When design participants are physically or technologically co-present, these public performances become resources for use by others, so that stances are mirrored, responded to and elaborated. This kind of coordination among the participants in a design critique is the result of, and produces, interaction rituals (Collins 2004). In the second case described above, Darren invokes the third-person stance in holding one of the foam models. He switches to the inscriptional stance with verbal reference and a deictic to one of the concept boards. Addison adopts this same stance in quickly gazing at the inscription that Darren points to. Darren continues narrating while holding the foam model, moving back to the third-person stance in enacting the spiral motion, emphasised in cessation of speech. Addison responds to Darren in the same third-person stance, pointing to the same model that he continues to hold. She then elaborates this position in the phenomenal stance, not only by enacting with her hands the springiness of the stool qua object, but manifesting with her bent knees the act of sitting by an anticipated user. In a critique, designs thus unfold over time, not only in speech, but also in the dialogic relation of the embodied stances of the designers.

Our study suggests that when embodied stances cannot be made visible to the other participants in a design critique, it may be difficult for designers to change stance in response to others, resulting in communication breakdown that arises from interactional asymmetries (Heath and Luff 1993). In another case within the DTRS 10 data-set (described in detail in Socha, Roth, and Tenenbergs 2015), a graduate industrial design student moves fluidly

between stances during her presentation to critics, and there are no discernible communicative breakdowns in the ensuing discussion with geographically remote critics. Yet in the case of Walter, he remains in the inscriptional and third-person stances throughout his discussion with expert critics. It takes persistent and increasingly stronger verbal statements by these critics to convey the challenges that an experiencing user – a first-person stance – might encounter when using Walter’s design.

Whereas stances may be inferred from verbal statements, stances manifest themselves as the designer moves with his/her material body, interacting with the design at hand. In physical placement, orientation, gesture, speech and gaze, designers position themselves in relation to the other designers and the conceptual space of the object under design, dialogically shifting from one stance to another throughout a design conversation. Seeing the design stances of others is thus a central aspect of the joint performance of designing that constitutes a design critique.

## Notes

1. This and the other names of participants in the design critiques are pseudonyms.
2. We use the following notational conventions for the transcripts, standard in conversation analysis. Unless modified, all words are written with small letters. A period in parentheses indicates a pause of greater than 0.1 s in length. Descriptions in double parentheses are transcriber’s comments. Colons indicate lengthening of a phoneme, about 0.1 s per colon. Square brackets in consecutive lines by different speakers indicate overlap of speech between these speakers. Speech within angle brackets preceded by ‘p’ (or ‘pp’) standing for ‘piano’ (or ‘pianissimo’) indicates lower (or much lower) speech volume than normal, as in ‘<<pp>scavenger hunt>’. Speech within angle brackets preceded by ‘len’ (or ‘all’) indicates *lento* (or *allegro*), i.e. slower (or faster) than normal speed. A word inside parentheses ending with ‘?’ indicates difficulty in hearing the word on the recording and that the word in parentheses is the closest approximation. A question mark inside a parenthesis is a word that could not be approximated. Capital letters indicate speaker’s emphasis. An equal sign at the end of a word indicates that there is no hearable pause prior to the next word uttered. Downward and upward arrows indicate the pitch jumping downward and upward. The punctuation marks ‘;?’ indicate movement of pitch (intonation) toward the end of an utterance: slightly and strongly upward, slightly and strongly downward, respectively.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## References

- Adams, Robin S., and Junaid A. Siddiqui. 2013. *Purdue DTRS – Design Review Conversations Database*. XRoads Technical Report. West Lafayette, IN.
- Chartrand, Tanya L., and John A. Bargh. 1999. “The Chameleon Effect: The Perception-behavior Link and Social Interaction.” *Journal of Personality and Social Psychology* 76 (6): 893–910.
- Collins, Randall. 2004. *Interaction Ritual Chains*. Princeton, NJ: Princeton University Press.
- Cross, Nigel. 2001. “Designerly Ways of Knowing: Design Discipline versus Design Science.” *Design Studies* 17 (3): 49–55.
- Dannels, Deanna P. 2005. “Performing Tribal Rituals: A Genre Analysis of ‘Crits’ in Design Studios.” *Communication Education* 54 (2): 136–160.

- Fleming, David. 1998. "Design Talk: Constructing the Object in Studio Conversations." *Design Issues* 14 (2): 41–62.
- Gaffney, Amy Lynn Housely. 2010. "Communicating about, in, and through Design: A Study Exploring Communication Instruction and Design Students' Critique Performance." PhD diss., North Carolina State University.
- Gardner, Rod. 2001. *When Listeners Talk: Response Tokens and Listener Stance*. Amsterdam: Benjamin.
- Glock, Friedrich. 2009. "Aspects of Language Use in Design Conversation." *CoDesign* 5 (1): 5–19.
- Goodwin, Charles. 2007. "Participation, Stance and Affect in the Organization of Activities." *Discourse & Society* 18 (1): 53–73.
- Heath, Christian. 1986. *Body Movement and Speech in Medical Interaction*. Cambridge: Cambridge University Press.
- Heath, Christian, and Paul Luff. 1993. "Disembodied Conduct: Interactional Asymmetries in Video-mediated Communication." In *Technology in Working Order: Studies of Work, Interaction, and Technology*, edited by G. Button, 35–54. London: Routledge.
- Heidegger, M. 1962. *Being and Time*. Translated by J. Macquarrie, and E. Robinson. New York: Harper and Row.
- Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, MA: Harvard University Press.
- Liddell, Scott K. 2003. *Grammar, Gesture, and Meaning in American Sign Language*. Cambridge: Cambridge University Press.
- Lim, Youn-Kyung, Erik Stolterman, and Josh Tenenber. 2008. "The Anatomy of Prototypes: Prototypes as Filters, Prototypes as Manifestations of Design Ideas." *Transactions on Computer Human Interaction* 15 (2) Article id: 7.
- Maurer, Richard E., and Jeffrey H. Tindall. 1983. "Effect of Postural Congruence on Client's Perception of Counselor Empathy." *Journal of Counseling Psychology* 30 (2): 158–163.
- McNeill, David. 2005. *Gesture and Thought*. Chicago, IL: University of Chicago Press.
- McDonnell, Janet, and Peter Lloyd. 2014. "Beyond Specification: A Study of Architect and Client Interaction." *Design Studies* 35: 327–352.
- Medway, P. 2003. "Imagining the Building; Architectural Design as Semiotic Construction." *Design Studies* 24: 255–273.
- Murphy, Keith M. 2005. "Collaborative Imagining: The Interactive Use of Gestures, Talk, and Graphic Representation in Architectural Practice." *Semiotica* 156 (1–4): 113–145.
- Murphy, Keith M. 2012. "Transmodality and Temporality in Design Interactions." *Journal of Pragmatics* 44: 1966–1981.
- Nelson, Harold G., and Erik Stolterman. 2003. *The Design Way: Intentional Change in an Unpredictable World*. Englewood Cliffs, NJ: Educational Technology.
- Oak, Arlene, and Peter Lloyd. 2014. "'Wait, Wait: Dylan, Your Turn': Authority and Assessment in the Design Critique." In *Design Thinking Research Symposium 10*. W. Lafayette, IN.
- Oh, Yeonjoo, Suguru Ishizaki, Mark D. Gross, and Ellen Yi-Luen Do. 2013. "A Theoretical Framework of Design Critiquing in Architecture Studios." *Design Studies* 34: 302–325.
- Pomerantz, Anita. 1984. "Agreeing and Disagreeing with Assessments: Some Features of Preferred/Dispreferred Turn Shapes." In *Structures of Social Action: Studies in Conversation Analysis*, edited by J. Maxwell Atkinson and John Heritage, 57–101. Cambridge: Cambridge University Press.
- Roth, Wolff-Michael. 2001. "Gestures: Their Role in Teaching and Learning." *Review of Educational Research* 71 (3): 365–392.
- Roth, Wolff-Michael. 2011. *Geometry as Objective Science in Elementary Classrooms: Mathematics in the Flesh*. New York: Routledge.
- Roth, Wolff-Michael, and Michelle K. McGinn. 1998. "Inscriptions: Toward a Theory of Representing as Social Practice." *Review of Educational Research* 68 (1): 35–59.
- Roth, Wolff-Michael, and Kenneth Tobin. 2010. "Solidarity and Conflict: Aligned and Misaligned Prosody as a Transactional Resource in Intra- and Intercultural Communication Involving Power Differences." *Cultural Studies of Science Education* 5: 805–847.
- Roth, Wolff-Michael, and Timothy J. Mavin. 2015. "Peer Assessment of Aviation Performance: Inconsistent for Good Reasons." *Cognitive Science* 39: 405–433.

- Sacks, Harvey, Emanuel Schegloff, and Gail Jefferson. 1974. "A Simplest Systematics for the Organization of Turn-taking for Conversation." *Language* 50 (4): 696–735.
- Schön, Donald A. 1983. *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.
- Socha, David, Wolff-Michael Roth, and Josh Tenenbergh. 2015. "Taking a (design) Stance." In *Analyzing Design Review Conversations*, edited by R. S. Adams, J. Siddiqui, and P. Buzzanell. West Lafayette, IN: Purdue University Press.
- Tannen, Deborah. 1989. *Talking Voices: Repetition, Dialogue, and Imagery in Conversational Discourse*. Cambridge: Cambridge University Press.
- Tenenbergh, Josh, and Laurie Murphy. 2005. "Knowing What I Know: An Investigation of Undergraduate Knowledge and Self-Knowledge of Data Structures." *Computer Science Education* 15 (4): 297–315.
- Tenenbergh, Josh, Wolff-Michael Roth, and David Socha. 2015. "From I-Awareness to We-Awareness in CSCW." *Computer Supported Cooperative Work (CSCW)*. doi:10.1007/s10606-014-9215-0.
- Tomasello, Michael. 1999. *The Cultural Origins of Human Cognition*. Cambridge, MA: Harvard University Press.
- Vinciarelli, Alessandro, Maja Pantic, and Hervé Bourlard. 2009. "Social Signal Processing: Survey of an Emerging Domain." *Image and Vision Computing* 27 (12): 1743–1759.
- Visser, Willemien. 2009. "The Function of Gesture in an Architectural Design Meeting." In *About: Designing Analysing Design Meetings*, edited by Janet McDonnell and Peter Lloyd, 269–284. London: Taylor & Francis.