# THE REAL THING: ARTIFACTS, ACTION, AND AUTHENTICITY IN A STUDENT-LED STAKEHOLDER SESSION

*MAURICE NEVILE*
*Australian National University*
*maurice.nevile@anu.edu.au*

## ABSTRACT

This paper analyses video recordings of a student-led prototyping session to consider stakeholders' use of artifacts, a cardboard prototype toaster and a real toaster. Its focus was prompted by an observation that stakeholders treated the toasters very differently. Stakeholders handled the real toaster more frequently and for particular interactional value. Unlike the prototype, it could be physical and visible evidence to authenticate actions for design discussion, such as claims, descriptions, and demonstrations. The real toaster could be a resource to coordinate with talk relating to actual toaster features, functions, and uses, or to participants' actual past experiences, or to make suggestions for specific design innovations.

## INTRODUCTION

This paper examines participants' use of artifacts in an artifact-making activity, which was conducted as part of a student-led participatory design session (Sanoff 2007). The aim of the session was to prototype a product called 'My first toaster', as an appealing and safe appliance for children. As Boess et al. (2011) ask, child-appealing electrical household appliances are a new phenomenon, but how might they figure in ordinary family life? How might parents and relevant professionals deal with the risks which such appliances can pose to children? The student designers provided stakeholders with a cardboard prototype toaster which they had prepared earlier (see Figure 1), and also a real brand name toaster. In the narrower and more literal sense of 'making' as giving form to ideas, for example to produce something tangible, the session's outcome was not fully as the students had intended. This despite that the students had provided a variety of tinkering materials, such as marker pens and paper, and modelling clay, and had briefed the stakeholders on their task to make (or transform) the prototype into a 'safe toaster'. Early in the session one student designer also demonstrated a making activity by folding some paper over the toaster's opening.

However, in the broader sense of 'making' as emerging innovation, the session was highly successful. In a vibrant and open discussion the five stakeholders used the toasters provided to identify a range of potential dangers for children, especially relating to heat and electrocution, such as touching the sides, inserting hands or objects, or handling hot food. Stakeholders made design safety suggestions, including a cover for the toaster's opening, limiting access to controls (e.g. hiding buttons and dials, blocking lever movement), and making metallic parts more visible. This paper analyses video recordings and associated transcriptions of the session, with an initial open interest in uncovering what the participants did, and how they did it. The approach taken follows a fundamental tenet of studies in ethnomethodology and conversation analysis that in any social situation the participants face the ever-present task of determining what is happening, what it is that they are doing, and what happens relevantly next. The nature, progress and outcome of any social situation, either in ordinary interaction or in institutional settings, emerges from the participants' own



*Figure 1: The cardboard prototype toaster, prepared and provided by the design students.*

talk and conduct, right there and then. Analyses begin from the participants' understandings and interpretations, as evident in their talk and actions relative to the evolving contingencies of the immediate circumstances.

The starting point for a closer look at the data was an observation that the stakeholders treated the two toasters, the real one and the cardboard prototype, very differently. Notably, although stakeholders gestured at and around the prototype, they mostly did not handle it. Both toasters were equally available, however whereas the prototype remained in the centre of the table, the real toaster was moved all around. Also, whereas one stakeholder slightly shifted the prototype at the session beginning, and two stakeholders touched it, the real toaster was handled many times throughout the session, and by all stakeholders. It was picked up, passed from person to person, tilted, and turned around and upside down. Stakeholders held its plug, pressed its buttons, turned its dial, and moved its lever.

In short, the paper shows how stakeholders used the real toaster as a source of physical and visual evidence for authenticating social actions for design activity, such as claims, demonstrations, descriptions, tellings, and explanations. Through their embodied conduct, by gesturing and by handling the toaster, the stakeholders directed attention to the real thing, and incorporated it relevantly with elements of their emerging talk. Further, stakeholders exhibited an orientation to the possibilities and value of the real toaster for such authentication, relative to the prototype toaster. Within a single stream of talk stakeholders switched with precision their embodied engagement between the two toasters. The paper's findings may increase appreciation of the subtle differences in the ways participants understand and use artifacts in interaction for design activities.

## LITERATURE AND THEORY

The paper's approach draws primarily on the interests and methods of ethnomethodology and conversation analysis (EM/CA) for analysing recordings of naturally occurring interaction to examine in detail the resources by
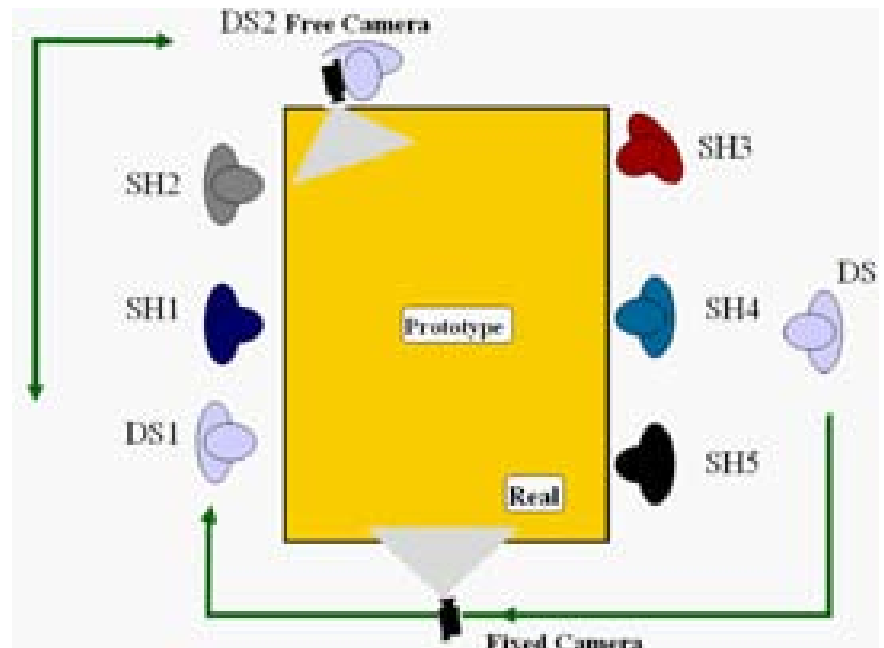


Figure 2: Locations of the participants and the prototype and real toasters (DS refers to Design Student, and SH refers to Stakeholder)

which people create and understand the order and intelligibility of activities for social life (see Have 2007). EM/CA studies have considered both ordinary conversational interaction, for example amongst friends and family (e.g. Goodwin 1981), and also interaction for work and institutional settings (see Arminen 2005). Significantly, studies have revealed the intricate ways by which participants build their contributions and understandings, moment-to-moment, by coordinating talk with other resources, including language, embodied conduct such as gestures, gaze, body posture and movement, as well as objects and features of the spatial and material environment (e.g. Schegloff 1998).

Analyses here are informed particularly by studies of how participants draw on features of the material setting, and objects (or tools), in consequential ways for the social actions in which they are involved, and so establish what is happening, and who is doing what. Such research is well exemplified in the work of C.Goodwin, across a huge range of situations, for example from handling cutlery while telling a story during a meal (Goodwin 1984), to using a trowel or colour chart for archaeological field work, or touching and attending to displays for establishing forms of joint seeing and activity (Goodwin 1994, 1995, 1997).

The paper furthers generally research

on design as a social activity and process, the sociality of design, and especially studies interested in details of communication and interaction (Bucciarelli 1988; Bowers and Pycock 1994; Coughlan and Macredie 2002; Matthews 2007). It meets the call of Coughlan and Macredie (2002:59) for real-world research on user-designer interaction, on the contexts in which such interactions are embedded, and on the behaviours involved in particular communicative activities.

## DATA AND METHODS

The data are two video recordings and transcription excerpts of a participatory prototyping session, conducted in English, led by two design-students and involving five stakeholders. Boess et al. (2011) describe the aims and context of the session within the students' overall program. Stakeholders represent possible users or interested parties for the product, a toaster which is safe and appealing to children. Four stakeholders are parents of young children, and one is a child psychologist. One stakeholder is a native English-speaker (from England), and four are of different language backgrounds (Dutch, Icelandic, Spanish) but are apparently sufficiently competent to discuss freely in English, as appropriate for this session. The arrangement of participants around a table is shown in Figure 2. 'SH' indicates a Stakeholder, for ex-
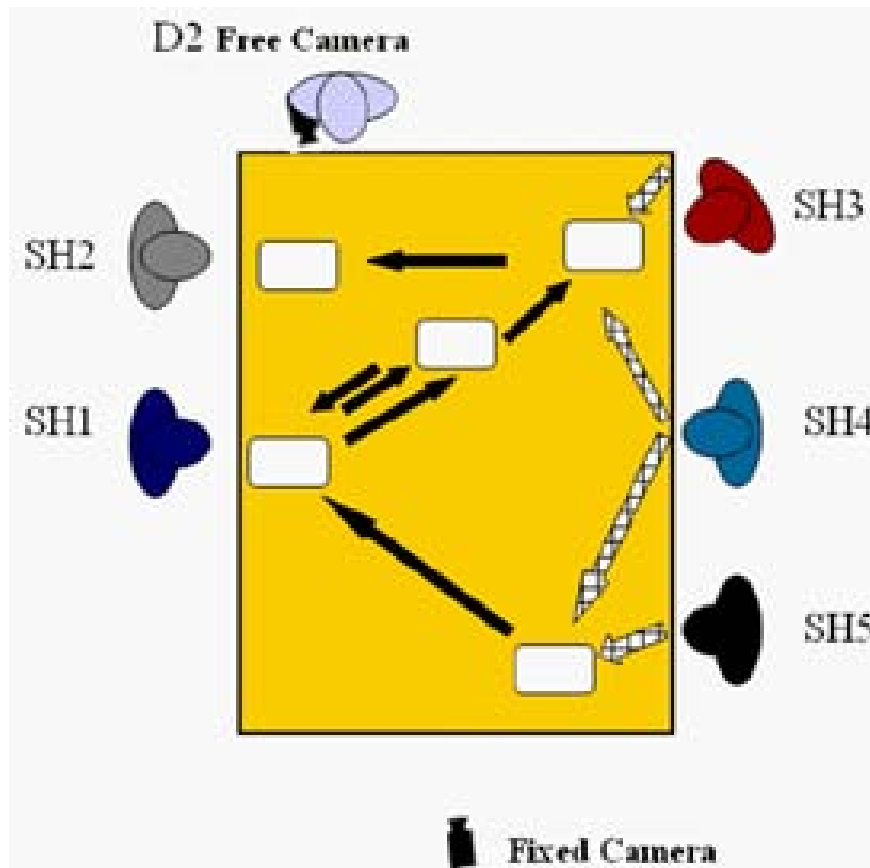
*Figure 3: Significant handling and movements of the real toaster.*

| | | |
|---|---|---|
| 01 | SH1 | >so yeah< if it is possible to make, (0.3) °a |
| 02 | | covered thing°. |
| 03 | DS1 | yea:h [just um:: |
| 04 | SH1 | [#because I like (.) I rea:lly like your idea of |
| 05 | | some kind of, (0.4) switch# that just [(0.2) turns |
| 06 | | it off. |
| 07 | | ((#SH1 MOVES HAND AND HOLDS TO THE SIDE OF THE PROTOTYPE, REMOVES HAND FROM PROTOTYPE, MAKES WAVING GESTURE)) |
| 08 | SH5 | [$with this |
| 09 | | thing. |
| 10 | | (($SH5 PICKS UP PLUG OF REAL TOASTER, HOLDS IT HIGH)) |
| 11 | SH3 | (yeah) that's what I was ↑wondering. |

*Example 1: This thing (Fixed05:17).*

ample 'SH1' is Stakeholder 1. 'DS' indicates a Design Student, for example 'DS1' is Design Student 1. DS1 gives the briefing to explain the session aims and what stakeholders should do. When the activity is underway DS1 sits beside SH1. One recording was made with a fixed camera, and the other with a mobile camera controlled by DS2. Both design students occasionally offer input, by asking or demonstrating. The fixed camera shows all participants, and on the table the cardboard prototype toaster (made and provided by the students), a real toaster, and various making materials.

The video recordings were transcribed by the author using common conventions for conversation analysis, as originally developed by Gail Jefferson (see Have 2007). Transcriptions include details of both talk and embodied activity as indicated in double brackets ((LIKE THIS)). Moments when embodied activity coincides with talk are marked with symbols #, $, %, @. For convenience only, line numbering across examples is consecutive.

The data are appropriate for examining in their naturally rich details the actual talk and embodied conduct of partici-pants for social activity in particular settings. They reveal the practices and understandings of which participants are generally unaware, to produce insights into processes of collaborative design activity.

**ANALYSIS**

The analyses begin from the observation that while stakeholders made gestural movements around the prototype, or briefly touched or placed their fingers inside it, they mostly did not move or pick it up. It remained stable in the centre of the table. By clear contrast, the stakeholders frequently moved and handled the real toaster. Figure 3 shows moments when the real toaster was handled (light arrows), by SH5, SH4, and SH3, and handled and moved to another location (dark arrows), by SH1 (twice), SH3, and SH2.

We start with a simple example, occurring early in this part of the prototyping session (time 5:17). The stakeholders have been discussing the possibilities of having a cover over the toaster's opening, so children could not place hands or objects inside and burn or electrocute themselves.

SH1's talk concerns cutting off power to a toaster, returning to an earlier comment by SH3 (lines 04-06). SH5 uses this as an opportunity to join in. She returns to earlier talk by SH3 by mentioning a relevant feature of the toaster, the plug, the point at which a toaster is connected to a power source. SH5 ties her talk explicitly to the trajectory of SH1's with "with this thing" (lines 08-09), building on SH1's "turns it off". SH5 simultaneously picks up the plug of the real toaster and holds it up to attract others' attention (line 10). The real toaster is at her end of the table, and so by picking it up and raising it above the table SH5 orients to the others' field of vision, and so makes the plug maximally visible. SH5 uses the real toaster to make visible the relevant feature which is the subject of SH1's talk, offering her support for an earlier suggestion. The prototype toaster has no cord or plug, and so the real toaster allows SH5 to physically demonstrate the feature in a way which the prototype cannot.

In the next example, SH4 furthers earlier discussion of the danger of metal within the toaster, accessible through its opening. She initiates new talk on the metal as a possible risk of toasters by noting that it might not be visible to children. The metal can be an unseen risk ("they don't see the risk", line 33). She claims that children can be tempted therefore to put their hands into the toaster and can tip it over to see inside. She says this problem applies specifically to the real brand name toaster on the table here. Accompanying her talk, she reaches for and handles the real toaster.

Although the prototype toaster is di-

```
12  SH4:  ((REACHES FOR REAL TOASTER))
13  SH4:  #(   ) it's too closed
14        ((#SH4 LOOKS TOWARDS DS1, GESTURES WITH HANDS
          APART, AWAY FROM TOASTER))
15  DS1:  hmmm
16  SH4:  I think the other ones that I saw er in the: (0.2)
17        the shop¿
          …SOME UNRELATED TALK BY OTHERS OMITTED…
18  SH4:  they are (0.2) you can see the me:tal.
19        (0.2)
20  DS1:  [yeah.
21  SH4:  [( ) the metal.=but this [one #you cannot see (.) th-
22  SH5:                           [oh yeah?
23                  ((#REACHES AGAIN FOR
          REAL TOASTER, MOVES HAND OVER OPENING))
```



```
24  DS1:              [oh yeah.
25  SH4:  th-m you cannot see [the METAL  because
26  SH1:                      [it *already is a bit high*]
27        ((*SH1 POINTS TO REAL TOASTER))
28        it's] already %high¿ (0.2) so (0.2) it's also yah for
29        °for (.) [(children)°
30              ((%MOVES HAND ABOVE OPENING OF REAL
          TOASTER))
```



```
          …SOME TALK OMITTED…
31  DS1:  [yeah because they don't see the risk.]
32  SH4:  [because for children¿] (0.3) they don't risk¿ (0.2)
33        they don't see the risk an' they don't understand
34        [(the: the:   ).
35  SH3:  [mm (    )
36        (0.3)
37  SH4:  because they want #to::: maybe to come: an' (.)
38               ((#SH4 PLACES HAND ON REAL
          TOASTER))
39        an' $look¿ an' look¿ so::[: (0.2) an' then they can
40        ($SH4 TIPS TOASTER TOWARDS HERSELF))
```



```
41  SH5:                [oh:: yeah.
42  SH4:  [jus' put their ha:nds [here you know,
43  SH1:  [yeah.
44  SH1:                         [because it really does
          look like a toy.
```

*Example 2: Too closed (Fixed09:15).*

rectly in front of her, SH4 leans and reaches for the real toaster. Her talk concerns what she claims to be a specific potential danger of this toaster ("this one" line 21), that the metal parts are not visible. As a source of available evidence for her claim she directs attention to the real toaster by placing her hand on it, and moving her hand over the opening as she describes the feature and potential danger. She authenticates her claim by physically demonstrating that the outside case is "high" (line 26) and that the metal cannot be seen. To demonstrate the possible danger she simulates the possible action by a child by tipping the toaster to look inside: "they want to::: maybe

to come an' look an' look so an' then they just can just put their hands here" (lines 37-42).

Handling the real toaster, and not the prototype toaster, allows SH4 to make visible the specific dangers and potential activities which are the subject of her talk. The prototype has no metal parts, one cannot tip it over to see them inside. SH4 is able to use the real toaster to authenticate her talk, made now not in the abstract but as embodied and tied to an artifact immediately present. In the next example a different stakeholder, SH2, uses the real toaster to explain his understanding of its functioning. The explanation involves the heat setting dial which he apparently thinks has a role in turning the toaster on. His initial comment refers to the 'plug' being on, but he has his hand on the heating dial, and this prompts no immediate response from other stakeholders (lines 50, 52, 54). They point out his misunderstanding (not shown), with SH5 then commenting that "you're obviously not a toaster owner" (line 61). SH2 continues by noting the possible relevance for the toaster of a safety design feature used on containers for medicines, which cannot be opened unless the user squeezes the cap while simultaneously turning it.

```
45  SH2:  no but I-I think as well that #something like that
46        (0.3) th't thi- this device just works when the-
47        ((# REACHES FOR REAL TOASTER, PLACES IT IN
          FRONT OF HIMSELF))
```



```
48  SH2:  when the:,%(0.5) plug %is on.
49        ((%PLACES FINGERS ON HEATING DIAL))
```



```
50        (0.7)
51  SH2:  otherwise (0.2) it doesn't work,
52        (0.5)
53  SH2:  correct me °if I'm wrong.°
54        (1.1)
55  SH2:  $°so° (0.6) this jus' works (0.4) like this doesn't
56        (0.3) but (0.2) *like this (.) sounds like errrrr.
57        (($TURNS REAL TOASTER SO THE SIDE WITH THE
          BUTTONS AND DIAL IS FACING OTHER PARTICIPANTS))
58        ((*HAS FINGERS ON HEATING DIAL))
```



```
59        (1.3)
60        or not,
          …SOME TURNS OMITTED…
```

```
61  SH5:  [you're obviously] not a toaster owner.
62        ((general laughter))
63  SH2:  #no that's right I don't have one so- (0.2) .h but
64        ah:: as far as I rem(h)ember (0.2) this i(h)s just ah
65        (0.2) it w's a matter of okay you want ah oh one
66        minute, two minutes [(    )
```



```
67        ((#SH2 POSITIONS REAL TOASTER FOR OTHERS TO SEE,
          SIMULATES TURNING HEATING DIAL))
68  SH4:                  [(    )
69  SH2:  so the longer: (    ) the the- the- (0.2) the darker.
70        ((general laughter))
          … SOME TALK BY OTHERS OMITTED…
71  SH2:  but then eh: as as there are ah er caps on the:::-
72        u::m (0.2) er (cha-) chemic stuff like ah laundry
73        stuff and the (.) children cannot open that you need
74        to push [to ah::::
75  DS1:          [mm hm
76  SH3:  oh yeah.
77  SH5:  oh::: yeah.
78  SH2:  to stri- (.) .hh (.) #i- i- it could be ah
79        ((#SH2 AGAIN SIMULATES TURNING HEATING DIAL OF
          REAL TOASTER))
80  SH5:  th't you have to pull it out a bit.
```

*Example 3: Plug is on (Fixed18:15).*

As SH2 sets out to describe what he believes to be details of when and how toasters work, he reaches for the real toaster, and then displays it to the others and manipulates its controls (the dial). His talk concerns not general matters, but specifically "this device" (line 46), and how it "works". He orients it physically so others can easily see its buttons and dial, he turns the dial while describing what he believes to be its function, and even simulates a toaster sound ("sounds like errrrr", line 56). By selecting and handling the real toaster, SH2 treats it as relevant for authenticating his emerging talk, as providing tangible and visible evidence. The prototype toaster does not 'work', it does not have a real dial, and it makes no 'errrr' sound. The real toaster can be used for authentically demonstrating how toasters work, what they do, and how one uses them.

Throughout his talk he holds the real toaster. He has his hand on the heating dial and simulates turning it to demonstrate his claims. He suggests that like 'child safe' medical bottles the toaster's dial could be simultaneously squeezed when turned to be more challenging for children to operate. To authenticate his talk he again simulates turning the heating dial.

The next two final examples highlight well the participants' embodied orientation to the different possibilities of the two toasters, and especially for the potential of the real toaster to draw

attention and authenticate emerging talk. Participants switch their embodied engagement between the toasters to coordinate precisely with the nature and timing of talk. That is, participants handle the real toaster, or gesture towards or around it, at precisely those moments when talk concerns details applicable only to real toasters.

Example 4, next, occurs as the very first response from a stakeholder to the opening introductory and briefing comments from the design student (DS1). DS1 ends by asking the stakeholders to consider possible specifications for a toaster to be "child safe". SH1's reply begins with a suggested modification, to make the toaster "extra deep". In her embodied conduct, SH1 switches from the prototype to the real toaster, and then back to the prototype. The switching is closely related to the substance of her emerging talk.

In order, SH1, SH5, and SH3 suggest ways to make a toaster child safe, and

```
81  DS1:   wh- what kind of specifica- (.) specifications
82          sh'd the product ha:ve .h (0.2) to be child safe.
83          (1.5)
84  SH1:    .hh maybe it c'd be (0.2) #kind of (.) somehow
85                          ((#SH1 TURNS THE
            PROTOTYPE SO ITS SIDE FACES HER, SHE PUTS HAND IN
            OPENING))
86  SH1:    (.) extra deep (0.3) because [um and
87  DS1:                                 [↑ah yeah
88  SH1:    then not ha::ve (0.2) metal °around [top°
89  DS1:                                        [on the top
90  SH1     $b'cause you know if you poke a fork into a
91          toaster >you electrocute yourself,<$
92          (($MOVES HAND RIGHT, POINTS TO REAL TOASTER$))
```



```
93  SH5:    ye:::s.
94  SH2:    #>°exactly°<.
95          ((#SH1 RETURNS HAND TO ABOVE PROTOTYPE))
96  SH1:    but maybe it could be somehow::, (0.8) %I'm not
97          sure exactly but jus' some way of- if you p:oke the
98          fork in a little bit (.) it doesn't (0.2) hit,%
99          ((% SH1 HOLDS HAND OVER OPENING, PLACES HAND
            INTO OPENING, MOVES HAND AWAY %))
```



```
100 SH5:    that it's dee::per.
101         (0.2)
102 SH5:    [@and ( ) maybe that it doesn't get war::m on the
103         ((@SH5 PLACES HAND INTO OPENING OF PROTOPYE))
104 SH1:    [yah:::
105 SH5:    top@ even.=
106 SH1:    =yah: some kind of way of: (.) a-making it
107         #more difficult to (0.5) to electro#cute [yourself
108         ((#SH1 POINTS WITH FULL HAND TO REAL
            TOASTER))
```



```
109 SH3:                                          [you can just
110         $make a top where you c'n$ just close it ( [ )
```

*Example 4: Extra deep (Fixed4:02).*

they gesture around the physical space of the prototype. SH1 suggests that it could be "extra deep" and to "not have metal around top", so that if someone were to poke a fork in a little bit it "doesn't hit". Throughout her talk referring to what might be changed, SH1 holds her right hand over the opening of the prototype toaster, at one point forming a fist, and sometimes she places her fingers into the opening. SH1 appears to simulate potential physical interaction with the appliance, and as she projects change she gestures around the prototype toaster. Similarly, SH5 joins in and also suggests a change such that the prototype "doesn't get war::m on the top" (line 102). She moves her hand over the opening of the prototype and places fingers inside the opening. Lastly, SH3 suggests a "top" to "just close it". During this talk she points to the prototype. In making their design suggestions, each of these stakeholders has some form of embodied engagement with the prototype toaster.

Note however, in contrast, that SH1 at two points moves her hand away from the prototype to point to the real toaster. Having made her design suggestion for the toaster to be deeper and not to have metal, she appeals to shared common knowledge of potential danger associated with toasters: "b'cause you know if you poke a fork into a toaster you electrocute yourself," (lines 90-91). For this talk SH1 points to the real toaster, to the very toaster, a real one, by which it is actually possible to electrocute oneself. The cardboard prototype toaster is not capable of electrocuting anybody. SH1 can authenticate her claim of potential danger by making visually salient through gesture the artifact of which this is claimed to be so. SH1 draws attention to the available toaster which does have such potential. As a real toaster it can be seen to approximate, to stand in for, the kind of appliance with which participants here may actually have had experience.

The significant point is that it is exactly at the point where SH1 shifts in her talk from suggestions, from projecting change, to existing knowledge based in past experience (if not one's own, then awareness of others', assuming that nobody here has actually been electrocuted), SH1 switches her embodied engagement from the prototype to the

real toaster. Talk for projected design changes is accompanied by embodied conduct directed towards the available toaster, the prototype, which represents the site for possible changes. The real toaster is however a resource for embodying talk for the possibility of electrocution, as a real experience and event, and a real danger.

Indeed after returning her hand to the space of the prototype toaster while making further suggestions for design modifications, SH1 again switches to gesture by pointing, this time with an open hand, to the real toaster. SH1 suggests a possible dangerous action ("if you p:oke the fork in a little bit", lines 97-98) and the outcome of a design remedy ("it doesn't (0.2) hit,", line 98). While talking she holds her hand over the prototype. She stops as SH5 contributes with support and another suggestion (lines 100, 102). After apparently accepting this ("yah:::" line 104) SH1 returns to talk for a general design safety goal, a way to make electrocution more difficult. For this talk SH1 again points to the real toaster, the toaster which can actually be a source of electrocution (line 108). It is the real toaster, not the prototype, for which the this talk is relevant, in terms of tying the talk to participants' awareness and of real-life experience of use of the appliance.

The last example shows embodiment for authenticating design talk in a variety of ways. The stakeholders have been discussing the possible danger to children of handling hot bread as it emerges from the toaster, concluding that it is not serious risk.
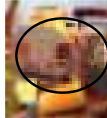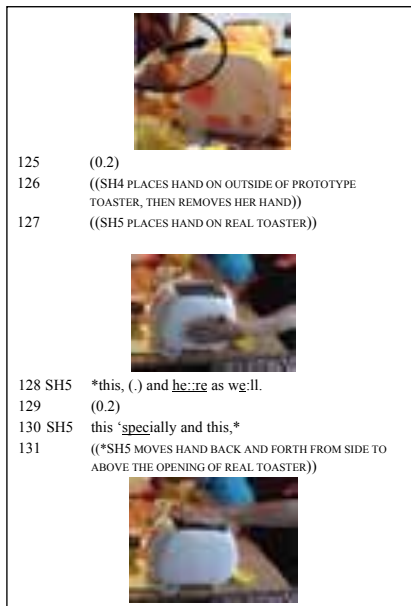
```
111 SH1    you'd r- kind of rather it didn't happen [to
112        the kid]
113 SH5    (   ) they're not gonna have (0.5)
114        [per- (.) a permanent injury.]
115 SH2    [they will not (s-) >well they will survive< b't it
116        will be really really harmful #ah when they#
117                     ((#MOVES HAND
           TOWARDS PROTOTYPE, PAUSES HAND WITH FINGERS
           CURLED IN BEFORE REACHING PROTOTYPE))
```



```
118        $touch the ah ah metallic a- part [(          )
119        (($MOVES HAND BACK TO TABLE))
120 SH3                     [%I guess it's
121        only the outside it's hot already%
122        ((% TOUCHES SIDE OF PROTOTYPE))
```



```
123        @when it's on@
124        ((@ POINTS TO REAL TOASTER))
```

| | |
|---|---|
| 125 | (0.2) |
| 126 | ((SH4 PLACES HAND ON OUTSIDE OF PROTOTYPE TOASTER, THEN REMOVES HER HAND)) |
| 127 | ((SH5 PLACES HAND ON REAL TOASTER)) |

| | | |
|---|---|---|
| 128 | SH5 | *this, (.) and he::re as we:ll. |
| 129 | | (0.2) |
| 130 | SH5 | this 'specially and this,* |
| 131 | | ((*SH5 MOVES HAND BACK AND FORTH FROM SIDE TO ABOVE THE OPENING OF REAL TOASTER)) |

*Example 5: Metallic part (Fixed08:10).*

First, SH2 makes a claim about the potential harm of the metallic parts of the toaster (" …it will be really really harmful ah when they touch the … metallic part", lines 115-118). He gestures with his talk. As SH2 begins his turn, he moves his right hand towards the prototype toaster. However, just as his hand approaches, before saying "touch", his hand stops, the fingers curl into his palm and the hand returns to the table. Note that his talk is about a definite feature of toasters, "the metallic part". The talk makes a claim about the danger of metal parts. However, the prototype 'toaster' to which he is now reaching actually has no metal parts. There is a form of disparity between his talk and the target of his embodied activity. He cannot point to or touch any metallic part, so the prototype does not allow him to authenticate his talk by demonstrating physically and visually. By curling his fingers in and retracting his hand back, just before saying the key word "touch", and when 'touching' is a next possible event, he ensures a kind of integrity for how gesture, artifact and talk combine to form his claim (Nevile 2004).

Following SH2, SH3 then notes the danger potential of the outside of the toaster becoming hot, and like SH1 in Example 4, we see here that she switches between the toasters in her embodied engagement. She begins by touching the outside of the prototype, which is close to her, when saying "only the outside it's hot already" (line 121). She locates by touch the physical site to which she refers. However, she adds "when it's on", and coinciding precisely with this she points to the real toaster at the far end of the table from her. So, she points and draws attention to the real toaster which can actually have the status of being 'on', as the relevant artifact for that part of her claim.

Her pointing prompts both SH4 and SH5 to respond by reaching simultaneously to touch the two toasters. SH4 moves a hand to the side of the prototype, in front of her, but says nothing and then moves her hand away. SH5 moves a hand to the side of the real toaster, which is in front of her, saying "this, (.) and he::re as we:ll.". SH5 verbalises and identifies physically the definite sites on the real toaster ("this", "here") which can actually get hot. She continues to do so with "this 'specially and this,", while moving her hand to and from the toaster's sides to the top opening. So through her embodied conduct, touching and moving her hand around the real toaster, SH5 authenticates her claim about the toaster's potential danger for children.

## CONCLUSION

Bowers and Pycock (1994:299) noted the challenge for design researchers to "explicate how – in detail – design is a social activity, how exactly participants coordinate their actions when they do…". This paper provides some of this 'exact' detail by examining how stakeholders in a prototyping session use artifacts for social actions, such as demonstrations, claims, and descriptions. The paper analysed video recordings of the session and showed how, and for what interactional value, stakeholders handled and gestured towards a real toaster. Through embodied engagement with the real toaster, stakeholders authenticated their actions. Stakeholders touched, positioned, manipulated and pointed to the real toaster as physical and visible evidence when coordinating talk and non-talk activity for their contributions. Stakeholders drew attention to the real thing to identify and describe its actual features, functions, uses, and potential dangers, and related these to their own authentic experience. Stakeholders realised public-ly and moment-to-moment their understandings of the varying potentials for the different toasters for generating design ideas: the real toaster had features and possibilities which the prototype toaster did not. This paper supports attempts to address Bucciarelli's (1988:160) earlier concern for a "failure to attend to the artifact" in design research. Talk, embodiment, artifact and attention, mutually informed each other, so"[m]ind and hand, thought and object are wrapped up together" (Bucciarelli 1988:163).

The paper furthers our understanding of the body, and the hand and gesture, as socially and materially situated in ongoing courses of activity, as tied to, being-in, or engaging with the world. Goodwin (1997) suggested that gestures can reveal "a way of knowing" (p.128), and the hand is "an agent of experience in its own right, encountering specific phenomena in the world within which it is working" (p.128). We explored something about such knowing for design as a social process.

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