COPYING AND LEARNING IN TESTING

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ABSTRACT

In this paper we unfold the local achievement of co-created affordances of an object in a natural test situation. Based on video recordings of people testing together (in the wild) the functions and properties of a new object, we show how the participants use embodied strategies in copying the handling of the object and familiarizing themselves with it; how they negotiate the use of the object by means of repeating or modifying each other's movements; how they treat a given use of the object as something to 'learn', how they strive to be considered first movers in a certain use of the object, treat each other as experts and novices in use of the object, take turns in taking the roles, and attribute status to the role of expert/first mover.

INTRODUCTION

We will study how participants testing in the wild treat each other as experts (first movers in a new use of the tool) and novices (copyist in a certain use of the tool); how they signal a will to learn and cooperate by copying; how they familiarize themselves with an action by means of copying it, their embodied strategies of selecting an action as noteworthy by copying it, thereby giving it attention and acknowledging it; and finally, how they negotiate use of the tool by means of copying and redrafting (using in a similar way but slightly differently). The case is three participants' first use of a modified piece of cutlery.

From a designer's point of view, one of the main points of reference when designing new artifacts is the concept of *affordances*. The term, coined by Gibson (1977) to de–scribe the qualities of an object or environment that allows an individual to perform an action, was later introduced in the design discourse by Norman (1988), who reinterpreted it as guiding concept for user centered design. In Nor–

man's sense, affordances referred to what people could perceive as possible spaces of action with an artifact.

However, it is now acknowledged that affordances alone cannot explain, let alone constrain, how people understand a product and its use. As Norman himself has later recognized (2008), this process does not happen in a void. On the contrary, it is related to the specific circumstances and contexts in which we encounter products, and in the way other people might understand and use those products too. The definition of what objects and their 'functions' are, is not a one-off process stopping in the design studio, nor is it a simple linear relationship between an actor and an environment. People continuously make sense of 'things' as part of the social environment they belong to and the activities they are accomplishing, recruiting them as resources in and for interaction, using them in different ways, talking about them or referring to them. Through use, they display their understanding of what an object is, and what it is supposed to do.

This paper explores how people make sense of a new object together, how they make their understandings of it visible to each other, and how they collaborate in reaching an agreement on what an object can be used for. We use data from an ongoing project exploring how people make sense, in interaction, of unfamiliar things, carried out by one of the authors. The project consists in the re-design of common objects such as cutlery, so that they become somewhat estranged, and asking participants to test these objects in the context of their everyday activities while video recording themselves. Participants are not given any instructions as to why the objects are designed in a certain way, or how they are supposed to be used. We focus on the role that copying or mirroring actions have when people use the new object and explore it in terms of its general use (such as handling) and its functions and, so to say, make the "emergence" of new affordances possible.

STUDIES OF COPYING AND MIRRORING

Studying prototype testing as an embodied practice en–tailing copying of other participants' actions is a new endeavour. However, studies have been made of the use of echoing, mirroring and repeating in a range of other social situations. In order to copy, or repeat, there must be some prior action (Johnstone et al. 1994). Somebody has to produce a first action, be a first mover.

Repeating something *puts it in brackets and selects it* for further treatment (Jefferson 1972; Johnstone et al. 1994), establishes something as 'new' or challenges the

first mover to elaborate on an aspect (Bean & Patthey-Chavez 1994). Therapists may repeat (mirror) the client to *elicit further talk on the theme* (Ferrera 1994). Pa–tients in therapeutic conversations may repeat (echo) the therapist at key points, thereby *marking the prior as noteworthy* and concise (Ferrera 1994). Novices echo and redraft expert versions in order to *accept expert versions*; and experts do it in order to *confirm a novice action as correct* (Bean & Patthey-Chavez 1994).

Learning something new entails repetition (Bean & Patthey-Chavez 1994). Repeating something gives it a sense of familiarity, cognitive accessibility and experi–ential reachability (Merritt 1994: 33). Shadowing colle–agues as an apprentice/novice is a key learning strategy (McDonald 2005). Copying/echoing demonstrates a will to cooperate, makes actions assessable by the more experienced, and makes it possible for novices to coordinate input and process information (Bean & Patthey-Chavez 1994). Learners may use repetition to attract attention and achieve control (Johnstone et al. 1994; Merritt 1994). Other-repetition offers participants a resource for not only interpreting but also for enga–ging with some learnable, analyzing it, and putting it to use in ways that enable players to display and develop their competence (Marsh and Tainio 2009).

Repetitions may be identical (allo-repetitions or copying) or redrafts/paraphrasing (Bean & Patthey-Chavez 1994). Participants make use of reduction and expansion as well as identical repetitions when aquiring new knowledge (Bean & Patthey-Chavez 1994): Novices echo with reduction; expansions are used by experts to give the novice models for better versions, and redrafting (especially of own actions) is used by them to signal a will to collaborate; whereas self-repe–tition and -redrafting appear in competitive situations.

DATA AND RESULTS

This paper focuses on a case of a first encounter and use of a modified piece of cutlery, consisting of a fork whose end consists of a ring rather than a handle (fig.1).

Fig. 1: The objects provided to participants for eating.

The participants in the extract are three colleagues, ORA (left in the picture, fig. 2), GRL (centre) and BLK (right), working together in a small company owned by ORA, and having lunch together in their work break.

DEMONSTRATING AND COPYING

Fig 2: BLK showing "We're doing like this"

In the first extract, participants are getting ready to eat, with ORA dressing his salad and the other two participants studying the object (l. 02-05). BLK shifts his fork to the middle finger, raising the hand and the middle finger towards ORA (l.06). This gesture does not receive any response by his interlocutors, still engaged with their current activities. At this point BLK makes another attempt by bringing the hand down (l. 07), repositioning the object on the finger and repeating (redrafting) the gesture. This time he is verbalizing it as a thing for them to do: *"we're doing like this"* and holding it up for mutual inspection (l. 09-10).

1_1_middle finger:
01   (4.6)
02 *GRL: [((looking intensely at her object, touching it repeatedly))]
03 *ORA:[((Opens a salt grinder))]
04 *BLK:[((testing his object, initially by wiggling it on his index finger
05   then shifting it to the middle finger))]
06 *BLK ((holds up his middle finger while looking at ORA.
07   Brings the hand down, adjusts the position of the object on the finger))
08 *BLK:we're doing like ↑this
09   (2.6)
10   [((holding up his middle finger))]
11 *GRL: [((giggles))]
12 *ORA:[((looks at BLK's finger, smiling))]
13 *GRL: ((looks down and switches her object from index to middle finger))
14 *ORA:So (apparently) you can do ↑terrible stuff with ↓them
15   ((grinding salt over his food))
16 *BLK: ((laughs))

GRL giggles and copies his behavior by switching her own fork from index to middle finger (l. 09-11). ORA has been observing (l. 10) and is ready to evaluate (l. 12). By these actions BLK constructs himself as a first mover, and GRL confirms that local identity by copying, following, his action.

NEGOTIATING VERSIONS BY COPYING
In the next example all the participants come up with an idea about how to use the object or wear it. First ORA introduces a use by asking *"is this to grab like this"* and demonstrates his suggestion (l. 02-04). GRL copies (l. 05-10), while BLK acknowledges (l.06).

fig 3a: ORA asks "is this to grab like this?" (left). GRL copies hold

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1_3_IThinkItsLikeThis
01 *ORB:    ((looks at his object holding it in hand))
02 *ORA:    I think it's- is this to grab like thi↑s
03          (0.5)
04 *ORB:    ((picks up salad from dish))
05 *GRL:    ((removes object from finger))
06 *BLK:    mmM↑
09          (1.4)
10 *GRL:    ((grabs object like ORA))
12 *BLK:    nna:I think it's like this (raises his object)
13          (1.6)
14 *GRB:    ((looking at BLK, changes object position to
            index finger))
16 *ORA:    he↑h
17          (0.5)
18 *GRL:    ↑oh ye:ah
19 *GRB:    ((picks up spaghetti with the tool on her
            finger))
```


fig 3b: BLK demonstrates his hold (left) GRL copies and picks up food saying "oh yeah" (right)

Then BLK, who has not changed his wearing position intervenes by proposing another version as a counter proposal *"nna:I think it's like this"*, with the *"nna"* ser–ving as a boundary marker and marking a mild protest. GRL again copies, from BLK this time, producing a change-of-state token (Heritage 1984), marking the new version as surprising to her and agreeing with him. She then continues to approach her food using the new me–thod. Versions of using the tool are thus negotiated in terms of being 'the right' use of it. It is interesting how ORA and BLK both search for a 'right version' to use the tool, even if several ways of using it might be equal–ly functional. They treat the search as something to identify and learn, not as yet another method of using it.

IDENTICAL COPYING AND REDRAFTING
In the following example GRL proposes a new use of the tool, an activity which can be carried out along with

eating by proposing to "*type on the computer at the same time*" as eating (l. 08-10). She embodies typing by placing her fingers on the table, pretending it to be an invisible keyboard. This movement is copied both by ORA and BLK (l. 15) until BLK raises the problem of not being able to use the index finger (l. 16-18). ORA acts as the expert by proposing to use "*the other fin–gers*" (l. 19-21) verbalizing a redraft of BLK's embodied redraft of GRL's proposed action.

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1_8_Type
01          all keep eating
02 *GRL:    I like it
03          (0.3)
04 *GRL:    ((slightly shakes fingers))
05 *GRL:    it's kind of nice because you have
            [your fans- hands free]
06          [(((gesturing with her
07          hands in front of herself))]
08          (.) if you wanna thyhHpe on the
09          comp[uter at the same  time] you [can do] th↑at
10 *GRB:         [((imitates typing on the table))]
11 *BLK:                               [hHehehe ]
12 *ORA:                               [oh ri↑ght]
13          (0.5)
14 *ORA:    true
15          ((all "type" with their fingers on the table))
16 *BLK:    no I-   (0.4)  I can't do it
17          (1.5)
18 *BLB:    ((repeatedly hits the tip of the fork on the table))
19 *ORA:    yeah but [you use the other fingers]
20 *ORA:             [(("types" on table without
21          using index finger))]
```


Fig. 4: all participants pretend to "type" on the table

ORA produces an identical copy of GRL's embodied suggestion of typing while using the tool. Like her, he uses both hands to type on the table surface, and he does it to the right of the plate, wearing the fork on his right index finger.

CONCLUSION
In this paper we have shown how participants use embodied strategies of selecting physical and verbal actions by copying them, thereby bracketing, giving attention to and acknowledging them as noteworthy.

The participants treat each other as experts (achieving being copied) or learners (copying) in using the fork, not as equal participants proposing different or parallel uses. They do so by demonstrating and copying particular uses of the tool and/or by acknowledging or assessing demonstrated versions. However, they also negotiate use of the tool by means of copying and redrafting, and by redrafting redrafts.

They together explore new ways of using the tool, in expected as well as unexpected ways, and they take turns in the roles of expert user and first mover, and of second mover copying a proposed action.

They not only propose using the tool in a similar but slightly different way, but they also verbalize the suggestion as such. They collaborate to reach an understanding of what the object can be used for.

Finally, participants signal a willingness to learn and cooperate by copying each other, repeating and verbalizing their efforts. In this respect, they familiarize themselves with proposed new actions by means of copying them. They are 'learning' to eat in new ways by means of the new eating tool they are testing, and they make visible to each other their growing understandings.

DISCUSSION

Participants testing not only make use of affordances in the test situation; they co-create affordances as they go through testing and making sense of the new object together. Affordances are thus not fixed, and not restricted to the relation between product and individual, but may be co-created as a group.

The expert/learner roles are used to test a suggested type of use, and they are performed by actions of repeating or redrafting the actions of a first mover. The moves are not just tried out by means of copying; the participants acknowledge first mover actions, and strive to achieve a local identities of a first mover, thereby giving status to the role of being first mover.

Studies of video recordings of testing in the wild of an object gives designers an opportunity to see how future users make sense of it while using it to co-create attractive local identities for each other. It invites designers to step away from a pre-allocated identity as author/first mover (by designing) and explore the co-created affordances of object use made available by users in interaction with other users while using the object.

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