Interfering with routines: disruptive probes to elicit underlying desires

Jettie Hoonhout
Philips Research,
High Tech Campus 34,
5656AE Eindhoven
The Netherlands
Jettie.Hoonhout@philips .com

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Abstract
Many daily activities in the home are done by users in a routine, more or less 'mindless' way. When discussing such everyday routine activities with users, as a starting point for new concept and technology development, it often turns out to be hard to collect information on important elements and drivers in carrying out such activities – not the rational motivations, but the deep and more concealed feelings. By letting people work with probes or prototypes that disrupt their usual way of working, they might come to realize what the (other) key drivers are to them. Using a disruptive probe in people's kitchens helped to identify elements that people find important in daily food preparation that without the probe might not have come to mind so easily.

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Introduction
When developing an 'update' or revision of a product, it is relatively easy to determine what needs to be done

to improve that product – one could for example start with observing consumers while using current products, and involve them in discussions about what could be improved [e.g. 1]. In cases where completely new product concepts are to be conceived, or in which directions in product innovation are pursued that do not directly originate from an analysis of current product usage, it still is important to involve the consumer perspective in meaningful ways at the earliest possible stage [4]. However, in the case of creating products from 'scratch', concerns, needs and wishes of consumers might not be available and getting consumers to articulate their underlying needs and motivations around daily activities could turn out to be very hard. Consumers may find it difficult to express what the key drivers are in daily activities, simply because they never thought about these topics before.

Also, it is often difficult for users to appreciate how new technologies and automation in the home domain might impact their daily routines and habits, what it will bring to them, but also what it will cost them, i.e., what are the pros and cons of the new technologies and concepts going to be to them.

Scenarios – or short illustrated stories of how a device might be used could help to explain the potential impact of new technology [2, 4]. When discussing such scenarios with users, they will get an idea of what the new concept is about; but since it is still a rather abstract representation, users might again not find it easy to appreciate how mundane routines will be impacted. Also, with scenarios, neither real interaction nor longer term use of a concept is possible, so dealings with the concepts are rather distant and short.

A popular way of getting users more intimately and usually also longer involved in exploring how new technology might impact their habits and routines, is the use of probes. Probes typically consist of a package with a camera, cards with assignments, a diary, which are given to participants to document certain aspects of their daily life, including use of technology [3, 5]. As part of the assignment, participants could of course also be asked to use a device or prototype, new to them. In this paper, an approach is proposed that uses probes as a means to let participants think about daily activities in a more comprehensive way. Participants are asked to work with a device not known to them, but that turns out to disrupt their daily routines. The idea is that this disruption will act as a trigger for discussing the more hidden drivers in ordinary activities.

Disruptive probes

Many daily activities in the home are done by users in a routine or more or less 'mindless' way – daily food preparation is an example. When interviewing users about such everyday routine activities, it often turns out to be hard for them to express what the most important elements and drivers are in carrying out such activities – regarding food they will tell you for example that time, health and taste is important. But that certain (routine) elements in the actual preparation of the food will also be important to them might not come to their mind so easily. By letting people work with probes or prototypes that disrupt their usual way of working, they might come to realize what these drivers are to them. So, using a *disruptive probe* in people's kitchens might help to identify elements that people find important in daily food preparation that without the probe might never have come to mind.

In a study aimed to come up with requirements and insights for future kitchen appliances, possibly automating the food preparation process, 10 participants were provided with an existing kitchen appliance that was however new to them. The appliance, the Thermomix (see figure 1), can be seen as a kind of kitchen robot; it can chop, stir and heat at the same time; it monitors the heating process, and automatically adjusts when required. The Thermomix is not like any other kitchen appliance, and it requires users to prepare meals in a very different way.

Figure 1. Thermomix

The 10 participants were asked to use this new device for 3-6 weeks; they were asked to record the experience with the new device in various ways – dairies, pictures of use, taken by the participants themselves; they were interviewed after one week, and again at the end of the test period.

Using this new, unknown device triggered the participants to think about what sort of devices they would like to use in the future, what sort of features, functionalities and qualities such devices should have, and how they might use these devices in their daily life. What is more, using the device helped the participants to think about elements in food preparation that they had not really thought about before; using the probe made them however realize that certain aspects were very dear to them in daily cooking activities. These were elements as having control over the end results, that is, being the master of the process; and being able to monitor the process through stirring, smelling, looking (things which the Thermomix does not allow so easily). It was very interesting to learn that the participants took so much enjoyment out of stirring in a pot. But they also realized that a certain amount of 'unattended' cooking is valuable, especially during the often hectic situation in most families around meal preparation times. The results of this study helped to define user and technical requirements for future kitchen appliances.

Coming up with a disruptive probe

The Thermomix turned out to be an excellent instrument to disrupt people's food preparation routines. But obviously, such working devices that can function as a disruptive probe might not always be available for a particular domain.

We think that possibly any hard to use device, replacing a currently used device, or any device that can do the task, but in a completely different or more "difficult" way might work. Furthermore, tasks that upset routines can help to learn more about those routines. For example, in a study where we gave

women a set of new recipes that they had to use for two weeks learned us – and the female participants – about the importance of social activities as barrier to dietary change. Before the start of the study, all participants anticipated a range of barriers they would have to deal with, but none of them expected that social activities were going to have such a huge impact on their (in)ability to change their dietary habits.

Discussion and conclusion

We were looking for means to make people reflect on routine activities they daily engage in, and to help them to get a feeling for what the hidden drivers are in these activities, and how the role of technology might have an impact on that, in a positive or negative way.

Disruptive probes seem to be a possible way to unsettle participants, upset their routines and thus help them to realize what they like and dislike about these routines, what elements in these habits are in fact really dear to them, even though they were not consciously aware of that before. In the case of the kitchen device, it helped to let the participants express aspects in food preparation that they found very important, that we did not hear so strongly, or did not even hear at all from interviewees, in interview studies we had conducted before. So, deliberate intrusion and disruption of routine activities over a longer period of time does seem to trigger participants to reflect on those activities in a different way. But like with most methods, this also comes at a certain cost:

- It is important to reflect on the ethical ramification of deliberately disrupting people's habits. One should carefully consider the possible risks and boundaries, before embarking on such a study.
- There is the obvious risk that this approach will result (also) in reporting elements that are an artifact of the disruptive probe, rather than being linked to the routine activity itself. A carefully constructed test protocol, proper understanding of the disruptive probe's qualities, a detailed post-test interview, and solid analysis of the data can help to mitigate such risks.
- We have to admit that it is not always easy to find a suitable disruptive probe.

To conclude: disruptive probes appear to be an interesting approach to elicit insights on daily routine activities that are often hard to obtain via conventional means, but should be applied with caution.

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