

Shopping Carol,” which featured Scrooge as the older client reluctant to reimburse the volunteer and raised various issues, including trust and honesty on the part of both the volunteer and the client. The second was a set of scenarios based on Laurie Taylor’s satirical newspaper column on the antics of academic staff at the fictional university of Poppleton. The scenario at the beginning of this article shows, through comic exaggeration, some of the difficulties university employees might encounter were they to take on too many clients and also some of the problems they would encounter if the accounts were not administered electronically. It also flags some of the issues around ageism that Age Concern is keen to address.

Although the scenario document was rather long the Age Concern representatives read them in their lunch break because they found them amusing. The rather dry subject of secure financial systems was enlivened by pastiche and a range of issues and design problems were raised around privacy, trust, honesty, complexity, reliability, and dependability which helped shape the final procedure.

There is an obvious objection to these kinds of scenarios: They do not address the typical user. This is an entirely valid criticism. The pastiche scenarios outlined above all addressed entirely atypical users in order to identify potential problems and abuses of the technological configurations described. Pastiche scenarios are not in any sense a scientific tool; rather they are resources to inspire or caution design. Similarly, the selection of the scenario has a profound influence (or bias) on the issues that are likely to be raised; selections must be based on the work the scenario is to do (as with the utopian or dystopian scenarios for the surveillance technology). One of the principle advantages of pastiche scenarios is that they are fun to make. They engage the designer and lead to fresh insight because the traits and quirks of the characters have nothing to do with the tech-

nology being imaginatively road tested. Pastiche scenarios are certainly not presented as an alternative to more traditional scenarios, rather they are suggested as a complementary and fun addition to the HCI toolkit.

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## Cultural Probes and the Value of Uncertainty

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*When reason is away, smiles will play.*

— Paul Eluard and Benjamin Péret

Designing for pleasure demands a different approach from designing for utility. The latter can be done from outside a given situation, standing back to assess

difficulties and seek solutions. The former, in contrast, is better done from within. To give pleasure to someone—to tell a funny joke, recount a moving story, dance a beautiful dance—it is best (or at least easiest) if you share with them some sense of humor, passion, and empathy.

Five years ago, Gaver, Dunne, and Pacenti published an article in *interactions* magazine, concerning “cultural Probes,” a design-led approach to understanding users that stressed empathy and engagement [1]. Probes are collections of evocative tasks meant to elicit inspirational responses from people—not comprehensive information about them, but fragmentary clues about their lives and thoughts. We suggested the approach was valuable in inspiring design ideas for technologies that could enrich people’s lives in new and pleasurable ways.

Since then, the approach has been adopted by several industrial and academic research and design groups around the world. This is heartening, of course, but also somewhat troubling. The problem is there has been a strong tendency to rationalize the Probes. People seem unsatisfied with the playful, subjective approach embodied by the original Probes, and so design theirs to ask specific questions and produce comprehensible results. They summarize the results, analyze them, even use them to produce requirements analyses.

Appropriating the Probes into a scientific process is often justified as “taking full advantage of the Probes’ potential,” as if, by not analyzing the results of our original Probes, we had let valuable information slip away. But this misses the point of the Probes. Sure, they suggested that research questions could be packaged as multiple, rich, and engaging tasks that people could engage with by choice and over time. Beyond this, however, the Probes embodied an approach to design that recognizes and embraces the notion that knowledge has limits. It’s an approach that values uncertainty, play, exploration, and subjective interpretation



Figure 1: A disposable camera repackaged with requests for specific pictures.



Figure 2: A friends and family map based on Dante's heaven and hell.

as ways of dealing with those limits.

*...it was through games, play, techniques of surprise and methodologies of the fantastic that [the Surrealists] subverted academic modes of enquiry, and undermined the complacent certainties of the reasonable and respectable.*

— Mel Gooding

A recent example of our use of Probes provides an example of how we use this purposely uncontrolled and uncontrollable approach to help us understand design domains in new ways.

Over the last few years, we have been pursuing a project on new technologies for the home. At the outset, we realized that a great deal of research on domestic technologies reflects dubious stereotypes about how people live at home—that “home” equals “family,” for instance, or that the activities of home revolve around consumption and recreation, domestic chores and paid employment. We decided to apply a Probes study to shake the preconceptions about home that seem to come with the domain.

For this study, we distributed domestic Probe packages to 20 volunteer households recruited through advertisements in popular London periodicals and signs posted on newsagents’ windows. We made no attempt to control demographics, but our volunteers came from a wide

range of circumstances: from ages 18 to 80, rich and poor, families, single people, and housemates; they represented a wide range of the home lives of people in today’s society. Preliminary visits allowed us to introduce ourselves to the volunteers and give them Probe packages to complete over a month’s time.

Confident from our success with the first Probes study, we designed more diverse and adventurous materials for this one. Space precludes a complete description here, but a few examples will give a feel for the approach we took.

As with many Probe or probe-inspired studies, we included a *disposable camera* with our packages, repackaged and labelled with requests for particular pictures (Figure 1). Many of ours were extremely open-ended or even absurd: “something you’d like to get rid of,” “the spiritual centre of your home,” and “something red.” On the one hand, we found it interesting to see how people dealt with these problematic requests. On the other, accidental glimpses of the home’s atmosphere were as informative to us as more purposeful presentations made by the volunteers. If nothing else, the requests provided a structuring technique that encouraged people to take pictures of their homes that they might not normally do.

We also included a *friends and family map*, adapted from a technique suggested

by ethnographers in the project (Figure 2). Typically this requires that people come up with their own ways of diagramming their relationships, but we subverted the method by providing images (a cricket pitch; trees on a mountain slope; Dante’s heaven and hell). This had the effect of encouraging volunteers to see their relations in new ways. Moreover, the visual frameworks we chose can be seen as somewhat sardonic comments on researchers’ tendency to apply their own conceptual frameworks to the phenomena they observe.

One of our favourite items was the *Dream Recorder*, a cheap digital memo-taker that we repackaged with instructions to use upon awakening from a vivid dream (Figure 3). Pulling the tab that activated the device lit a LED indicating that there was 10 seconds to describe a dream to us. After that, the device simply shut down; volunteers had no chance to edit or even review what they had said, but could only choose to return the device. We weren’t sure what to expect from this, but thought it might give us unexpected new insights into their lives. In fact, it gave us much more: The dreams we received were remarkably powerful and sometimes poignant, seeming to summarize people’s lives and personalities in a few evocative words.

*“In my dream, the moon’s reflection in a stream turned into my girl-*

*friend's face. As I leaned forward to kiss her lips, I fell into the water and it was dark, green and very cold."*

— *S's dream.*

None of these tasks (or any of the others we used) produced returns that were easy to interpret, much less analyze. How could you compare two photographs, even if you knew both were meant to show "the spiritual centre of the home?" It would be difficult to know for certain what the photographer had meant to highlight, and impossible to know its exact significance. Similarly, it is tricky to analyze friends' and family maps, knowing that they've been shaped and constrained by an arbitrary visual metaphor. How can you extract user requirements from dreams?

Our Probe results are impossible to analyze or even interpret clearly because they reflect too many layers of influence and constraint (see Figure 4). Of course, any user-testing involves a cycle of expression and interpretation. Researchers express their interest through questionnaires, experimental tasks, or the focus of their ethnographic observations; volunteers interpret researchers' motivations and interests and express themselves in response; and researchers interpret the results. But whereas most research techniques seek to minimize or disguise the subjectivity of

this process through controlled procedures or the appearance of impersonality, the Probes purposely seek to embrace it.

When we finally receive the results it is clear that they are incomplete, unclear, and biased. We do not ask volunteers to explain their responses. Instead, we value the mysterious and elusive qualities of the uncommented returns themselves. Far from revealing an "objective" view on the situation, the Probes dramatize the difficulties of communicating with strangers.

*'Tell me about yourself,' says a stranger at a party. You can recite your résumé, but what you really want to express, and what the stranger (assuming her interest is genuine) really wants to know, is what it is like to be you. You wish (assuming that your interest is genuine) that you could just open your mind and let her look in.*

— *Louis Menand*

What is the point of deliberately confusing our volunteers and ourselves? Most fundamentally, it is to prevent ourselves from believing that we can look into their heads. By producing returns that reverberate with mutual influence, it is impossible to arrive at comfortable conclusions about our volunteers' lives or to stand back and regard them dispas-

sionately. Instead, we are forced into a situation that calls for our own subjective interpretations. We have to see our volunteers in terms of our own experiences, understanding their responses empathetically, not intellectually.

Rather than producing lists of facts about our volunteers, the Probes encourage us to tell stories about them, much as we tell stories about the people we know in daily life. At first, these stories can reflect dismissive stereotypes ("she's a dumb media wannabe"). But stories are provisional. Our interpretations are constantly challenged: by the returns themselves, by the differing interpretations of colleagues, by our own changing perceptions. Over time, the stories that emerge from the Probes are rich and multilayered, integrating routines with aspirations, appearances with deeper truths. They give us a feel for people, mingling observable facts with emotional reactions.

The Probes simultaneously make the strange familiar and the familiar strange, creating a kind of intimate distance that can be a fruitful standpoint for new design ideas. They produce a dialectic between the volunteers and ourselves: On the one hand, the returns are inescapably the products of people different from us, constantly confronting us with other physical, conceptual, and emotional realities. On the other hand,



Figure 3: The *Dream Recorder*, a cheap digital memo-taker

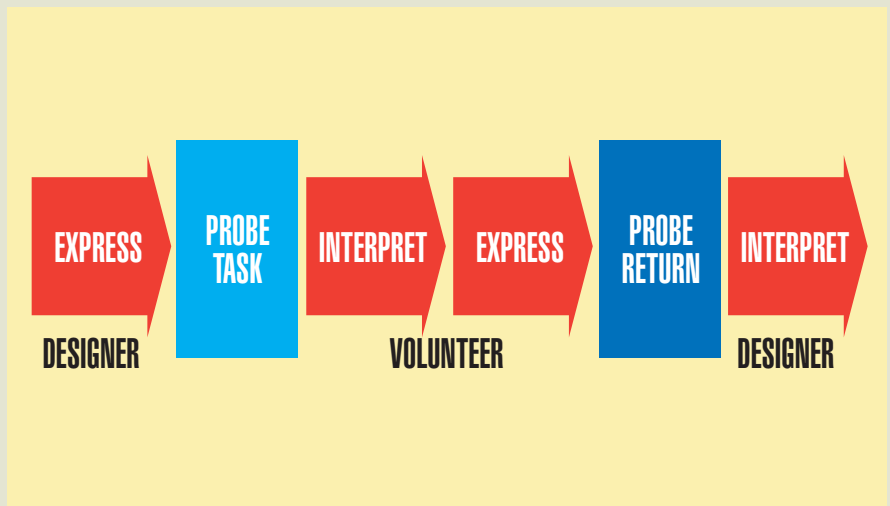


Figure 4: Probe results are the result of a multi-layered process of expression and interpretation.

the returns are layered with influence, ambiguity and indirection, demanding that we see the volunteers through ourselves to make any sense. This tension creates exactly the situation we believe is valuable for design, providing new perspectives that can constrain and open design ideas, while explicitly maintaining room for our own interests, understandings, and preferences.

Sometimes the trajectory from Probes to designs is relatively straightforward, and design ideas can clearly be traced back to Probe returns. For instance, a picture of Harry, one of the domestic Probe respondents, staring into his aquarium, was juxtaposed with a picture of a lonely straight-backed chair, the most uncomfortable place in his home. These led to a proposal that the chair might be turned into the command center for a telerobotic device that would give Harry a first-person view from inside the fish tank. In such cases, new proposals seem to emerge from the stories we tell about our volunteers as props are suggested by the stories of films or screenplays.

Most of the time the relationships between Probes and proposals are more complex and difficult to trace. Our design ideas are formed from a combination of conceptual interests, technological possibilities, imaginary scenarios and ideas for how to implement them. The Probes are one influence in all this. They create relationships with our volunteers that are a little like designing for friends: We know them well, but that doesn't mean we know exactly what we should make for them. Nonetheless, their familiarity serves as a reminder of the actualities for which we are designing, and allows us to imagine our proposed systems in real homes.

It would be a mistake to think that Probes make design easy, however. We freely admit that the responses they elicit are not necessarily accurate or comprehensive, and that they seldom give clear guidance to the design process. Nonetheless, the Probes have been an

invaluable part of our design process, and without them we would not have produced the designs we have. Even if our designs are not dictated by Probe returns, referring to the returns often helps us explain the issues our designs address and the experiences they encourage. Moreover, after having produced prototype systems, the Probe returns have allowed us to predict with confidence which system our volunteers might prefer, just as we might predict which item in a shop our friends might like. The Probes give us a deep sense of familiarity and engagement with the people who might use our designs, and this nourishes our design process at every stage.

*"In searching out the truth, be ready for the unexpected, for it is difficult to find and puzzling when you find it."*

— *Heraclitus*

We began this article by saying that we worried about the tendency for researchers to appropriate the Probes into a "scientific" approach. This worry reflects some particular concerns about how the desire for control can dilute the particular appeal of the Probes:

- Asking unambiguous questions tends to give you what you already know, at least to the extent of reifying the ontology behind the questions. Posing open or absurd tasks, in contrast, ensures that the results will be surprising.
- Summarizing returns tends to produce an "average" picture that may not reflect any individual well, and that filters out the unusual items that can be most inspiring.
- Analyses are often used as mediating representations for raw data; they blunt the contact that designers can have with users through Probe returns.
- Seeking for justifiable accounts of Probe returns constrains the imaginative engagement and story-telling which can be most useful for design.

Beyond these specific concerns, however, it should be clear that the Probes embody an approach to design that goes beyond the technique alone. The potential benefits and lessons from this approach are in danger of being lost if Probes are used in a purely "scientific" fashion.

Our colleagues John Bowers and Tom Rodden have suggested an analogy between the Probes and the use of ethnographic studies in HCI. Ethnography was introduced to HCI and CSCW largely by sociologists pursuing ethno-methodological studies of technology use, an approach that encourages the articulation of group behavior in terms used by its own members to account for their activities. The techniques of ethnography and ethno-methodology were intimately linked. Over time, however, ethnographic techniques have been reclaimed in HCI and CSCW to service approaches other than ethno-methodology. This is of some concern to ethno-methodologists because the varying uses of ethnography as a technique can distract from, or muddle, appreciation of ethno-methodology as an approach.

We like this analogy. If Probes are collections of materials posing tasks to which people respond over time, then "probology" is an approach that uses Probes to encourage subjective engagement, empathetic interpretation, and a pervasive sense of uncertainty as positive values for design. We accept that Probes, the technique, may be appropriated for a variety of different ends. We hope, however, that other researchers and designers will embrace "probology" as well as Probes in pursuing design for everyday pleasure.

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