

Cultural Commentators: Non-Native Interpretations as Resources for Polyphonic Assessment

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Abstract

Designs for everyday life must be considered in terms of the many facets of experience they affect, including their aesthetics, emotional effects, genre, social niche, and cultural connotations. In this paper, I discuss the use of *cultural commentators*, people whose profession it is to inform and shape public opinion, as resources for multi-layered assessments of designs for everyday life. I describe our work with a team of movie screenwriters to help interpret the results of a Cultural Probe study, and with filmmakers to document the experiences of people living with prototype designs in their homes. The value of employing cultural commentators is that they work outside our usual community of discourse, and are often accustomed to reflecting issues of aesthetics, emotions, social fit or cultural implication that are difficult to address from traditional HCI perspectives. They help to focus and articulate people's accounts of their experiences, extrapolating narratives from incomplete information, and dramatising relationships to create powerful and provocative stories. In so doing, they create the grounds for a *polyphonic assessment* of prototypes, in which a multiplicity of perspectives encourages a multi-layered assessment.

Introduction

There's nothing quite like getting a new phone. Only a few things are as satisfying as prising a mint mobile from its packaging... The reception was clear, the screen vibrant, and it didn't shame me to be seen talking into it, unlike the heavy square-ish monstrosity it was to replace. The next day, I admired its petite frame and slender curves. Sadly, I could barely scrape a day of use before the battery began to bleep for a recharge... - Mat Smith, The Guardian newspaper, 23 March 2006

As computational technologies are increasingly being developed for life outside the workplace, the issues relevant for their success are broadening considerably. From a traditional emphasis on *utility* and *usability* (Nickerson and Landauer, 1997), we need to expand our approach to consider a much broader range of dimensions in characterising people's experience - for instance, understanding the aesthetics of computational systems and the emotions they arouse. In addition, we need to understand and design for the ways that new technologies are adopted by, and affect, society. This includes the ways that computational technologies are perceived in terms of existing *genres* (such as tools, information resources, entertainment systems or art), and the *social groups* that might adopt given technologies as particularly suitable to their lifestyles and identities. Finally, it is important to consider the potential *cultural implications* of particular technologies - to envisage how they might affect larger scale trends that we find desirable or worrying.

It is possible to focus on each of these facets of experience separately, but in practice they all tend to be integrated (McCarthy & Wright, 2004). Designs that focus heavily on only one of these levels, seeking primarily to elicit, represent or convey emotions, for instance, or simply to provide aesthetic experiences, are a subset of those that cater to a wider range of experience, and often an impoverished one at that. Many computational artefacts elicit emotional reactions; few are "affective interfaces". Indeed, it is arguable that *all* computational artefacts can elicit aesthetic and emotional reactions, that they fit or avoid known genres, are more suitable for some social groups than others, and have positive or negative cultural implications, whether or not these issues are made salient in their design.

Moreover, emotions may be aroused in reaction to any of the various aspects of experience offered by an artefact. A beautifully designed artefact may make us happy. We may feel saddened by a sentimental picture, and simultaneously angry at having our emotions manipulated. We might feel disappointed to realise a new design is "only" another example of a certain genre (say, an entertainment device) or embarrassed to enjoy a design identified with a social group we find distasteful. At the same time, we might be proud to think that using a given artefact will have beneficial cultural effects (perhaps promoting communication) or chagrined to think that we are contributing to detrimental ones (for instance, the increasing fragmentation of public culture). As these examples suggest, our reactions may not be simple: we may well have mixed emotions within or between any of these levels of appreciation.

In considering technologies for everyday life, then, the dimensions of experience that we need to understand and design for are diverse and complexly interrelated. As a result, the range of issues we need to address in assessing the products of our design are also varied and complicated. It is no longer sufficient to evaluate whether people can use a given design to achieve a task easily and efficiently. We need also – sometimes primarily – to understand how the design resonates aesthetically, emotionally, socially and culturally, both with particular users and with a larger audience. And this implies that we need new sources of assessment on the one hand, and that assessments need to be multi-layered on the other (c.f. Sengers and Gaver, 2006).

Cultural Commentators

In this paper, I report our experiences of employing *cultural commentators* to provide interpretations and evaluations as a resource for multi-layered assessments of everyday technologies. “Cultural commentators” is a loose category referring to those who comment on events (including artefacts and systems, as well as happenings) for a more-or-less general audience. Commentators may be sub-categorised as *popularisers*, *storytellers* and *analysts*:

- *Popularisers*, including print or broadcast journalists, documentary film-makers and some critics, report on events, as a professional activity, for the “general public”. Their chief concern is to identify and communicate the “essence” of a story – its most salient and important elements – and how it should be interpreted.
- *Storytellers*, including some authors, film-makers, poets and artists, may disguise and/or invent the subjects of their comments by focusing on what is (apparently) imaginary. Their concern may be to propel a narrative through a sequence of causally-connected events, or to create meaningful complexity by offering numerous or ambiguous perspectives on events.
- *Analysts*, including psychoanalysts, archaeologists, historians, and some detectives or forensics experts, are most like traditional technology researchers in their concern with articulating events in terms of their component dimensions, and tracing chains of causality among them. Such communities of practice, if not often involved with technology development, may offer a usefully alien perspective (cf. Bell et al., 2005).

The basic method of using cultural commentators is to ask them to report on a piece of design in a mode that would be customary for their profession. A journalist might visit and interview people borrowing a prototype; an author might write a short story incorporating the prototype in some way; a psychoanalyst might report on how the prototype triggers certain emotional complexes for a given user. Of course, applying commentators’ customary practices to technological designs may be a new endeavour for them, so adaptations will be required. But the intention is that commentators should maintain integrity to their own community of practice in commenting on designs, rather than adopting the traditions of interaction research.

There are several potential advantages to gathering cultural commentaries as resources for design and its assessment. First, because they are, by definition, outside interaction design's normal community of practice, cultural commentators may bring new perspectives and insights to a given example of design. Some of these might open new lines of enquiry or question basic assumptions of the field, as well as highlighting particular facets of a design. Second, cultural commentators may be accustomed to reflecting on and articulating aspects of experience that are difficult to approach using traditional research methods. For instance, journalists routinely comment on the aesthetic and emotional impact of designs, their fit to various social groups, and the implications for wider society. Third, cultural commentators often produce relatively compact accounts of their interpretations (documentary films, stories, forensic reports, etc.) which may be both compelling in their own right and usefully compared to accounts produced by other forms of evaluation. Finally, cultural commentators' accounts embody their perceptions and interpretations as individuals, adding to those of the users, designers or researchers about whom they are reporting.

In the rest of this paper, I describe three examples of our work with cultural commentators. The first example involves a team of motion-picture screenwriters (story-tellers in the taxonomy above), who supplemented our interpretation of a Cultural Probes study. The other examples involves film-makers (popularisers), who made documentary videos to help us assess the experience of volunteers trying prototypes in their homes.

Screenwriters Interpret a Cultural Probe Return

As a starting point for a long-term study of technologies for the home, we ran a Cultural Probes study with twenty households in the greater London area (Gaver et al., 2004). The goal of the study was to gain insight into the variety of ways that people live at home in terms of their activities, values, opinions and aspirations. In taking this approach, we hoped to subvert stereotypes of the home that we perceived as endemic in the research community. To further enrich our understanding, we asked a team of screenwriters to create a new work based on the returns from one of the households.

The Domestic Probes Study

For the study, we placed advertisements in various newspapers and magazines published in London, and also posted notices in newsagents' windows, asking for volunteers to work with our design team. The first twenty households that responded were recruited as subjects for the study. We made no attempt to achieve demographic balance, but our volunteers came from a diverse set of backgrounds. They ranged in age from 18 to 80, and in socio-economic status from state-dependent to affluent professional. In addition, they reflected a wide range of domestic situations, from those living alone to "traditional" families, to more unconventional and temporary groupings. Reflecting on these differences alone was useful in reminding us of the diversity of home lives.

We visited each of the households over a period of about a month, bringing to each a 'Domestic Probe' package we had prepared earlier. Each of the Probe packages included twelve items making requests or setting tasks for the volunteers (Figure 1). These included, for instance, a *disposable camera* repackaged with requests for pictures (e.g. "a collection", "a social gathering", "the spiritual centre of your home", "something red"). A set of *household rules tags* were included with instructions to note domestic injunctions, whether explicit (e.g. "don't put your feet on the table") or implicit ("don't discuss finances first thing in the morning") for placement in relevant places around the home. A *listening glass* was packaged with instructions for users to hold the (ordinary drinking) glass to their ear when they heard an interesting sound, and to write a description of what they heard on the glass itself using a special pen. Finally, a *dream recorder* included instructions to pull a tab at the bottom when awaking from a vivid dream, and then to describe the dream in the 10 seconds before the recorder switched off.

The Probes were designed as an alternative to traditional methods for studying user populations (Gaver et al., 2004). They are purposely made open-ended to encourage idiosyncratic approaches in responding to them and to allow volunteers to surprise us with their answers. The Probe materials not only pose questions to people, but sometimes set them tasks or create situations that they might not otherwise encounter, simultaneously allowing us to foreshadow possible design directions and to discover how people will react. They are designed to be aesthetically appealing and approachable, and the tasks designed to be engaging, in order to make clear to volunteers both our concern for their experience and, through the evident care we took in making the materials, our hope that they will take equal care in responding. Finally, the Probes are designed to be somewhat ambiguous and even absurd, not only to



Figure 1: The Domestic Probe materials

compel volunteers to struggle to make sense of them, but to ensure that we will have to grapple with a set of returns that are equally ambiguous and difficult to interpret confidently.

We preclude clear interpretation of the Probes to sabotage assumptions that user studies might capture the truth of peoples' situations comprehensively or adequately enough to warrant reification, and to explicitly encourage designers, in making their interpretations, to supplement the returns with their own imaginations and interests. The aim of the Probes, in sum, is to find a balance between the uninformed, unconstrained imagination of designers, and overly authoritative accounts of design contexts that may paralyse creativity. They allow designers to project their own concerns and readings onto user data, while continuously confronting them with the realities for which they are designing.

In the current study, we returned to collect the completed Probes from volunteers about a month after we had originally distributed them. None of the households completed all the tasks - this was explicitly allowed and even encouraged in our original instructions - but we nonetheless received hundreds of photographs and images, a great deal of writing, and a number of annotated glasses and used dream recorders (Figure 2). We made no attempt to analyse or summarise the returns, but instead organised them according to household and kept them to hand for later phases of the design process.

The Probes returns were effective in familiarising us with the people and households who had completed them. Not only did the returns remind us of our first

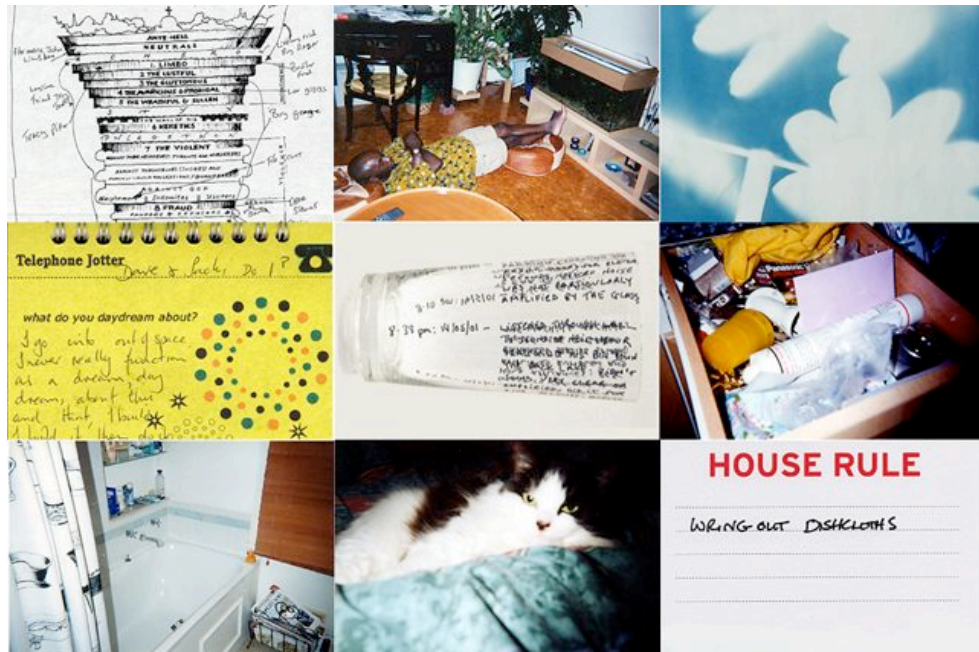


Figure 2: Sample Probe returns

impressions, but they also deepened our understanding. More importantly, they gave us a feeling of familiarity even with those households we had not met personally. They created a powerful sense of each household, which could be reinvigorated and reinterpreted through repeated exposure to the returns, that served as a foundation for our subsequent design explorations.

The Screenwriters' Interpretation

Interpretation is key to the Probes approach. The myriad of textural details the Probes provide are filtered, combined and explained by those who view them. This is useful for designers as it allows them to apply their own perceptions, desires and aversions in the process, simultaneously projecting their own stories while accommodating those of the volunteers. The Probes do not provide comprehensive, general or testable information about a user population, or even the particular volunteers being studied. They do, however, provide a rich ground for interpretations that can raise issues or offer possibilities for design.

To enrich the process further, then, we decided to bring other people's interpretations into the mix. We approached a pair of screenwriters who had a background writing for successful motion pictures, and we asked them to interpret one set of the Probe returns. The idea of their involvement appealed to us for several reasons. They were clearly well outside our community of practice and thus unlikely to be biased in terms of the issues they might address or the process they might consider appropriate. Given their success in their own professional work, we were confident that they would produce a competent example of that practice's genre, and that they were accustomed to addressing emotion, aesthetics and social values. Finally, we assumed they had a specialist methodology for researching character and setting, and thus would be accustomed to building narratives from their impressions of fragmentary information.

To brief the screenwriters, we described the Probes study in moderate detail, but without discussing conceptual or methodological issues. We then give them one set of Probes returns and asked them to produce a short script – ten pages, say. We imagined that this would be a short scene or two telling a story about characters somehow inspired by the Probes. The screenwriters understood our basic intentions, and while slightly worried about not meeting our expectations, they were intrigued and enthusiastic about the proposal.

A few weeks later, however, they telephoned to ask if, rather than a script, we would accept a “character profile” based on the materials we had given them. They explained that this was a standard part of their writing process: before starting work on a screenplay, they wrote a substantial report about each main character, including both their backstory and their life beyond the end of the screenplay. Since we were interested in allowing commentators to find their own means to pursue and express an interpretation, we readily agreed to this new plan.

When the profile was completed, the screenwriters seemed excited but anxious. On the telephone, they warned that the result was “not very flattering”, and

were clearly hesitant about delivering it. We assured them that we understood the profile was fiction, based on fragmentary material, and that it was appropriate to exaggerate for clarity. Nonetheless, the writers were nervous. Finally they asked, “Just tell us one thing. Does she live in Notting Hill?”

She did.

The Character Profile

At seven pages, the profile is too long to present in detail here. In brief, it describes “Binky”, a 24-year-old woman living in London¹. It lists her likes and dislikes, sketches her familial relations, discusses her boyfriend Sergio and other friends, her worries about herself and others, and what others think of her, and reveals what she hopes will happen in ten years time – and what actually will happen.

Through this structure, a story emerges. A young woman moves to London from a small town in the Yorkshire, partly in rebellion from her family (whose “biggest achievement was joining the middle classes in 1974”). As the years pass, she is exploited by her boyfriend Sergio, and is somewhat exploitative to her friends in turn. Although she prides herself on being unconventional, her attitudes and actions are actually contradictory and even touch on the hypocritical (for instance, she secretly despises her multicultural neighbours: “these people have no manners”). She worries about her weight, her boyfriend, her health. She fears that she is becoming too much like her mother. Most of all, she yearns to be recognised as a “leading light in her field”, but ends up living in a provincial town near London, married (though not to Sergio) and running a small design firm.

The screenwriters’ account is terse (though much more nuanced than this summary), but very humorous. They are knowing, almost cruel in their description of Binky and the reality of her life. For example:

Binky’s parents refused to let her go to the poll tax demo because she was too young and had school work to be getting on with, however Binky watched the riots on TV and felt so at one with the anger that when she tells people that actually, I was there and a policeman knocked me down and I thought the horse was going to trample me, it feels like the truth.

Nevertheless, the profile is fundamentally sympathetic to Binky. The reader may laugh at her attitudes and be scandalised by her hypocrisy, but the writers take her side as she tries to find happiness. Consider this description of her boyfriend:

Sergio is a poet. He reads Philosophy Now. He cooks. Sergio does not wash up, iron, do the shopping or put the bins out. This is because he is an artist and cannot let his soul be contaminated by the banality of existence. Or because in his culture it would be emasculating. Or

¹ Note that names, places and other identifying details have been altered in this account.

because it's not his house and he does not want to cross these boundaries. Or because he is deeply manipulative and she loves him more than he does her.

Binky may be mixed up, but Sergio is clearly no good (even her neighbour thinks he's "a bit of a creep"). We laugh at her pretensions, but wish her well at the end of the profile.

Empirically-Based Fiction

It should be clear that the profile is far more than a disinterested description of a stranger, or an analysis of what could be gleaned from the Probe materials. It incorporates the screenwriters' intuitive reactions to the materials we gave them, and so turns the fragmentary evidence provided by a set of Probe returns into a coherent description of a complex character. The result is reminiscent of "extreme characters" – caricatures used to highlight unusual values or activities (Djajadiningrat et al., 2000) – or "pastiche scenarios", in which characters from popular fiction are used in design scenarios to ensure psychological realism (Blythe, 2004). Binky, however, is not entirely fictional, but is an extrapolation from the Probes material. In being drawn from real life, she is similar to a *persona* (Cooper, 1999). Yet Binky's story is not based on multiple sources of data, but on rich returns from one individual. This gives her character a particularity and force that many personas seem to lack.

Binky's profile goes beyond mere description to give a sense of her story – her trajectory from rebellion teenager to settled adult, via a long and difficult relationship (with Sergio). But it is a story without a plot. Instead, it presents a complex character with a rich internal life in a way that is similar to the *polyphonic novels* described in Wright and McCarthy's (2005) discussion of Bakhtin's literary theory. Polyphonic novels have several characteristics that are echoed by Binky's character profile. First, they are driven by character rather than plot. In design work, focusing on characters' emotions and motivations, rather than on events, often results in more convincing scenarios and better situate expectations about how design possibilities may be received (Nielson, 2002). Second, they embody a "multi-centred, multi-voiced universe" (Wright & McCarthy, 2005, p. 5) in which several different truths may coexist. The character profile similarly contains different voices, several belonging to Binky herself and others belonging to Sergio, her friends, a local shopkeeper, etc. This multiplicity allows a rich view of Binky's situation, and may allow design ideas to be tested against differing (even contradictory) points of view. Third, polyphonic novels are situated in time and place, both in the sense that they are set in a particular historical setting, and in that their characters change with time (in contrast with, say, adventure novels, in which time and place tend not to have deep effects on the nature of characters or conflicts). Similarly, Binky's existence is set in a social and historical context peculiar to London, and – as we have seen – Binky evolves from rebellious child to working wife and mother.

Moreover, Binky has a rich aesthetic and emotional life that is revealed by the character profile. She likes "Roland Barthes, Cindy Sherman, Tracey Emin, dance

music, bright colours, Buddhism, tequila” and dislikes “Bridget Jones, Damien Hirst, boy bands, consumerism, weddings, church, suburbs and school runs”. She “hates family do’s because everyone picks holes in her”. Binky’s profile builds up a sense of her affinities and tastes that reveals the motivations behind her actions, similar to the “thick descriptions” (Geertz, 1973) used in certain forms of ethnographic research. As we have seen, however, her attitudes are often in conflict. One of the fascinating achievements of the character profile is to resist a simplistic description of Binky’s emotions, probing instead at the contradictions below the surface. For instance: “Binky’s friends are all jealous of her house and her relationship with Sergio. This makes Binky feel secure because she’s better than them, but also hopelessly insecure because deep down they must hate her”. Binky has a hidden life, according to this account, with values at tension with those she cultivates publicly. This gives her a depth and richness that most designers’ characters and scenarios lack.

Of course, the character profile goes far beyond the evidence provided by the Probe returns. In many ways, Binky’s account is blatantly subjective, exaggerated, even stereotyped. It is not wholesale fiction, however. Rather, it is an extrapolation from the Probe materials that draws wide inferences about many other areas, and, crucially, about the inner life of the person who produced that set of returns. For example, the original volunteer only returned one of the Household Rules tags, simply marked: “No Rules!” (Figure 3). The screenwriters expand on this in their description:

No rules. They interrupt and disrupt the free flow of ideas and expression in the house. They are artificial constraints and boundaries that prevent one from seeking true creativity. Sergio was very eloquent on the subject and had made her feel empowered and excited. No rules!

Clearly, the screenwriters have read a lot into a two-word response. Indeed, their story exceeds our own speculations about the volunteers. This may reflect our professional inhibitions or our limited familiarity with the volunteers. Equally, however, it seems to reflect the screenwriters’ professional skill at fleshing out character, as well as a playful

Figure 3: *No Rules!* [original to be supplied]

approach encouraged by their unconcern about the project. Binky's story is the result of looking at the Probes returns and asking what sort of person might have responded in that way. What would she be like? Where might she have come from? What might happen to her?

The character profile may be speculation that goes far beyond the evidence, but Binky's story is plausible – plausible enough to make slightly uncomfortable reading. Ethical questions ensue. To what extent does revealing Binky's story compromise our volunteer's privacy? The profile is both intimate and judgemental – whether or not it is accurate – and we were reluctant to show it to the volunteer, and in fact we never did. It is important to recognise, however, that Binky's profile is exaggerated and largely fictional. It balances an expression of the Probes returns that is rooted in real life with a fictional independence from those materials. Thus our best understanding of how to use it responsibly is to maintain the anonymity of the original volunteer when telling Binky's story, and to be clear about the distinction between the two: Binky is *not* the volunteer.

The Drift Table Documentary

Sometime after the Probes study described above, we produced several prototypes of electronic furniture which were tried by volunteers in their homes (Gaver et al., 2006; Gaver et al., 2004). Each piece of furniture was designed to promote *ludic engagement* in the home, which we characterise as non-utilitarian, playful, curiosity-driven exploration (Gaver, 2002). We designed the furniture to be easy to use, but not easy to explain. The implied question is: What's it *for*? Our aim was to see how people would incorporate the prototypes into their own lives, and, through the activities they pursued with them, the meanings they found for them.

Given that there was no correct usage for the prototypes, an approach to evaluation based on hypothesis-testing seemed inappropriate. Instead, we focused on capturing rich descriptions of the volunteers' experience with the prototypes, to provide resources both for future design activities and for evaluative interpretations by ourselves and potential audiences of the works. We used three strategies to pursue this goal. For two of the three designs, we employed an ethnographer to make detailed written observations of, and interviews with, the volunteers. We also collected log data from the devices, so we could track the system's view of use. Lastly, we employed a professional film-maker to produce documentary videos of the pieces, as a form of cultural commentary. Here I focus on how these documentaries created accounts of the trials, and discuss their uses for assessment.

The Drift Table

The Drift Table is a small (80 x 80 cm) coffee table with a circular porthole on top (Figure 4). Looking through the porthole, one sees aerial imagery of the British landscape from an apparent distance of a few hundred metres above ground. The imagery scrolls and zooms slowly in response to weights placed on the table. Putting weight on one side of the table causes the imagery to move in the opposite direction, giving the impression that the table is gliding over the landscape towards the weight. As more weight is added, the view appears to move faster and closer to the ground; removing all weight causes it to rise and hover with little motion.

The Drift Table contains high-resolution aerial imagery of the whole of England and Wales, amounting to about a terabyte of data. This is a vast resource, and means that the device could be used for weeks on end without seeing the same imagery. A display on the side of the table shows the name of the place nearest to the current virtual location, and an electronic compass aligns the orientation of the imagery to the table's physical location. A small button beneath the display allows people to reset the virtual location to its default (usually set above the physical location), in case people get lost or bored, or the table gets stuck at the coast. (The Drift Table is described in more detail in Gaver et al., 2004).

We loaned the Drift Table to several households that had participated in our Cultural Probes study (Gaver et al., 2004), but we focused our evaluation on just one household, in order to gain some depth in our account. The household lived in a flat



Figure 4: The Drift Table

owned by S, a musician and producer who usually worked in the flat during the day, but often stayed with his girlfriend in the evenings and nights. Conversely, J and W, who rented rooms from S, usually worked elsewhere during the day and returned in the evenings. A steady stream of friends, collaborators and clients also visited the flat, so the Drift Table was encountered by a large number of people during its six weeks in the flat.

An ethnographer on our team visited the flat periodically and spent several day-long sessions observing the housemates' uses of the table and their conversations about it. These observations are described in Gaver et al., 2004.

To gain another perspective on the trial, we also hired a professional film-maker to produce a documentary. The film-maker had worked as a cameraman for US news programs, covering conflict zones such as Afghanistan and Bosnia, but he was now living in London. We explained the notion of the cultural commentator, but didn't discuss particular prototypes or conceptual issues. Instead, we simply asked him to make a short documentary about the household's use of the Drift Table, and emphasised that he was free to do this in his own way, and to foreground his own judgements. Our only stipulations were that he contact S independently, and that he involve none of the research team in the filming. Indeed, we declined his requests to interview us for the video, preferring him to focus on his own and S's interpretations.

The Documentary Video

The film-maker shot the documentary in a day, a few weeks after the Drift Table was delivered to S. He then edited the tape and delivered the result - a two-minute video - soon after the trial was over.

The documentary is presented in the genre of a news item, of the type one finds on popular science and technology programmes. Unbeknown to us, the film-maker had subcontracted a presenter to appear on camera. The presenter makes introductory comments and prompts S's description of the table, after which the film consists mostly of S's comments about his experience with the table. Occasionally the video shows S speaking, but more often his comments are used as a voice-over while he is shown using the table.

Much of S's account deals with his *trajectory of appreciation*² of the table. He describes how his initial excitement upon receiving the table gave way to frustration and finally to appreciation:

"I really liked it at first. Then I went off it because there were no buttons to play with, and now I'm really really back into it. I kind of like the way that its changed my attitude towards it, in that the whole thing of wanting to control it has worn off now. I kind of just like drifting with the Drift Table."

² A term coined by John Bowers, the ethnographer who studied S's experience with the Drift Table. See Gaver et al., 2004.

By the time the film-maker visited S, he had lived with the table long enough for this initial trajectory to have taken its course, and was able to reflect on it. Moreover, he was prepared to summarise his view of the table in an authoritative manner. At the beginning of the video, for instance, when the presenter asks what exactly the Drift Table is, S replies, "I'd describe it as a digital hot-air balloon that you travel in from the comfort of your own front room". Later he expands on this:

"I now understand that I'm not really in control of it, apart from telling it what direction I want to drift in. So... you know, all the technology in the Drift Table is within as opposed to without. There are no buttons or keys to press or anything - everything is within. And the only interaction I have, really, is to look through the lens or to place weights in the direction I want to go. And that is what it does, and if you want to do anything more than that you really should be looking at maybe buying a Playstation. [laughter] This is what it does, and it does it really really well."

During the voice-over, S is shown using the table in various ways: placing weights on it, checking the place display, referring to a map, and so on. The overall effect is to present him both as an expert at using this unusual device, and as an advocate for its appeals.

Witnessing an Authoritative Account

On first consideration, the Drift Table video appears a straightforward presentation of S's experience with the prototype. The points S makes in the video about his experience, and the behaviours that are shown in the piece, are all compatible with the ethnographer's observations. In fact, the ethnography uncovered far more than S reveals about his (and his housemates') experience. After all, the ethnographer spent much longer with S, his household and the Drift Table than did the film-maker. The ethnographer had access to the volunteers' emerging, lived experience with the Drift Table, whereas the film-maker only received S's account of this experience.

Nonetheless, the video documentary has unique features as an account of S's experience that make it a valuable resource both for presentation and assessment. First, it gives viewers the sense of being *witnesses* (Winston, 1995, in Raijmakers, in preparation) of the situation. Video may be a selective representation of events (see e.g. Mackay, 1995), but that which is seen and heard on video is usually taken to be an unmediated record of those events that are selected. We see the Drift Table in S's flat, we see S as he describes it and watch him manipulate it, we hear him speaking - and we can return to the video time and again. This contrasts with the ethnographer's written account, which is, by definition, descriptive. Even when quotes are used, these cannot capture the precise rhythms and intonation of actual speech; even when settings are described, these cannot capture all the visual details of a video image.

If viewers feel that they are witnessing S's account and actions relatively directly, S is also aware of potential viewers. This awareness elicits from him a *definitive* account

of his experience. His presentation is crafted to be appropriate for the sort of video he expects to be made. He produces “soundbites” (e.g. “a digital hot air balloon”, “drifting with the Drift Table”, etc.), as well as longer descriptions that are notably articulate and reflective. His evident enjoyment and occasional jokes (“you really should be looking at maybe buying a Playstation”) serve to leaven and highlight his more serious pronouncements. Above all, the process of making the documentary elicits from S an account that is consistent and authoritative.

However, the video captures are other, unarticulated aspects of S’s experience. For instance, S demonstrates how to use the Drift Table: “You place a rock if you want to go west, and if you want to go faster, add some more rocks”. As he says this, he first places a single rock on the table, and then a small bucket of rocks (Figure 5). Viewers usually laugh at this point, in part because placing a bucket of rocks on a table is self-evidently odd, and in part because S smiles, acknowledging the oddness. Later, S is shown looking at the location display on the table, then consulting a road map before returning to look through the porthole at the current view. Again, viewers laugh at this odd behaviour, but this time S does not acknowledge it. Along with his account, then, the video presents aspects of his behaviour that, though not undermining his authority, certainly complicate and enrich it.

In addition to S’s account, the documentary also includes a scene in which the presenter describes his own feelings about the Drift Table. Alone in the shot, he walks over to the table and kneels behind, saying:

“So what do I think of the Drift Table? Well, when I first heard about it, I thought it might be a gimmick or some kind of techno-experiment. But for me it’s an art installation that functions very well as a piece of furniture too. Now, would I want one? Yep.”

This short scene complements S's account with suggestions that the table could be seen as a "gimmick", "techno-experiment" or "art installation", indicating how he (and a wider public) might understand the piece as belonging to an understood genre of technological device. We interpret the presenter's positive verdict as an attempt to respond to our request that the documentary reflect the film-makers' views of the table, as well as the volunteers'. In light of the fact that we paid the film-maker for his work, however, viewers might interpret the presenter's remarks differently. The film-maker himself did not appreciate the Drift Table as much as the presenter did (as we learned through casual conversation), but chose not to include his views in the documentary. It is possible, then, to perceive this scene as reflecting two different stories: one about the positive reaction of the presenter after initially sceptical expectations, and a second about power relations among the different parties behind the film.

The point here is not to defend any one reading of the Drift Table, but to show that even this short documentary embodies several different accounts, and permits multiple interpretations of those accounts. Being on camera encourages S to present a definitive account of his trajectory of appreciation. Nuances are added to - or layered over - his account by S's unusual expertise with the piece, as witnessed by the viewer. The presenter also supplies his account, of having been won over despite initial scepticism. However, this account is potentially undermined by the film-maker's continuing but unvoiced scepticism, and by the financial arrangements for the film-making. Audiences can consider each perspective (or something else entirely).



Figure 5: S demonstrates the Drift Table

Moreover, they can consider the Drift Table for themselves, judging it by what they see of it, and thus imagine how they might live with it in their own homes.

The Key Table Documentary

Soon after completing the Drift Table trials, we loaned another prototype, the Key Table, to another volunteer household. This time, we relied largely on the film-makers to capture the experience, because it was difficult (for logistical reasons) to undertake ethnographic observations. We employed the same film-making team that had produced the Drift Table documentary, but with very different results.

The Key Table

The Key Table is a small (about 40 x 40cm, waist-high) table, designed to be placed in the home's entrance as a repository for things carried when leaving the house, such as keys, mobile phone, etc. Like the Drift Table, it contains a load sensor, but instead of being used to register weight, the sensor's transient response is used as a measure of the force with which things are placed on the table. When objects are placed on the table, a wirelessly linked, motorised picture frame tilts to indicate the force of the placement (Figure 6). It holds its position for 40 minutes before swinging back to vertical. If a new weight is placed on it before that time, the frame tilts to the other side to indicate the new reading.

The Key Table's design was inspired by the notion that, just as slammed doors can indicate emotional upset, so the force with which people put things on a table might betray their mood. Slapping down a mobile phone might be a sign of anger, whereas placing it more gently could signal a calmer frame of mind. The picture frame would communicate this to other people entering the home, suggesting, for instance, that they tread warily. The Key Table could thus be seen as simple form of *emotional interface*, sensing and representing emotions to allow computational systems to respond more effectively to people (Norman, 2004; Picard, 1997). However, the story embodied by the Key Table is rather too crude to be plausible. It is difficult to believe that placement force is an accurate indication of mood: great force might merely reflect haste, and careful placement could signal cold fury. We knew this. In one sense, the Key Table was a light-hearted parody of emotional interfaces. But its very jokiness also had serious intent. For the dubious manner in which the table foregrounded the issue of emotion was, we hoped, a tactic for encouraging people to make their own judgements. We anticipated that people might "game" the system, consciously placing objects on the table with more or less force to send playful messages to one another.

We loaned the Key Table for about six weeks to a household consisting of H, her children L and S, and N, a friend of L's. They lived in a modern, semi-detached house with a small garden. As in many such London houses, the front door opened onto a stairway to the upper floor and a hallway to the back room, their living room. Because the hall was narrow, H chose against placing the Key Table there, and instead

asked us to install the table and picture frame in the living room. Even at this point, it was clear that things were not to go as we expected.

The Documentary Video

The film-makers joined us on our trip to install the Key Table in H's house, filming the process and interviewing the design team and members of the household. Then, about two weeks later, they returned to complete the filming. Perhaps because they thus captured the households' first experience of the Key Table, as well as ensuing reactions, this documentary is more complex than the Drift Table film, presenting a series of live-action shots intercut with interviews. Rather than giving a static view of the table, it shows how the household's relationship with the table evolved. This is also a function of length: at just under five minutes, the Key Table video is over twice as long as the Drift Table video.

The beginning of the video shows the film-maker asking one of the team members to describe Key Table, and then interviewing the author. On account of this intervention, the first descriptions the family heard of the Key Table were not crafted for them, but delivered extempore for the video. Since we did not want to reveal the narrative behind the table at this stage, neither description mentioned the key concept that the table was designed to reflect the moods of people entering the home. Instead our descriptions dwelt on how the table acts on the one hand, and broader issues of designing for interpretation on the other. Crucially, and in part because of the presenter's continued interventions, we never did manage to tell the family the intended narrative. So the family were left to interpret it entirely for themselves.

Soon after the table was installed, the film-maker (F) interviewed the members of the household:

F: What do you think, L?

L: Um, it's good... I thought it would be more of like changing an image but I like the whole idea of it. Everything you put on it shifts it... so it's kind of like a watchdog, really. [gestures at the picture]

H: It's obviously Terence the Dog doing it. It looks like he's just checking out what's on the table - he's looking down like, "ah yeh, it's just a phone this time." There's definitely personality in this. It isn't just an empty or mechanical item.

N: I dunno, because it's giving inanimate objects a personality. It's like, it's kind of... I'm imposing my feelings on something solid.

This short exchange set the tone for the households' relationship with the piece. Their focus on the table as a sort of interactive watchdog persisted throughout their ownership of the Key Table.

Participation and Performance

Even at this early stage, it was clear that the film-maker was not merely an observer of the household's experience with the Key Table, but an active participant. Prompting the design team to describe the table affected the way they presented the piece, and interviewing the household about their reactions prompted explicit statements from them about their interpretations, much as the interviews with S drew out his definitive account of the Drift Table. The statements of H, L and N, however, were made early in their encounter with the piece and within hearing of one another. The tendency for filmed interviews to elicit definitive articulation here had the effect of encouraging the household to agree on an immediate interpretation of the piece.

As the documentary progresses, moreover, the household (especially H) increasingly *perform* their relationship to the Key Table. A third of the way into the video, for instance, the presenter (P) is shown standing outside the household's front door:

P: H and her family were really excited when the Key Table was delivered. Two and a half weeks later, let's see if they're still into it.

[P rings doorbell, and H opens door]

P: H, how are you doing?

H: Hello, how are you? Have you come to visit Terence the Table?

P: [pauses] Terence the Table?

H: Yes. [laughs]

P: Right. Come on then, let's have a look.

The interaction has clearly been contrived by the film-makers and H for dramatic – and humorous – impact. The effect is to sensationalise H's relationship with the Key Table, demonstrating the degree to which she has endowed it with personality.

Later in the video, she describes this relationship in more detail:

My interaction with the piece has become more personal. It's not a table with a picture and a frame – it's now Terence the Table who has a personality. He's an animal who lives in our home, just like the cats live in our home. And so I do with him what I do with my cats. I talk to him. I do things with him that I would with the cats – I invent games that I can play with the cats, and I do with Terence. I don't exactly



Figure 7: Heather welcomes the Key Table

*dress my cats up, but I'm afraid that because Terence can't run away,
he's ended up getting clothes on him.*

The video enables viewers to witness some of the modifications the household made to the piece. A scarf is shown draped over the picture frame. A piece of plastic film has been stretched over the bottom of the frame, trapping several small balls so that they roll along the lip of the frame when it tilts. A cat toy was attached to the table surface, presumably to encourage the household's cats to play with the device.

The last scene of the video dramatises this relationship still further (Figure 7). The scene opens with H entering the living room carrying a jester's hat, a wine glass and a bottle of champagne, as her family and the film-makers sit watching. "Here you go, Terence," she says. "A little celebration to welcome you into the family. Happy birthday." She ritualises the performance, ceremoniously placing the bottle and glass on the table as punctuation to her utterances, and then props the cap on the picture frame as she wishes it a happy birthday.

Some viewers of the video take H's performed relationship to "Terence the Table" at face value, and conclude that H is an eccentric. But this is a superficial reading of the scene. H is *performing* an extreme relationship with the piece, quite aware of what she is doing. This is suggested earlier in the video, when she gives a more distanced account of her interaction with the piece:

Initially, he was just here and I could look at him and put things on him. But now I've actually started to think of myself as the artist. I don't know whether I have the liberty to do that. Too late, I've taken the liberty! And I've become involved with him as an artwork, and I feel like I'm evolving him. And when he goes home, perhaps everything I've done to him will be stripped away, but whilst he's here he's my artwork, as well as [the design team's].

It is clear that H is aware of appropriating the table, both from the costumes she provides and the games she plays. Moreover, she indicates her awareness by the exaggerated manner in which she performs her relationship with the piece. Her dramatic welcome ceremony is followed by gales of laughter from her family, and H herself doubles over. Everybody – including H – knows her enacted relationship with “Terence” is absurd, but it provides the basis for a “game” they can all play.

We suspect that this game does not merely exaggerate their relationship with the table: it *is* their relationship. The performance is *performative*, in the way that statements like “I pronounce you man and wife” are performative (Bruzzi, 2000, in Rajmakers, in preparation). Such statements create the very state of affairs they describe, just as the household's actions constitute the relationship they appear to illustrate. It is unclear how H and her household behaved when the film-makers were absent, though various additions to the table suggested a continued engagement. It is plain, however, that H's video appearances intensified the form of that engagement.

Again, the film-maker was far from neutral in all this. It appears that he and the presenter were instrumental in encouraging H and her household to form such an extreme interaction with the Key Table. Certainly, when interviewing the household after the penultimate welcome scene, he does not step outside the “game” of treating the piece as a member of the household:

F: “L, how do you feel when your mother thinks this dog is part of the family. Are you getting any sibling rivalry?”

L: “No, I... It's lovely. I'm glad to welcome him. He'll fit right in.”

F: “Do you think your children are a bit jealous of all the attention you're pouring on Terence?”

H: “No, they get equal amounts. I think we've enjoyed the whole concept. It's cheered us up a lot to do strange things to an inanimate object.”

Throughout this scene, everybody, including the film-maker, is laughing. It is evident not only that they are playing, but that they are colluding in their play for the sake of the film's (unspecified) audience. There is a strong sense of mischievousness, which was

later acknowledged indirectly by the film-maker when he first played the video to the author. He (somewhat facetiously) suggested that the author sit down before viewing the video, and referred to it as a “slow-motion train crash”, offering to re-edit if necessary.

In sum, the Key Table video captures an unfolding relationship both between H’s household and the piece, and between H and the film-makers as they conspire to dramatise an exaggerated version of that relationship. In contrast to many forms of user research, the film-makers were participants in the process through which H and her household began to interpret the Key Table, and it is doubtful that events would have unfolded as they did without them. This is regrettable in preventing a more realistic view of how the table might be used. However, the film-makers’ participation did have some benefits, for it allowed – even encouraged – H to play the role of an *extreme character* (Djajadiningrat et al., 2000), thus foregrounding potentially common, but subtle, relationships and forms of appropriation. In some ways, the character H plays in the documentary is probably as removed from the day-to-day H as “Binky” is from the volunteer on whom she is based. The Key Table video is not a “mockumentary”, however, or a fictional account presented as a real one (cf. Dunne, 2005). The film-makers may have amplified H’s emerging attitude to “Terence the table”, but they did not create it. Much as the process of being filmed prompted S to clarify his account of the Drift Table, the process prompted H to elaborate – even create – her relationship with “Terence”.

Discussion: Listening to Other Voices

The cultural commentators’ perspectives on our work produced perspectives and insights that were useful for our understanding of users engaged in the design process, and there were commonalities among these perspectives. For instance, each commentator addressed issues of aesthetics, emotion and motivation, and made interpretations of genre or social category based on an understanding of the cultural connotations of the materials in question. As we had hoped, these appear to be normal facets of the interpretations they make as part of their professional practices. However, the three commentaries differed considerably in the manner of their contributions. In part, this reflects the fact that one was made by storytellers, whereas the other two were by a populariser.

In addressing the Probes returns, the screenwriters used their professional skills to turn a collection of clues into a story. They not only integrated the material, but extrapolated new material by asking themselves wide-ranging questions. (“If this is how the character responded to these probes, what sort of job would she have? Where would she live? What would her boyfriend be like?”) The result wildly exceeds the reach of the data, but it allows a consideration of emotions and motivations that are not directly revealed by the Probes. Moreover, the screenwriters were able to endow Binky with both an overt and hidden life, creating a much more intimate – and sometimes unflattering – portrait than is usually drawn from user studies. In doing so, they created a story that is based on character, not plot (Nielson, 2002), allowing readers to extrapolate for themselves what sorts of design “Binky” might like, and dislike. Their

contribution creates a complicated ethical position, but has the advantage that, because it is essentially fictional, it can be pejorative without compromising privacy.

The Drift Table documentary is apparently less provocative, providing a straightforward account of S's experience of the piece. Nonetheless, the process of film-making led S to articulate an authoritative, definitive account of his experience. Moreover, the medium of video further allows viewers to witness the situation in which that account was created: they can see the table in situ, watch S use it, and hear him tell his own story. They can also witness unarticulated details of his activity, such as his use of surprising weights, which revealed his unusual expertise with the piece. On top of this, the documentary juxtaposes the presenter's views with S's, and implicitly alludes to the film-maker's more sceptical - but inhibited - position. In sum, this seemingly simple video betrays several, partially overlapping accounts.

The Key Table documentary, similarly, allows viewers to observe the film-makers prompting the household to develop an articulated, consensual interpretation of the Key Table. The documentary traces how this interpretation becomes increasingly embellished and performed over time, ending with an extraordinary scene in which H dramatises an extreme version of her relationship with the piece - after having articulated calmly how she appropriated the Key Table "as the artist" earlier in the video. In encouraging and participating in the creation of an exaggerated version of H's role, the film-makers reflect their interpretation of the prototype and process, as well as H's. They collude with H to portray her as an extreme user of the table, with views as clearly articulated as S's, but as fictional as Binky's.

It is tempting to conclude that each form of commentary - storytelling and documentary - works in characteristic ways to raise characteristic issues. Generalisation, however, seems premature. The two documentaries are quite different in style, tone and focus, despite having been made by the same team. These differences may reflect something about the film-makers themselves, but they may also have arisen from the situations they confronted: the specific prototype, the volunteers, and the ensuing relationships. Clearly, the results produced by these commentators were deeply situated, and, in general, it may not be possible to predict accurately the nature of such contributions. However, the ability to predict how a particular commentator, or even type of commentator, will respond would seem to undermine the appeal of the approach. One of the virtues of using cultural commentators is that it enables one to escape the constraints of working wholly within a native community of practice. Opening the process to commentators from outside, rather than sticking to known dimensions and familiar issues, can bring a valuable element to the design process - surprise.

Polyphonic Assessment

Each of the three forms of cultural commentary we gathered is interesting in its own right, and each contributed to the design process. We do not consider any of the commentaries to have provided a privileged or authoritative account, however. Binky's character profile neither finalised our impressions of the volunteer, nor determined

how we interpreted other returns. The Drift Table video presented what appeared to be a definitive account from S, but this was complemented and extended by the ethnographic observations and interviews, as well as the design team's more informal ones. The Key Table documentary was the primary record of how H and her household related to the piece, but it too was supplemented by the design team's informal contact with the household, and in any case, the exaggerated form it took undermined its own authority. More generally, the appeal of the accounts produced by popularisers and storytellers is that they variously focus, dramatise and extrapolate materials received from volunteers. This makes them useful as resources for interpretation, but limits their authority as interpretations themselves.

The commentaries we collected were generally most interesting when set alongside other interpretations and information. For instance, the ethnographic observations of the Drift Table in use were based on much longer periods of contact with S's household than the documentary video, and this is reflected not only in the greater detail that emerged, but their ability to capture a sense of the emergent lived experience with the piece - the ways that S interwove its use into his daily working life, for instance, or the varying degrees of appreciation (or lack thereof) that emerged in different members of the household. Nonetheless, the video complements these observations, both by allowing the audience to witness the table in S's household and hear what he has to say about it, and by motivating him to express his subjective experience clearly and definitively. In a sense, the video serves as a spotlight on the ethnographic observations, highlighting certain aspects through recapitulation and others through contrast.

Similarly, the character profile of Binky generated by the screenwriters complements, but does not replace, the original Probe returns. The returns themselves maintain an authenticity and texture that is lost in the profile. Moreover, while the profile is useful because it integrates and extrapolates the materials to produce a narrative, the Probe returns are equally useful precisely *because* they are fragmentary and ambiguous, explicitly requiring an act (or repeated acts) of interpretation on the part of researchers. Each different interpretation of the materials provides a new perspective with its own strengths and weaknesses, and none clearly subsumes the others.

From this perspective, there are two basic approaches for managing multiple sources of interpretation, whether these are gained from cultural commentators or from more traditional sources, such as ethnographic observations or even experimental hypothesis-testing. The first is to use them as resources to be combined, in order to create a unified assessment. This implies looking for convergences and overlaps among the interpretations as a sign of reliability and replicability, and, when contradictions occur, either sidestepping the issue or finding some justification for privileging one source over another. The end result is a cohesive account crafted from multiple sources of information (potentially interpretations themselves), which can be presented as authoritative and comprehensive.

An alternative approach is to use multiple accounts as resources for a *polyphonic assessment* of design, in which, rather than seeking to present a resolved,

definitive assessment of design, the researcher orchestrates a multi-voiced, divergent set of views for audiences to consider. I choose the term “polyphonic” here to echo Bakhtin’s characterisation of polyphonic novels, as discussed by Wright and McCarthy, because of the parallels between Bakhtin’s approach to fiction and the kind of assessment I am advocating. Consider Wright and McCarthy’s (2004, p. 9) description of the polyphonic novel:

...dialogues are central to the polyphonic novel. We do not learn of the fate of characters, their personality traits, their intentions, or their values by listening to the author talking about them. Rather, they are revealed to us through the dialogue between the characters themselves.... Dialogues in a polyphonic novel have, not surprisingly, a dialogical sense of truth. That is, we see the world of the novel from the multiple perspectives of different characters with different values systems, and there is seldom one best way forward. Rather it is the relations between these values systems that drive the novel on.

Similarly, juxtaposing multiple assessments allows them to be considered on their own terms, rather than through the researcher’s interpretation. Agreements and contradictions may be highlighted, and so may implicit assumptions and values. In undermining the expectation of a single, decisive evaluative judgement, such an approach may elicit a richer understanding of people’s experience with design prototypes.

Polyphonic assessments are appealing as a way to address the many facets of experience that are important in designing technology for everyday life, from usability and utility to aesthetics, emotion, genre, social fit and cultural implications. Allowing accounts to coexist means that *all* the facets under scrutiny can be explored sensitively and sympathetically, using the languages developed by the communities of practice most accustomed to discussing them. Moreover, multiple accounts can help to dissolve situations that appear problematic for more unitary approaches to design. For instance, the Key Table was designed to highlight people’s inadvertent emotional expression, yet H’s household interpreted it as a kind of mixed-reality, autonomic “pet”. Is the design a success or failure? If the designers’ job is to communicate a single, privileged interpretation to users, the Key Table clearly failed; but if the Key Table is seen from a ‘ludic’ perspective (which seeks to encourage play), the piece was extremely successful. Resolving these two positions, as a unitary assessment would demand, is problematic. Allowing them to coexist, however, as a polyphonic assessment does, enables each one to inform an audience’s understanding of the project.

Taking a polyphonic approach to assessment does not imply embracing a relativistic view that all assessments are equal. As we have seen, the ethnographic observations of the Drift Table were based on far greater access to the household’s experience than the documentary film, and this gives them greater authority as a source of information about the household’s lived experience with the piece. For multiple

accounts to be used responsibly, it is important that such factors are made explicit: the provenance of commentaries must be clear. More generally, pursuing polyphonic assessments does not imply that researchers can or should abdicate all responsibility for interpretation. Through their choice of commentators, the ways they contextualise and edit the accounts, and the ways they emphasise or explain discrepancies, researchers have ample opportunity to communicate their own views. At worst, the process could be used to present a convergent assessment in the guise of a polyphonic one. At best, though, the process can provide a multi-faceted, multi-voiced view of the experiences engendered by designs, in which the researcher's interpretation is only one of many.

Polyphonic assessments deliberately cast their audiences as active participants in the interpretative process. Rather than acquiescing to a unitary, convergent narrative, the audience has to navigate a complex, multi-layered story. Of course, researchers seldom do consume colleagues' claims passively. They routinely question all aspects of research: methods, generalisations, results. A polyphonic approach recognises this, and offers a wide range of resources for assessment – and these can include accounts not usually considered authoritative within the research community, since what is being claimed is not authority but a more narrowly contextualized validity. After all, cultural commentators and polyphonic assessments are not a means to “sell” a particular evaluative stance towards a particular design, but to achieve what Wright and McCarthy (2005) call “a way of creating scenes for intense dialogues with unforeseen outcomes”.

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