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Evaluating the Double-Deck Desk

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Abstract

The Double Deck Desk (Dddesk) was a two-storied work station with accompanying software that we installed in the foyer of a large office building over a two-week period. Evolved from several iterations of speculative design proposals, it addressed the need for contemplation within the workplace by literally lifting people from everyday commotion and by providing software that encouraged people to reflect on their activities and aspirations. Assessing the contribution of such a project is not simple. We suggest that traditional HCI criteria are inappropriate, and instead the Dddesk and the proposals that preceded it should be seen as embodied narratives. They serve as 'projective objects,' eliciting stories from people that highlight issues relevant for design.

1 Introduction

One Monday morning, workers at Hewlett Packard's Bristol Research Laboratory arrived to find a Double Deck Desk (Dddesk) prototype in the atrium of their building (Figure 1). The Dddesk was a standard-sized office desk at ground level with a raised platform and integrated table about 3.5 meters above the ground. Prototype 'Reflection Engine' software projected onto the lower and upper desks allowed people to create 'mindmaps' – words arranged to show patterns and relations among concepts – across the two desks using keywords automatically culled from their existing files. The intention was to combine physical height with software functionality to encourage people to reflect on the fundamental trends and issues emerging from their work.

In this paper, we discuss the Dddesk as an example of how narrative objects can be used in design. Elements of the Dddesk are relevant to traditional HCI. But the primary intention was to embody stories about possible ways of working, rather than finding practical solutions to recognisable problems. This raises questions about the evaluation of such systems that we explore here.

Figure 1: The Double Deck Desk.

2   The Dddesk

The Double Deck Desk was developed as part of the Knowledge Workplace project undertaken by the Appliance Design Studio (ADS), a virtual organisation led by Appliance Studio Ltd. that included ourselves and researchers from IDEO Product Design and Hewlett Packard [see 6, 8]. The aim of the Knowledge Workplace project was to develop digital products and services that would exploit new technologies to support emerging forms of knowledge work. Our group worked relatively independently of the others to develop conceptual designs that could inform more commercial development.

The Dddesk comprised a combination of furniture design with software and interface systems. Several factors constrained the final form: We wanted to maintain the precarious appearance of the original sketches, for instance, so that the benefits of height would be balanced by a sense of risk or even fear. We wanted to combine two desks, but without implying that two people would work at them. Finally, we wanted to maintain a small footprint for the Dddesk to avoid expanding the workspace horizontally as well as vertically.

The prototype was constructed of steel tubing connected using a system of commercial fastenings similar to those used for railings and stage construction. The four surfaces were made of 3/4" birch veneer plywood, and friction pads applied to the landing and upper deck. Two data projectors were mounted near the upper deck, one facing downwards to project on the lower desktop, and one upwards to back-project on a translucent touchscreen inlaid in the upper desk. A computer and printer were mounted under the lower desk.

2.1   Using the Dddesk

The Dddesk was equipped with hardware and software specialised for running Reflection Engine software. The process was initiated by placing a transparent plastic 'Data Puck' in a 'Data Dish' on the front left of the lower desk. Keywords were extracted from text files by comparing word frequencies from individual files with those of a large baseline corpus to find words that were unusually common in the target files [c.f. 3]. Ten keywords for each of six files were projected in randomly organised groups on the lower desk's wooden surface. People could organise keywords into clusters using a cordless mouse as the beginning of creating mindmaps for their work. The lower desk was constrained to simple grouping, so words could not be edited. They could, however, be deleted by 'dropping' them into a glowing red plastic Disposal Chute set into the desk. Completed word clusters could also be sent to the upper desk for further work by dropping them on a Data Transfer Point in the shape of a truncated cone that glowed green. These simple devices, along with the projection of words directly onto the desk itself, removed the experience of using the Dddesk from typical screen-based encounters.

2.2   The Dddesk In Situ

We installed the completed Dddesk in Hewlett Packard Laboratories' atrium, adjacent to a major stairwell near the front entrance where it was difficult for any of the hundreds of employees to miss. Email had been sent to all Lab staff about the project, though passersby still seemed puzzled about the mysterious arrival of this strange piece of furniture. Nearby, however, they could find a leaflet explaining the intention of the project and providing detailed instructions for the Dddesk's use. This was presented as a 'Quick Start Guide' to encourage people to imagine what it would be like to own such a product rather than seeing the Dddesk as a prototype to be evaluated. Interested passersby were given a tour of the Dddesk and shown how it worked, and a local employee was available to guide people in its use over the two-week period.

We used several methods to encourage feedback about the Dddesk. We set up a contest via email for short stories about the Dddesk, asking participants to imagine it in their own lives or in some fictional world. A sketchpad was left with the Dddesk so that people could write comments. Finally, we chatted with viewers as they tried out the Dddesk or merely passed by to take a look.

3   Evaluating the Dddesk

The Dddesk's deployment within Hewlett Packard was more similar to a performance or exhibition than a traditional evaluation. How can we assess the Dddesk in these circumstances?

3.1   Human Computer Interaction

From a traditional perspective on Human-Computer Interaction, the project seems confusing, almost absurd. The most visible aspect of the work, the two-story desk itself, was heavy and very tall, raising health and safety issues that Hewlett Packard's safety officers impressed upon us strenuously. But more fundamentally, the Dddesk as a piece of furniture is simply outside the province of HCI, difficult to assess using the perspectives and expertise the field represents.

The Reflection Engine software, in contrast, is more topical for HCI. As a new application for previous research on keyword extraction and information visualisation [e.g., 4], it suggests a 'solution' to the 'problem' that there are few technological tools for reflection [c.f. 9]. Similarly, the active object interaction techniques we used, such as the Data Puck, Disposal Chute, and TransferPoint, are also recognisable within HCI [e.g. 7]. But we didn't run usability tests with clearcut tasks and measurements. Nor did we embed the Dddesk in anybody's working life to observe usage and changes in work patterns over time.

So from a traditional HCI view, the Reflection Engine and interface may be interesting but they are untested, and the Dddesk itself is apparently irrelevant. But clearly this isn't the whole story. The Reflection Engine, the Data Transfer Point, and the Disposal Chute might all be evaluated in traditional ways, but to do so would be to miss the forest for the trees. For the Dddesk wasn't a prototype for development so much as an evocative object meant to elicit narratives about technology and work. This requires different ways of thinking about its successes and failures.

3.2   Value Fictions

One way to consider the Dddesk is as a 'value fiction.' This term comes from Dunne's work on strategies for using design as a form of research [4]. According to Dunne, designers can not only investigate the material aesthetics of technologies, but also their conceptual aesthetics, and particularly the sociocultural roles they play in our lives. Value fictions are one strategy for doing this. The opposite of science fiction, which tends to explore impossible technologies in recognisable cultures, value fictions explore possible technologies used to serve unusual cultures [e.g. 5]. Their contribution is in questioning prevailing attitudes about technology's role and in suggesting new issues and possibilities.

Value fictions take the form of products or systems presented through descriptions, proposals, scenarios, or functioning prototypes. Making use of the fact that all artefacts can be seen as embodying their designers' implicit or explicit theories [2], artefacts designed as value fictions embody a narrative of use. They imply a story about who might use them, why, and how.

Taken as a value fiction, the Dddesk should be appraised as a narrative rather than as a tool. The Dddesk's function, from this perspective, is to tell a story about how technologies might serve

psychological, social, and cultural values in ways outside our current imagination. Its functional and interactive features are important only as they are necessary or useful in telling this story. Like props in a drama, they should propel the story, or at least not disrupt it, but they do not need to function fully to serve the plot. Instead, the Dddesk's success as a value fiction depends on its ability to communicate and provoke new understandings of work.

3.3 The Dddesk as Story-teller

The purpose of the Dddesk was to raise issues about the nature of modern knowledge work, and in particular to suggest that achieving contemplation is a value to be supported. Once the Dddesk had been explained to people, they engaged with this story through their interactions with the software and the Dddesk itself. Indeed, sitting on the upper desk did seem to evoke feelings of peace and contemplation, removed from activities below. But was not spontaneously perceived this way by uninformed observers. For while The Dddesk was successful in prompting viewers' narrative interpretations, the stories they told were not what we had expected.

Divergent interpretations of the Dddesk emerged from the very beginning of its development. As we constructed it within our studio space, for instance, some of our colleagues complained that it suggested surveillance over our closely packed working environment. Within Hewlett Packard the Dddesk's appearance was initially greeted with bemused speculations about vertical office-sharing, prompted, we learned, by its coincidence with a programme to reduce office space. Finally, our requests for stories about the desk prompted accounts of its being used in a child's room by parent below and child above, or as a setting in which defence lawyers could practice dominating the opposition. As far as we could tell, nobody spontaneously interpreted the Dddesk according to our original intentions of providing an opportunity for contemplation and reflection. While this may have been influenced by the materials we used in its construction (which evoked scaffolding or playground equipment rather than office equipment), the fact remains that the story it had to tell was not obvious to everyone.

3.4 The Dddesk as Projective Object

Despite the Dddesk's failure to communicate unequivocally, it remained a powerfully suggestive object. We realised that its success lay in its ability to provoke people to tell stories about it that revealed their desires and fears about the workplace. From this point of view, the Dddesk can be seen as a 'projective object,' similar to the projective tests used by psychoanalysists. Just as projective tests employ ambiguous imagery to elicit people's interpretations and thus reveal their preoccupations, so the Dddesk impelled but did not constrain interpretation. It served to raise issues regarding work without resolving them. With people reading it in terms of surveillance, space efficiency, play, or power, as well as our suggested interpretation of contemplation, the Dddesk demanded explanation but did not provide it.

It was the Dddesk's very unclarity as a narrative object that made it effective in eliciting a wide range of interpretations. In this it resembles art pieces which invite explanation only to thwart it. Examples range from the Surrealists to contemporary artists who offer suggestive images from underspecified events [e.g. 10, 11]. In the case of the Dddesk, its power to impel numerous narratives seems to come from the juxtaposition of a normal desk with the use of height, a psychologically powerful dimension with many implications.

Our growing belief that the Dddesk worked as a projective object was reinforced when the New York Museum of Modern Art not only requested earlier renderings to use in its catalogue for an exhibition on future workspaces [1], but also used a modified version for the catalogue's cover and

private view invitations. What might seem a mistake from the perspective of HCI or even Value Fictions makes sense if the Dddesk is viewed as a projective object: the image raises many issues relevant for an exhibition about new forms of work, without committing the institution to a particular stance on any of them. Thus the Dddesk not only served as a tool for research, but for public communication as well.

4   Conclusion

The Dddesk and the proposals that preceded it are examples of how design can rely on a process emphasising narrative and dramatic conflict rather than more traditional problem-solving and empirical evaluation. Our purpose has not been to establish the Dddesk as a successful design, as we feel it succceeded in some ways but failed in others. But we do believe it to have opened new prospects for narrative in design. The Dddesk itself did not tell its own story clearly, but what it did do may be more powerful: it served as a research tool that evoked stories from viewers, stories revealing their own beliefs and fears about the workplace.

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