

# Grounding Design in Values: A Position Paper for the CHI 2002 Workshop on New Technologies for Families

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## INTRODUCTION

With the exception of security, automation, communication, and entertainment applications, the potential uses of computing technology in the home are little understood. Initial efforts in designing home technologies point to the difficulty of designing for environments that are not workplaces and represent substantial needs that fall between productivity and entertainment [5, 6, 7]. Recent research indicates that although families adopt technologies to save them money or to make daily chores more efficient, the values of home life are not driven by “maintenance” activities but reflect experiences of family identity and togetherness [Philips Research, technical presentation on current research].

Our research keys into two points here:

- The design space for the home is not well-explored.
- The key to understanding the unique breadth of the domestic design space may be the unique breadth of values that drive what is meaningful in domestic environments.

We are performing a series of design ‘experiments’ in an attempt to understand the utility of values in exploring and challenging the boundaries of the domestic design space.

## VAL•UES (‘VAL-YÜZ): N. ‘SEMANTIC CAN OF WORMS’

By values, we refer to personal values, not the moral values of human welfare and justice addressed in Friedman’s Value-Sensitive Design [1, 2]. These personal values are

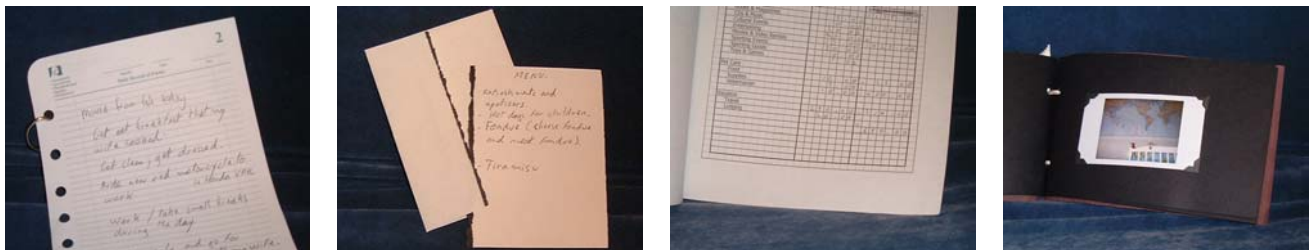
more similar to what Gaver and Martin call *alternative* values, meaning that they are beyond “domestic work” and “time off” [5]. In contrast to the work of Gaver and Martin and the work of Shneiderman, who advocates making value-based goals, as a field, for system design [9], we emphasize capturing the values of users and letting their values, rather than designers’ socially-conscientious priorities or eye for provocation, seed the design process.

In this paper, when we refer to values, we are referring to Rokeach’s articulation of the sociological construct: “A value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially more preferable to an opposite or converse mode of conduct or end-state of existence” [8].

## GROUNDING DESIGN IN VALUES

We have spent considerable time trying to understand holistically the relationships between values and the domestic design space. We have dovetailed numerous iterations of a data collection technique, our values-centric version of Cultural Probes [4], with variations in design processes that foreground values.

In our value probes, as we call them, each activity was designed to tap into a different way that values might manifest themselves in a family’s daily life, either through observable behaviors (e.g. how people spend their time, how they use their space, or how they portray themselves socially) or through how people think about their values. Each probe activity was also designed to accommodate the



**Figure 1:** Probe Artifacts Returned by a Family (from left to right): the utopian *day planner* page that begins with being ‘anywhere but here,’ the menu from the *party invitation* featuring international cuisine, the *budget* with a relatively large amount allocated to travel, and a photo from the *scrapbook* highlighting a world map over the infant’s crib.

Activity	Manifestation	Expression
Take turns posing Joe Bender™ (a bendable wire figurine) as yourself. Take a photo and add it to the family picture frame.	Through how people portray themselves individually.	Intrapersonal, Bodily-Kinesthetic, & Spatial.
Recall your schedule today. Generate a day planner page to detail everything you did today. Generate another day planner page to detail what you would have done if today had been an ideal day.	Through how people (would like to) spend their time.	Logical/Mathematical & Linguistic.
Play a game of Milestones Memory ... a card game that involves selecting five goals you'd like to achieve during your lifetime.	Through long-term goals.	Interpersonal & Existentialist.
Draw a map of your house. Label the rooms. Annotate a house floor plan with stickers (e.g. best hiding place, best place to find help, scariest place, etc....), affixing them to the map wherever they should go.	Through how people use their space.	Spatial & Bodily-Kinesthetic.
Write a letter for your children to read twenty years from now. Reflect, for your children, on the lessons you would have liked for them to have learned.	Through how people think about what is important.	Existentialist & Linguistic.
Estimate your monthly budget.	Through how people spend their money.	Logical/Mathematical.
Create a scrapbook that captures what you value about your home.	Through the things with which people surround themselves.	Spatial, Bodily-Kinesthetic, & Linguistic.
Compose your own recipe for a successful life.	Through how people think about what is important.	Existentialist & Linguistic.
Design an invitation for a dinner party.	Through how people portray themselves socially.	Interpersonal & Linguistic.

**Figure 2:** Value Probes

varying ways family members might be most comfortable communicating their values. To account for this, we looked to Gardner's Multiple Intelligences (e.g. logical-mathematical, linguistic, kinesthetic, etc.) and created activities that enabled people to communicate their values mathematically, linguistically, kinesthetically, etc... [3]. The current version of the value probes is described in Figure 2.

One of the design teams we worked with engaged in a two hour, charrette-style design process. They interacted with the probe artifacts, including among others a scrapbook photograph in which a world map appeared over an infant's crib, a budget item that allocated a relatively large amount of money toward travel, a party menu that featured international cuisine, and an agenda item for an ideal day that began with leaving the city in which the family currently lives [Figure 1]. The design team inferred from the data in these artifacts that the family valued global awareness. This team's final design idea was a cultural proxy — a media space for immersion in other cultures. The responsiveness of this team to the values of their users is the type of design we consider may play a significant role in stretching the boundaries of the domestic design space.

A holistic approach to this research has yielded promising anecdotal evidence and has given us a firm sense of the more focused research questions that need to be addressed.

To address these questions, we turn to a series of more focused design 'experiments.'

### **Are Values a Useful Methodological Entré Into the Domestic Design Space?**

We begin our design experiments by asking whether values are a useful methodological entré into the domestic design space — whether by casting a wide net into the sea of values, we might expose a a broader and perhaps less intuitive catch of design ideas for families and the home environment.

We are hoping to understand whether values actually are a useful catalyst for design, whether there are values that are more or less easy to support through design, and at what level of abstraction values may be most useful to designers.

To this end, we are conducting a design survey using the values taken from the Rokeach Values Survey [8]. The Rokeach Values Survey's taxonomy includes two types of values — eighteen instrumental values or desired modes of conduct (e.g. ambitious, broadminded, obedient) and eighteen terminal values or desired end-states (e.g. a world at peace, family security, social recognition). Designers are given a randomly ordered list of the Rokeach values and are asked to recall or invent a product that satisfies each of the values.

## How Are Values Manifested in Everyday Life?

In addition to understanding the relationship between values, products, and design, we are interested in the relationship between values and families. How do a family's values manifest themselves in everyday life?

We hope to understand which of the posited manifestations of values (e.g. how people spend their time, how they use their space, or how they portray themselves socially) actually manifests values and which values may not be tapped into by any of the activities. We also need to understand whether the design of the value probes, themselves, inserts a level of bias into the capture and inference of values and, if so, we need to identify what those biases are.

Our second design experiment uses the artifacts created by the families along with a traditional design practice of brainstorming with post-it notes. We give a team of designers the probe artifacts and a workspace on which labels of all thirty-six of Rokeach's values are independently anchored along with a handful of customizable, blank labels (for value inferences that may not be supported by Rokeach's taxonomy). Designers interact with the probe artifacts and brainstorm things they infer about the family. Each brainstormed idea is written on a separate post-it note (different colors of post-it notes are used for each artifact) and affixed to the workspace nearest the value that it most closely supports.

In addition to asking the families to complete our collection of probe activities, we also ask them to fill out the Rokeach Values Survey. Following the design 'experiment,' we ask the designers to complete the survey, demonstrating their understanding of the family's values.

If the value probes are found to be a viable method for capturing and inferencing values, then these can certainly be offered as a lightweight values-based tool for designers. At a higher level, though, this design experiment will enable us to understand how values are manifested in everyday life so

we can begin to look into providing a framework for designers who may wish to use other design methods in conjunction with a design space that foregrounds values.

## REFERENCES

1. Friedman, B. (1996, November + December). Value-sensitive design. *Interactions: New Visions of Human-Computer Interaction*, 3:6, 17-23.
2. Friedman, B. (Ed.) (1997). *Human values and the design of computer technology*. Stanford: CSLI Publications.
3. Gardner, H.E. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
4. Gaver, B., Dunne, T. & Pacenti, E. (1999, January + February). Cultural probes. *Interactions: New Visions of Human-Computer Interaction*, 6:1, 21-29.
5. Gaver, B. & Martin, H. (2000). Alternatives: Exploring information appliances through conceptual design proposals. In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (pp. 209-216). New York: ACM Press.
6. Hindus, D., Mainwaring, S., Hagstrom, A. E., Leduc, N. & Bayley, O. (2001). Casablanca: Designing social communication devices for the home. In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (pp. 325-332). New York: ACM Press.
7. Mynatt, E. D., Rowan, J., Jacobs, A. & Craighill, S. (2001). Digital family portraits: Supporting peace of mind for extended family members. In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (pp. 333-340). New York: ACM Press.
8. Rokeach, M. (1973). *The nature of human values*. New York: Free Press.
9. Shneiderman, B. (1990). Human values and the future of technology: A declaration of empowerment. Keynote address for the ACM Conference on Computers and the Quality of Life.