Beyond "Puree": Reinventing the Blender

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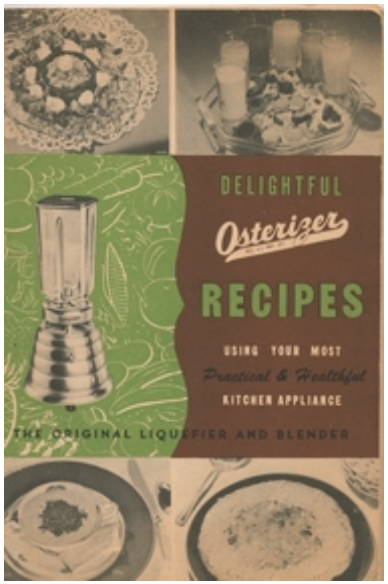
Abstract
From its invention in the 1920s to today, the humble blender has been a fixture in American homes. However, since its heyday in the 40s and 50s, the blender has descended in status from important food preparation tool to seldom used drink mixer. In February 2000, Sunbeam challenged Design Continuum to reinvigorate the Oster Blender.

Continuumís process for design strategy, which serves as a roadmap and conceptual platform for product development, includes extensive research, analysis, and envisioning. Once a strategy is developed, designers bring it to life by creating products that deliver on the strategic promise.

Multidisciplinary teams visited homes across the country, speaking with and observing blender users to understand what they do and why. Analysis of these observations formed the basis for the development of a new model for blender use, delivering benefits that encourage consumers to rediscover the blender as a useful food preparation instrument.

Keywords
Business Strategy, Design Strategy, Experience Design, Consumer Appliance, Kitchen, Food Preparation, Interface Design, Industrial Design, Market Research

Industry/category
Consumer, appliance, kitchen



Project statement

Ever since the first model hit the shelves in 1922, the blender has become a ubiquitous, iconic presence in the American kitchen. Despite its popularity, the product category has been historically slow to innovate. The perceived functionality of the blender was further eroded by the introduction of the food processor in 1973. Since then, many design strategies used by blender manufacturers have focused on either incremental improvement (e.g., more speeds) or value engineering—both of which have contributed toward increasing categorization of the blender as a commodity product, with no real difference between models. With functional innovation occurring in other categories, the blender has been reduced to specialty drink-making status. Even though blenders remain a central food preparation tool in Latin American countries, blender use for food preparation worldwide has been on the decline, especially with the proliferation of pre-processed foods in the US.

In 2000, Sunbeam, which owns the Oster name, presented Design Continuum with a set of challenges:

- To revolutionize the blender category by delivering unparalleled blending performance and versatility through innovative design.
- To re-establish Osterizer blenders as the category leader via innovation and performance.
- To set a new standard within the blender category regarding expectations of performance.

Project participants

The project team consisted of representatives from several disciplines in the product design field.

At the start of the project, members of Continuum's Design Strategy Group, skilled in seeking out market opportunities, conducted the research effort and analyzed the findings, ultimately pointing the product in a specific direction. Although strategists led the research teams, members of other disciplines and client representatives took active roles in performing and analyzing research.

With strategies for interaction, interface, and physical attributes identified, specialized teams led specific aspects of the product-development effort. Industrial designers focused on the physical aspects of the product, including aesthetics, cleaning, assembly, and disassembly. Interface designers worked to refine the control set. Engineers oversaw the mechanical and electrical issues with the device. Constant communication across the disciplines and with the client ensured a cohesive result.

Project dates and duration

The initial research studies began in February of 2000. The research was quite extensive, utilizing three teams whose members had significantly diverse backgrounds. The project continued with development in the design, mechanical, electrical, and interface areas growing out of the research findings. These teams comprised both Sunbeam and Continuum members.

The final design deliverable to Sunbeam was reached almost a year later and included a form design database, full-size models, and two refined directions for the interface designs.

The first models of the Oster In2itive Blender were introduced in 2002.

Process

Continuum's philosophy in product development is to step back and examine the reasons why a product exists, why it has evolved the way it has, and what core problems it is meant to solve. With this understanding, a strategy for using design to better solve problems is developed. Instead of simply designing a prettier blender, or a more powerful blender, Continuum's team sought to discover the underlying reasons consumers use—or don't use—their blenders.

As opposed to other sorts of business strategies (e.g., a marketing or manufacturing strategy), a "Design Strategy" is a map for using design to meet a client's business needs. The process of developing the design strategy reduces to simple steps: learning, analysis, and direction.

Learning is the process of aligning the team with the problem, including:

- The client's business goals
- The history of the product and category
- The current state of the market
- The concerns of all stakeholders (consumer, retailer, distributor, service center, marketing department, etc.)

Depending on the project, a learning phase can take as little as a few weeks or as much as a year.

For purposes of a process description, *analysis* begins when *learning* is complete; realistically, however, analysis begins as soon as the team begins to dig into a problem. Various frameworks and segmentations are developed as the team sorts information; ultimately, these tools help clarify the issues and even uncover new ones.

During the *direction* phase, the team generates "blue-sky" solutions that speak directly to the analysis results. These are not designs for the final product, but rather exist as signposts for the design team, narrowing the possible universe of design solutions to a smaller target zone. Sometimes this target area overlaps with the client's view of their market, but sometimes, as in this case, these efforts lead the team to a new area of the design universe that encompasses innovative new solutions. The outputs of a direction phase are tangible representations of the *design strategy*.

With the design strategy in place, the program becomes a more traditional product development program, and the team follows this path:

- Envision and define individual products
- Create, evaluate, and mature concepts
- Refine, deliver, and support production

Product *definition* begins with an exploration of physical architecture, to understand the physical components of the system and how they interact with each other and how users interact with them. Simple blocks cut from foam help designers play-act various scenarios. Very radical solutions may require simple user testing to understand design implications.

With an understanding of the product's physical architecture, the team fleshes out *concepts* that add detail to the structure. The industrial designers develop detailed CAD models of the system, the interface team builds interactive prototypes, and the electrical and mechanical engineering teams build proof-of-concept models to aid the transition from idea to reality.

Finally, the product is *refined*, with mechanical engineers developing the final CAD models, which will be used to create production tooling at the manufacturer. The team works closely with the factory, which may or may not be part of the client's organization, to ensure that the deliverables are appropriately detailed and tested to ensure successful manufacture.

Obviously, every project is different, and the process is infinitely moldable to fit the job at hand. Often, the team alters the process on-the-fly to emphasize different aspects as needed.

Armed with this framework, the team set out to build a better blender.

The Project

Sunbeam's research showed that, in the US, consumers were using blenders only to mix drinks. Unlike 30 or 40 years ago, when "blender cookbooks" abounded, today's consumer had lost the connection between the blender and food preparation (in the US, at least—in Latin and South America, where there is less processed food, the blender is a crucial kitchen tool). Theories about this decline centered on the "convenience" factor: the majority of consumers are leaning toward devices and products that make food preparation quicker. Today's home cooks are harried and rushing; the actual process of cooking is less attractive than it once was. And for those who do enjoy the process, the introduction of the food processor in the early '70s stole much of that part of the blender's market.

In addition to this sort of market research, the client also brought a few new technologies, including new motor designs and interface components, to the table. Some of these had been knocking around the company for a while, without a clear picture of how to use them.

Learning

In late March 2000, three multidisciplinary teams, led by Continuum but including representatives of the client organization, were dispatched to 20 kitchens in Miami, Boston, Chicago, Evansville, and Denver. The interviewees were chosen to represent a wide slice of America with varied age, gender, income, and location. There was a specific focus on the Latin American users living in the United States because they were seen as "lead" users with a broader set of blending habits. The teams used an extensive protocol to interview the blender users about their kitchen, appliances, cooking habits, and blender usage, and observed user behavior during the blending of a favorite recipe as well as the blending of a supplied recipe.

Teams were armed with a lengthy interview protocol, in which they took notes about the conversations (see Figure 1, following References). Additionally, the sessions were captured on videotape and still photography. The teams debriefed after each interview to sum up their findings in written field-guides. The raw data generated from this research amounted to about

25 hours of videotape, hundreds of still images, hundreds of pages of transcripts, and about 50 pages of notes and sketches.

Additionally, while in the five cities, the teams visited different stores that sold blenders at various price points in order to get a sense of the channel and marketing. During much of the ‘90s, a free-spending and fully employed consumer culture buoyed the margins of the likes of Waring, Kitchen Aid, and Cuisinart in the style-driven high end of the category; some models from these manufacturers retailed for as much as $199. At the low end, Hamilton Beach offered a glut of products for under $30. However, from user interviews, the team learned that people do not see value in spending as much on a blender as they do on other small appliances; they are unable to identify differences in performance across price points.

This represented an opportunity to escape the “commodity” rut in which the Oster line found itself. With no clear distinction in the low-end and mid-range market, the designers realized that a demonstrably different product—different in a real, useful way—could capture mind and market share.

Analysis and Opportunities

The team recognized that one overarching goal of the project was to increase blender use in general—to create a product that people would buy and use often. To do that, we first had to understand what “blender use” meant to consumers. Continuum quickly learned that people thought of their blenders solely as drink-makers, but the reasons for this shift away from food-preparation were not clear. Why are people reluctant to consider a blender for food preparation?

To explore these issues, a flowchart was developed [Fig. 2] to document the typical process that a consumer follows, from initial stimulus through post-use cleaning and storage. From this flowchart, the team discerned several areas of opportunity:

- Roadblocks to blender use may be overcome with good physical design
- The food preparation process itself could be improved
- Users could be enticed to use their blenders for a wider variety of tasks—to return to the days of the blender as a food preparation tool

Solutions and Strategies

From a physical-design perspective, several issues presented themselves. The assembly and disassembly process could be improved, removing some of the pain of setting up and cleaning the device. Giving the blender a shorter profile would help it fit under cabinets. And simply making the devices more aesthetically pleasing would allow the consumer to feel better about leaving the product on the counter rather than disassembling and storing it after every use; removing the onerous task of collecting, assembling, and storing the parts. The industrial design team sketched possibilities and made foam models of leading candidates.

One of the biggest opportunities for improving the user’s experience, though, lay in examining and changing the blending process itself.

Research uncovered that users did not have a clear idea of what the controls on the blender actually do. A typical blender may have 10 buttons, with labels like

“chop,” “mix,” “puree,” and “frappé,” and on the face of it, their use is clear: they run the blades. But users were hard-pressed to describe any real difference between the controls. This shouldn’t be surprising, since the controls all do pretty much the same thing: spin the blades at slightly different speeds. Out of 10 buttons, what’s the difference between button five and button six? Why include such a range if the differences between them are meaningless?

Users also expressed frustration with the unpredictable nature of the interface. Buttons labeled “chop” were misleading—if left on too long, their results would be a puree. The interface was causing users to have to think too much about the blender, instead of the food they were making.

Another observation was that the blender use model follows a curious pattern [Fig. 2]. Users begin with a good understanding of the desired final result, a margarita or chunky salsa. After assembling the blender and collecting the ingredients, the following loop occurs:

1. Turn on the blender (picking a button at random).
2. Let it run for a few seconds.
3. Turn off the blender.
4. Look inside to see if the desired consistency has been reached.
5. If not, go back to step 1 (optionally scraping down the sides of the jar first).
6. If we’ve reached (or more likely, gone slightly beyond) the desired result, we’re done.

Typical blender use might put the consumer through several iterations of this loop.

Questioning this model of blender use, the team made a crucial observation: Users know what they want when they start. The team envisioned a magic blender that could simply read the user’s mind and produce the desired result.

Obviously, the mind-reading capabilities of kitchen appliances are limited by technology, but steps could be made in that direction, which formed the basis for the design strategy. By doing away with misleading buttons labeled “chop” and replacing them with results-oriented buttons labeled, for instance, “salsa,” the interface could allow users to describe a texture instead of a blade-speed-of-revolution, leading to a new process of blender use.

The analysis process began with questions like “What does blending mean?” and ended with a new idea for interacting with the blender [Fig. 3].

Defining the Products

With a strategy that included physical improvements and a “results-oriented” interface, Continuum and the client defined specific products to be developed. The low-end version would substitute texture results for blade-speed buttons. At the higher end, Continuum suggested building in what amounts to an old-school blender recipe book. This product would have an LCD screen and provide step-by-step instructions for preparing an assortment of food and drink. The team iterated through many concepts to understand the opportunities [Fig. 4].

To require less involvement in the process of creating the final texture—the necessity of scraping the bowl and choosing different speeds in an attempt to influence the outcome of the process—the team relied on a technology that the client had developed but had not yet placed: a reversing motor.

The reversing blender motor gives the ability to spin the blades forward or backward—interesting because this can give, ostensibly, two different results. Simply slapping yet another control on a traditional blender seemed ill advised—a gearshift lever that would provide twice as many options for spinning the blades would be confusing. However, combining this motor with a new interaction style in the new blender opened up a range of possibilities.

Design Development

With these products defined, the work of designing the physical aspects and refining the interface concept began in earnest. The industrial design team developed the form of the blender for ease of assembly and cleaning, and with a high level of aesthetic awareness, created appliances that the consumer would be proud to have on the counter.

Ultimately, Continuum delivered CAD databases to the client, from which final products were produced.

Oster hired a third-party usability consultant to perform an analysis of the two different interface designs: the button-oriented version and the LCD-based version. Both designs were successful enough to be brought to market at different price points.

Results

Two Oster “In2itive” blender models were released in the spring of 2002, and were well received and reviewed.

The low-end product has a range of texture programs built into it. The “salsa” button, for instance, whirls the blades in the “sharp” direction, pauses for food to fall to the bottom of the jar, and whirls “sharp” again. Then, it spins slower in the blunt direction to mix the ingredients. Now it stops, and the result is a chunky “salsa” texture. The high-end blender takes this further, with built-in recipes that trigger different blade behavior for different steps in the process [Fig. 5]. These designs change the interaction paradigm from “this blender is like a hammer I use to smash tomatoes,” to “this blender is an assistant who cuts up my tomatoes to my specifications.”

The results-oriented interface solutions also neatly solve the problem of enticing users to use their blenders more often. Now, with the promise of desired results and the high-end model’s built-in cookbook, users are encouraged to try new recipes and make foods they had never thought of making with their blenders. Providing suggestions right on the face of the blender keeps the notion of blender versatility front-of-mind.

The products bring consistency to the blending process; the texture-oriented buttons bring the same results every time. Users can follow recipes with predicable results.

Physically, the new blenders are sleek and modern, and the new designs are shorter and more stable. The jar attaches to the base with a wider, easier connection,

and is made of polycarbonate: virtually unbreakable, scratch-resistant, and suitable for use as a serving pitcher. Combining a beautiful counter-friendly aesthetic with a new interaction style, this is a product that asks to be used.

The blenders are sold through an array of retailers, and Oster continues to refine the product, creating different versions for various channels. The product is offered through mass retailers and through other lines, including a partnership with Tupperware. Models in new colors and finishes are planned.

In addition, the "results-oriented" concept serves as a model for future products that may be viewed, not as a tool to be applied, but as a kitchen assistant.

Reviews have been overwhelmingly positive, and in such diverse publications as *U.S. News & World Report*, *Popular Science*, and *Fine Cooking*. *Fine Cooking* declared the In2itive its "Top Pick," which "takes all the guesswork out of blending." Florence Fabricant said in her *New York Times* review, "If I needed a new blender, or was buying one as a gift, this new machine would be my choice."

Food For Thought

This project serves as an excellent reminder that user experience is the sum of many parts:

- **The details of performing a task**. Using a blender is about more than just pressing buttons. Assembling and cleaning the blender have historically been roadblocks to its use, and addressing these details removes strong negative aspects of the system.
- **The emotional aspects of living with the device**. Improving the aesthetics supports the user who is living with the appliance, and encourages them to leave it in plain view, where it serves as a reminder of its existence.
- **The conceptual model, which defines the ways in which users confront products**. Changing the model affects not only user-friendliness of the object itself, but can help the client rethink its business and product lines.

Especially when faced with a "redesign" project like this one, it's very easy to accept particular design elements (like simple motor-control buttons) as key to the definition of the product simply because they've been around for so long. A blender exists to chop, mix, blend, puree, and frappé, but those terms describe the destination, not merely the path to get there.

This project also raises some questions about the notion of "Ubiquitous Computing." Digital cognoscenti hold forth on the coming of the "third wave" of computing, when computers recede into the world around us. Experience designers play with "wearable computers" and "alternative" input devices in an attempt to take computing as we know it today and either disguise it in new clothes, or change it into an as-yet-undefined something else. We don't know what it is, but we'll know it when we see it.

The In2itive blender is proof that "ubiquitous computing" is here now—everywhere. What used to be a simple motor with some speed control switches is now a complex, flexible, computerized control system. What used to be a simple tool for whirling peas has

become a virtual *sous-chef*, through the magic of computing technology.

Conclusion

When faced with redesigning a device with a long history, it's tempting to simply evolve a beloved (or at least, comfortable) user experience, retaining what was instead of inventing what can be. But if you really love the experience, set it free. If it comes back, great; if not (like in our case), maybe it wasn't so great to begin with!

Acknowledgements

Continuum Team:
Allan Cameron – Project Manager, Principal, Industrial Design
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Ann Sullivan – Designer, Industrial Design
Cordy Swope – Principal, Design Strategy Group
Andrea Pogach – Principal, Design Strategy Group
Heather Reavey – Envisioner, Design Strategy Group
Aaron Oppenheimer – Senior User Interface Designer
Stuart Perry – Director of Electrical Engineering

Sunbeam Team:
Michael Morton, Stacie Perko, Augie Picozza, Jerry McColgin

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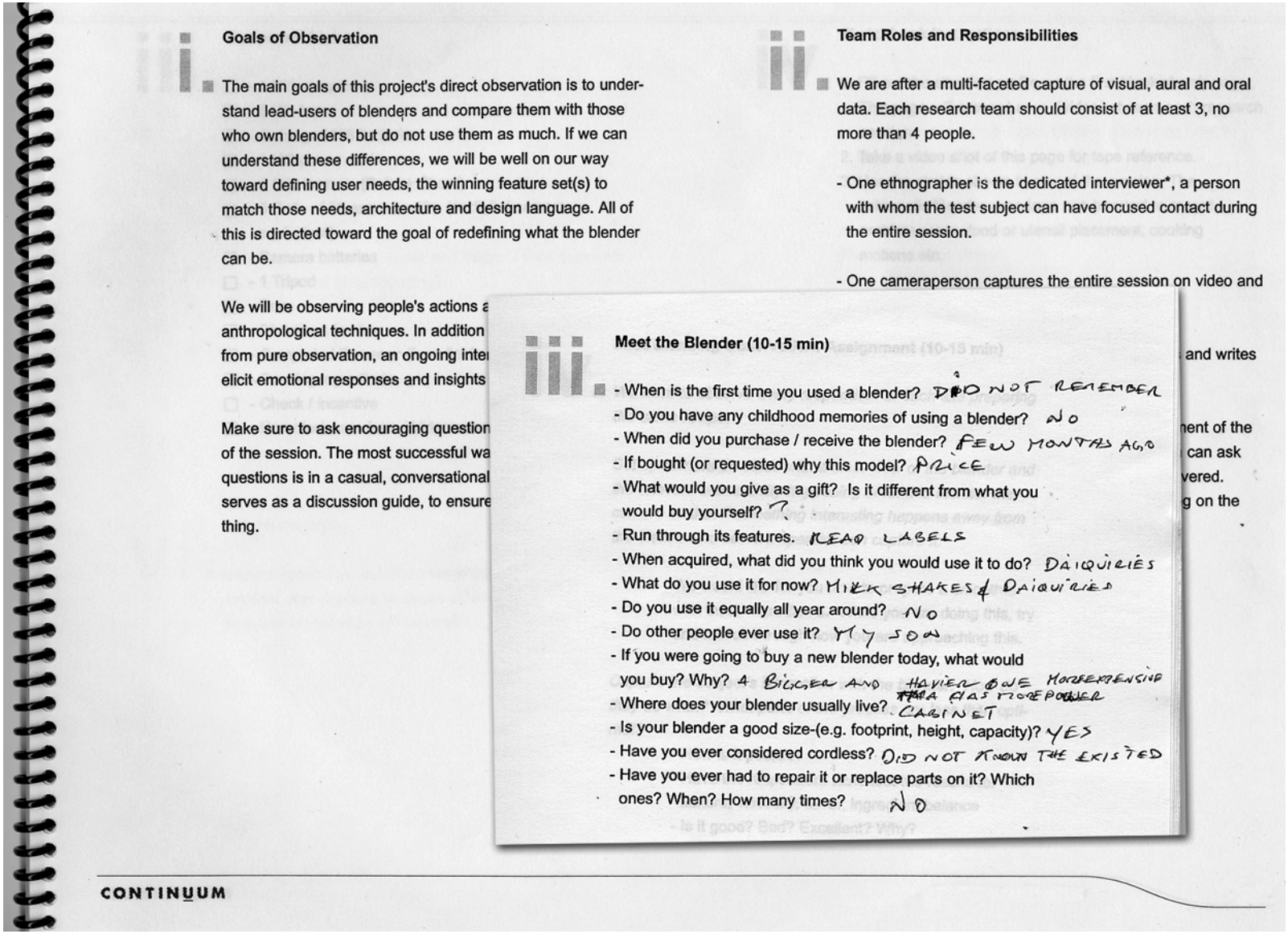

Goals of Observation

The main goals of this project's direct observation is to understand lead-users of blenders and compare them with those who own blenders, but do not use them as much. If we can understand these differences, we will be well on our way toward defining user needs, the winning feature set(s) to match those needs, architecture and design language. All of this is directed toward the goal of redefining what the blender can be.

We will be observing people's actions a
anthropological techniques. In addition
from pure observation, an ongoing inte
elicit emotional responses and insights

Make sure to ask encouraging question
of the session. The most successful wa
questions is in a casual, conversational
serves as a discussion guide, to ensure
thing.

Team Roles and Responsibilities

We are after a multi-faceted capture of visual, aural and oral data. Each research team should consist of at least 3, no more than 4 people.

- One ethnographer is the dedicated interviewer*, a person with whom the test subject can have focused contact during the entire session.

- One cameraperson captures the entire session on video and

and writes

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Meet the Blender (10-15 min)

- When is the first time you used a blender? DID NOT REMEMBER
- Do you have any childhood memories of using a blender? NO
- When did you purchase / receive the blender? FEW MONTHS AGO
- If bought (or requested) why this model? PRICE
- What would you give as a gift? Is it different from what you would buy yourself? ?
- Run through its features. READ LABELS
- When acquired, what did you think you would use it to do? DAIQUIRIES
- What do you use it for now? MILK SHAKES & DAIQUIRIES
- Do you use it equally all year around? NO
- Do other people ever use it? MY SON
- If you were going to buy a new blender today, what would you buy? Why? A BIGGER AND HEAVIER ONE MOREEXPENSIVE THAT HAS MORE POWER
- Where does your blender usually live? CABINET
- Is your blender a good size-(e.g. footprint, height, capacity)? YES
- Have you ever considered cordless? DID NOT KNOW THE EXISTED
- Have you ever had to repair it or replace parts on it? Which ones? When? How many times? NO

CONTINUUM

Figure 1: Excerpts from Interview Protocol.

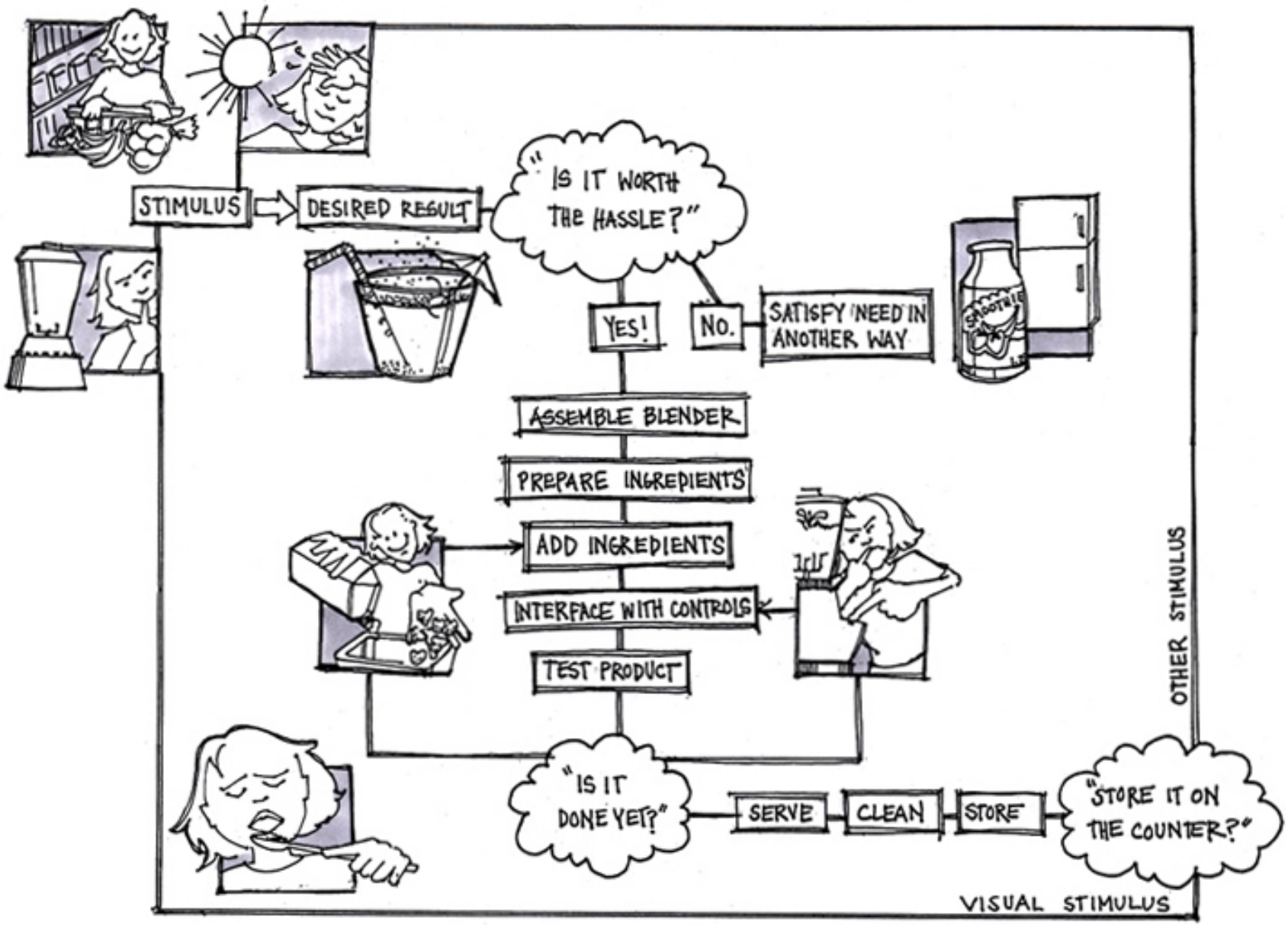
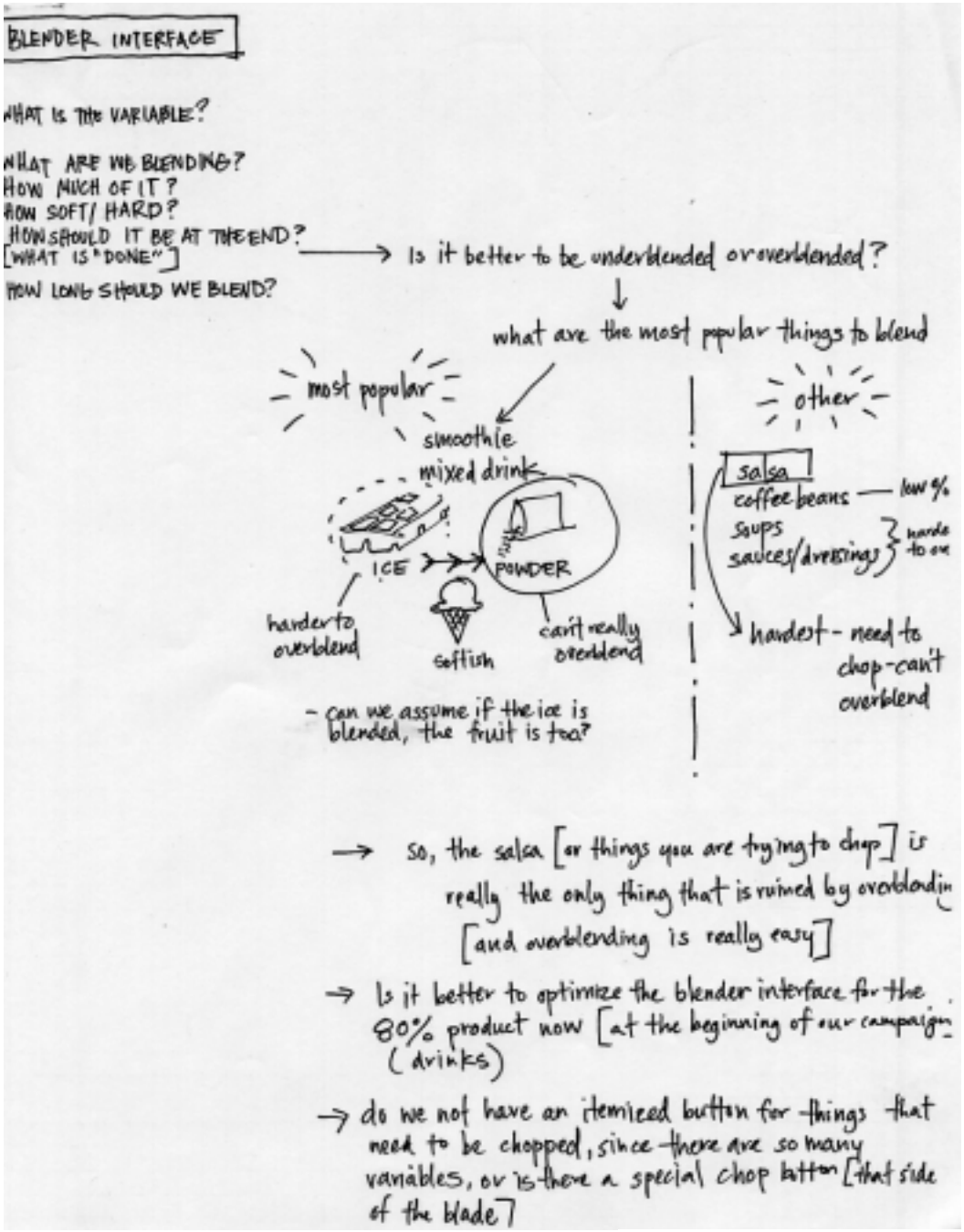


Figure 2: Research identified this flowchart of blender use.



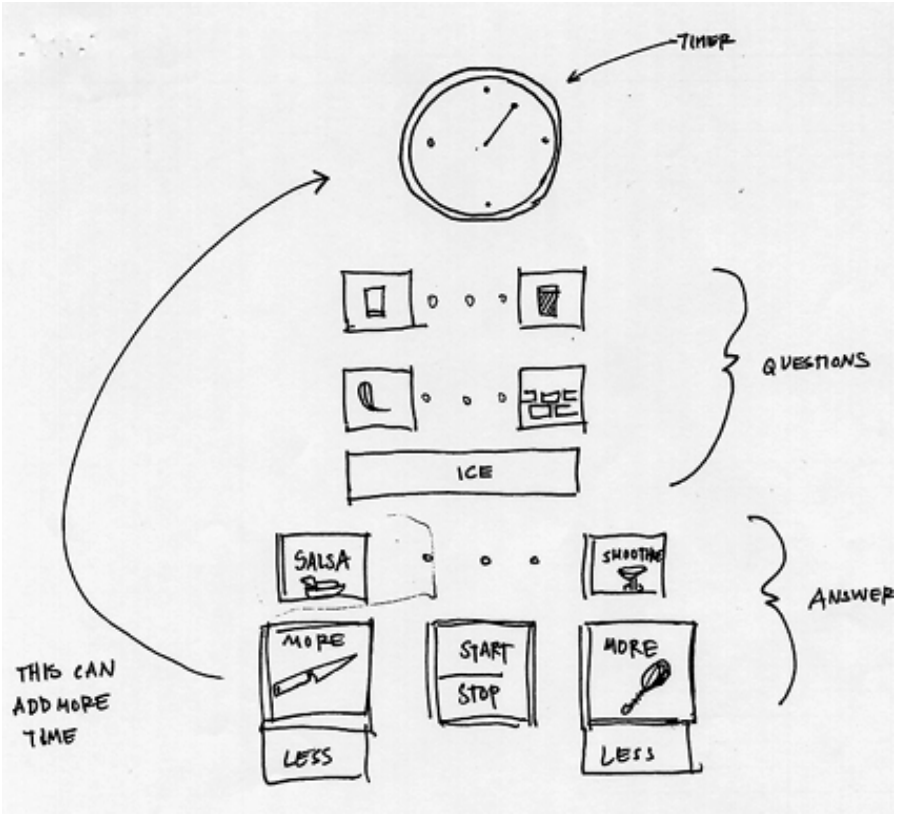


Figure 3: Pages from a designer's sketchbook.

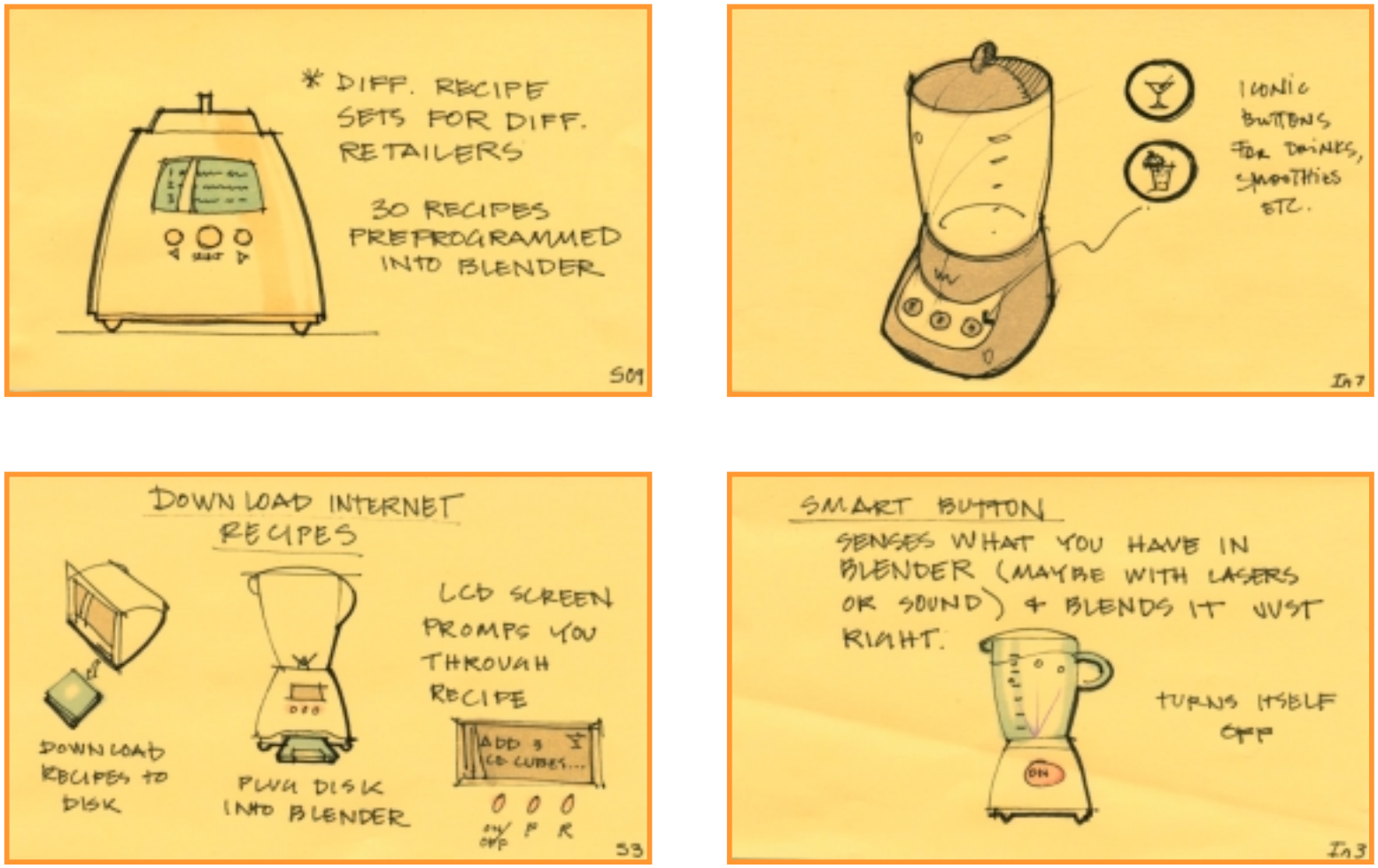


Figure 4: Product interface concepts

Figure 5: Final product interfaces