

A NEW ROLE AND NEW VALUE FOR COLLABORATIVE STUDENT/CORPORATE DESIGN RESEARCH

Tod Corlett, Philadelphia University; *Clive Roux*, Philips Design; *Hy Zelkowitz*, Philadelphia University, USA

Introduction: Design and research, an iterative relationship

Incorporating research into undergraduate industrial design education is difficult. While it's a truism that good research skills are essential for twenty-first-century design graduates, there's little agreement as yet on what actually constitutes such research, or what value it's expected to add to the process. In a recent survey, a variety of definitions were put forward, some as general as "Design research is work or play in any topic that will reveal a new technique or approach."¹ When you add a corporate collaborator/critic to the project, the stakes are raised even further, as corporations tend to have very specific meanings and expectations attached to the idea of "research," often ones derived from marketing or engineering.

This paper examines the process and the results of a collaboration between the Philadelphia University undergraduate industrial design program and Philips Design USA. We at the university and our collaborators at Philips, represented by Clive Roux, began with limited goals and well-defined expectations, but ended up with a much more expansive understanding of the potential synergy of research and design.

Philadelphia University initially solicited a project with Philips because we felt that, although our students were very competent in the narrowly defined skills of design, their design decisions tended to be based on subjective or personal criteria. We felt that this was giving rise to students who were very successful at articulating conventional design problems and answering them with well-thought-out, technologically and economically-sound solutions. We found, however, that their success in design was directly proportional to how much the user group for the resulting design was like them, or rather, the story about themselves that they received from advertising media and repeated. They didn't seem to have a high capacity for empathy, for putting themselves in another's shoes. As we would find, they had also been taught to define the role of design quite narrowly.

We were looking for a project that would teach them the value of incorporating design research skills, and we were defining research in a very specific way, as a quantitatively-mediated way of understanding and internalizing the needs of other kinds of people, so as to design better for them. In other words, a user-based research process. Philips said they used a process of this sort, and we'd seen a lot of clever social and cultural insight in some of Philips' research-based projects for future products, and thought involving them as collaborators might give the students the experience they needed.

In return for sharing these methods and subsidizing three days on-site with the students, we thought Philips might gain the usual benefits of working with students: they would train graduates already familiar with their methods, they would acquire a collection of very specific new product ideas they could evaluate for potential marketplace viability, and their relationship with the university could generate positive publicity for Philips, identifying them as forward-thinking, idea-based, and involved in the community.

¹ Manfra, Laurie, "Research- Its Role in North American Design Education". Metropolis, August-September 2005, p. 136.

In fact, however, the really interesting aspect of Philips' design research turned out to be not the research methods, but the role of research in determining corporate strategy and its relationship to the design process. Once we understood this, we were able to redefine what the value of collaboration was, both for Philips and for the students.

We began planning the project with an exchange of e-mails, and immediately uncovered some interesting differences in thought process. Philips referred to design as part of their research process, while the university team had been talking about integrating research into the design process. Because our job was to educate designers, we tended to think of research as a sideline, a means to an end. Design, hopefully excellent design, was the end itself. We were used to thinking of design as an iterative process, based on visualizing and testing solutions, but we realized that the process we were teaching was actually very linear by Philips' standards, as it was divorced from other important elements of corporate strategy (fig. 1). From Philips' corporate perspective, manufactured objects were just another intermediate product, a feedstock for an ongoing, iterative research process which could be used to determine corporate strategy.

Minimally Iterative Design Process

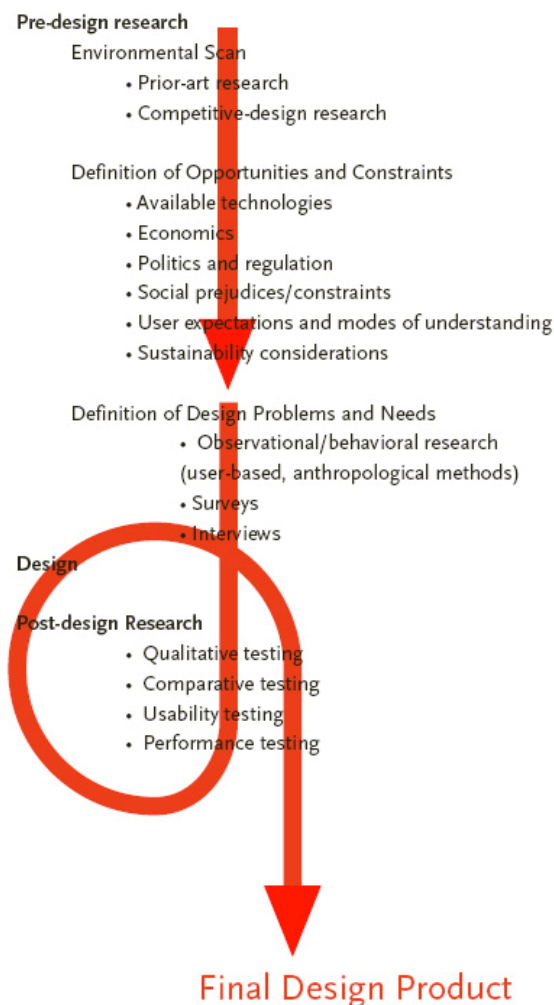


FIGURE 1.

For Philips, the “finish line” of a research project could be declared at any point in the process loop, especially near what we had considered the beginning of the process. For instance, Philips often used displays of theoretical or future products as a form of education or acclimatization, creating “memories of the future,” which then, hopefully, made consumers more willing to accept unusual products when they were finally offered for commercial sale. Social and cultural norms and attitudes, in other words, weren’t just a subject of research to inform a “product”; they could be the product itself. Philips had figured out a way to transcend Raymond Loewy’s MAYA principle², by modifying the public’s perception of what it was willing to accept.

Likewise, Philips used well-thought-out scenarios of cultural trends and social changes to create thematic, well-realized “future” products, not just for advertising, or to make people think; they used them to assess which technologies, materials and processes were likely to be crucial to products of the future, so Philips could move nimbly to acquire, develop and protect those technologies ahead of their competitors (fig. 2). Philips seems to have realized that, at a corporate level, insight is the product, but design, *especially* well-resolved and detailed product design, can be a key part of the iterative process.

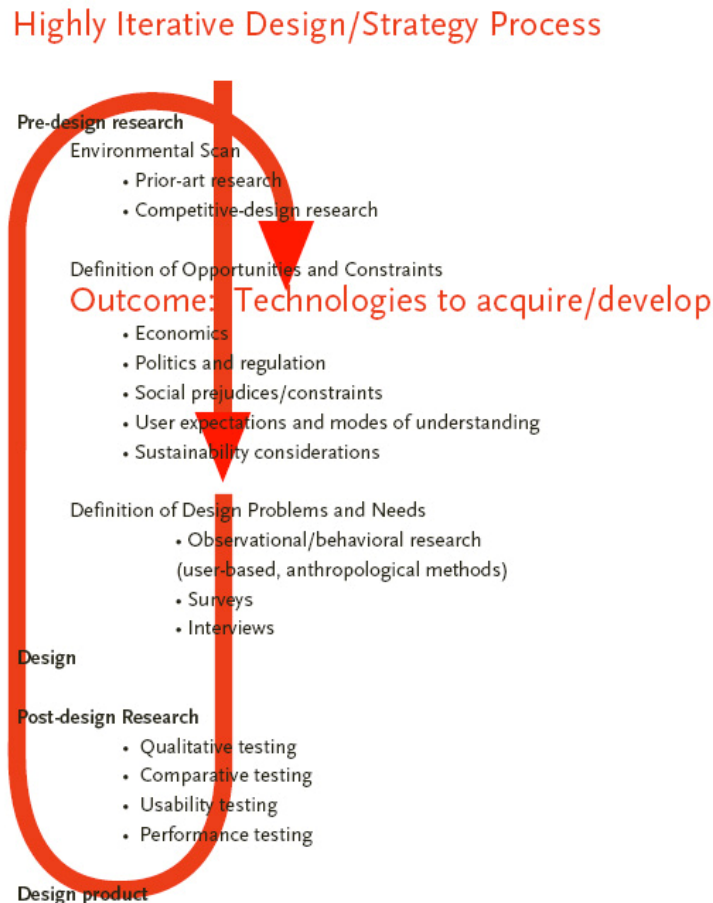


FIGURE 2.

² Loewy, Raymond, “The MAYA Stage”, excerpted in Gorman, Carma R. (ed.), *The Industrial Design Reader*, 2003, p.155.

Preparation

Once the university understood that we would be participating in a process that was a loop rather than a straight line, we attempted to put together a definition of research objectives and characteristics for the project that matched both Philips' goals and our educational objectives. We were interested in having the students have some tangible evidence to back up their design decisions, while Philips was interested in having robust documentation of the students' process, rather than just their final products. To these ends, we agreed that:

The topic would be "investigating food." This would allow a broad spectrum of investigations and solutions, while ensuring that there would be observable, tactile processes to document and modify. Philips was concerned that food was also not yet a major corporate business area, but the University group didn't want to worry about students copying current efforts in a misguided effort to please the project sponsor.

- The initial project would last twelve weeks, occupying the majority effort of 22 fourth-year students for the fall term.
- All student research would be followed by phases of formal interpretation, drawing defensible conclusions, and recording the insights gained. All too often, undergraduate "research" stops with the gathering of information, without establishing any framework for using the results.
- Following a phase of pre-design library and online research, the students would choose an area of concentration and use observational research to find what we called an "area of opportunity"- a situation in everyday life that was inadequately or problematically supported by objects or systems.
- Once the problem was defined, the students approached the designing itself as a form of research, producing usable mockups of multiple products for two rounds of iterative testing with real potential users in the field. Each round was analyzed, not to improve a specific product, but to map the area of opportunity and define how potential interventions were understood and appreciated by users. These test rounds were to be two-way conversations, and users would have active involvement in evolving the product solutions.
- Limits were placed on the specificity of the solution, to make it a more effective feedstock for future iteration. The "final product" for each student was a collection of objects or systems, defined so as to create overlaps and intersections and more effectively define specific opportunities within the student's area or theme. These solutions were treated as "points" defining an area in conceptual "space". The objective was to be able to draw a general conclusion, defended and supported by the success of specific solutions. Each of these product solutions was to be detailed to the point that the functionality, technological underpinning and sensory personality was defined and in-focus, and no further. "Tight concepts", in other words. This freed up time that otherwise would have been used for final modeling, detailing and materials/process specification for the creation of multiple designs.
- Concepts and opportunities were formally named and described, so this literary information could be cross-referenced with the visual personalities of the solutions, searched as a database, and used to further define the opportunity space.

- The results of the project were to be preserved as a record, to be used by the next group of students to encounter the project, so they would have the advantage of a “running start” and could address similar questions on an even deeper level, without reinventing the wheel or duplication of effort.
- This research/development project was undertaken by fourth-year students. In the following term, the third-year students would be assigned to exploit one of the most productive-seeming “areas of opportunity” and would be allowed to design very specific, fully fleshed-out products/systems in response to the opportunities their predecessors had uncovered.
- At the conclusion of the project, assisted by the final critique, students would assess their success at addressing the questions and opportunities they uncovered during basic research, under the assumption that many of these questions would be picked up and addressed later by Philips or by other students.

Process

In planning the student project, we realized that we couldn’t replicate all aspects of Philips’ process. For instance, Philips commonly runs a given design-research program for three years, while we had about twelve weeks, and Philips “primes the pump” by consulting a number of outside experts in many fields to inform its projects. However, in other respects we would be able to do things Philips couldn’t- our project would have 22 design efforts running in parallel, generating a massive quantity of testable design product.

To substitute for the outside consultant research, we split the students into small groups, then assigned background research topics having to do with food. They then chose an area on which to concentrate, and used ethnographic methods to observe and document the lives of people within these areas. They then worked to define an “area of interest” offering new design opportunities, which was refined and populated by the students with conceptual products. These were tested in mockup with potential users, and the successful results were presented as a potential new market or business area at the final presentation. This presentation included and focused on objects, but the emphasis was on what those objects could describe about the opportunity and how much they demonstrated about the validity and potential of that area, rather than whether the objects represented marketable products in their own right.

The Project

To acquire background knowledge to inform the project, the students were assigned to small working groups to research (frustratingly broad) assigned topics. These included:

History of Eating, Comparative Cultural Attitudes & Approaches
Eating Disorders, Dysfunctional Lifestyles and Medical Problems
Farming/Food Production & Distribution/Sustainability
Shopping & Buying & Selling
Restaurants & Fast Food & Snacks
Cooking and The Family Meal: Food and Work, Food and Play
Government Policy and Intervention, Food Safety, Labeling

To direct and evaluate this research, students were asked to address the following exercises and questions:

- The Playing Field: Diagram this Area.

Break the area into elements or chunks and arrange them on a 2D surface. Cluster them by affinities; draw lines and arrows to show common links. Can you assign values to vertical/horizontal axes and make graphs?

This exercise was intended as an initial test to get the students used to treating information as an analog of “space” susceptible to “mapping” and the discovery of meaningful adjacencies or juxtapositions.

- Who are the players or stakeholders? Who’s involved? Make a list and describe their roles.
- What is the past? How does it relate to the present? What’s likely to change in the future?
- Follow the money. What’s the business model? Who profits and how? What’s gaining/declining in this business?
- Cultural influences- what’s pushing or affecting this area from outside? How is this area affecting other issues/areas?
- Impalpables/emotional valence: What are the cultural and emotional issues in play? For instance, chickens are food; kittens are not.

The finished research reports were presented to Philips at a workshop session, and the groups’ findings were plotted on larger charts to find clusters of opportunities or meaningful information in overlaps between groups. These charts were organized on X/Y axes representing continua such as “rational/emotional” and “efficient/inefficient”.

Based on these findings, students were then allowed to individually pick areas of study to address for the balance of the project. Bryce Beamer, for example, decided that the area of food safety, including the problems of labeling, contamination of packaged food, the new popularity of organic foods, and worry about GMOs, food-borne disease and irradiation constituted a fertile space for examination. These issues were seen to have common elements which hinted at common solutions, although they were typically seen as disparate factors, to be addressed primarily through graphics, media, social and policy channels, rather than through industrial design.

The students continued by doing observational research in their areas, which they documented by video or digital camera. If possible, they were to observe without affecting the situation, and to document specific instances where the match between people and the objects and systems they were using. This quickly started to yield situations which seemed susceptible to design solutions. For instance, in investigating a cluster of issues involving transporting food, Yoo Na Sohn found standard shopping trolleys almost comically unsuited to their purpose. In researching choosing and buying food for preparation at home, Pamela Vargas found people wandering the aisles of supermarkets in puzzlement.

To conclude this phase, the students created reports documenting the problems and opportunities they'd found, in brief, several-sentence statements, which were backed up by visual field documentation. Collected documentation was also used to defend personas the students created to define the user groups they were designing for. Stock photography and advertising images were not allowed, only images and descriptions of observed situations.

The students then refined their statements into "areas of interest" in critique, and created multiple design concepts to address them. Over the next week, the students developed these designs, but weren't allowed to settle on one "best" solution; instead, preference was given to multiple solutions that addressed different aspects of an opportunity and defined a novel, potentially-profitable area of business for Philips. Often, these solutions addressed similar problems but were tailored for different user groups, or involved the application of different levels of technology. Greg Goldman, for example, worked with an opportunity involving the fact that children's lunches are eaten by kids but bought by adults; his solutions ranged from graphics and packaging, on the low-tech end, to lunchboxes which were also multiplayer online electronic games.

At this point, a traditional corporate-sponsor project might enter a rather hermetic development stage, in which all but a single concept falls by the wayside, and the surviving idea is refined visually and technologically through class, faculty and sponsor critique.

In our development process, on the other hand, we tried to keep the project research-based and connected to fresh infusions of outside information. It involved two iterative stages in which students built increasingly sophisticated mockups of their ideas, taking them into the field and having people from the declared user groups talk about and eventually use them. Yoo Na Sohn built several different shopping carts out of plywood and PVC pipe, and took them into stores to try them out.

Finally, based on all this testing, the students presented fully-rendered collections of product ideas to Philips, with the latest versions of their statements identifying their areas of interest. The collections covered subjects such as:

- The desire to reconcile nutrition and convenience in fast food
- Acceptance and celebration of eating in the car
- Lunch perceived as an "escape" from the workday.

In most, if not all cases, an important piece of new insight was gained, and coupled to believable physical means for exploiting those insights and improving everyday life. Judged by those standards, Philips, Philadelphia University and the students all got what they had hoped from the project.

Conclusion

As this was a pilot project, some things didn't work perfectly, from an educational standpoint. First, it was hard to cover the initial background research with the time we had allocated, and morale was low, as the students wanted to "get to the design." This led to a relatively poor quality of these research reports. In future projects, we plan to address this by proposing somewhat more limited areas for exploration, so students feel less overwhelmed.

The project was also, by student standards, very long, which cost the students some of the intensity of effort they had brought to shorter projects. This could be addressed in future projects by breaking them into formal phases, making end-of-phase presentations competitive, and compressing the overall project schedule.

The biggest problem by far, however, was an undetected weakness in the structure of our curriculum. For four years we had been teaching students, by assignment and by example, the linear, ever-narrowing, product-focused model of the design process discussed above. The result was that this process became a kind of phantom limb, and the students acted as though it was still in effect. When they were given authority to make decisions for themselves, students tended to revert to the old habits, despite clear instructions to the contrary. For example, if a concept presentation encompassed six concepts and the students were instructed to develop these ideas for the next class, at the next class there might be one or two concepts left, presented at a much higher level of finish. The students assumed that Philips, as a “corporate” client, was more interested in polished deliverables than in additional thinking, when in fact the opposite was true and had been stated. It was agreed that in future projects, students would be introduced to the novel design process and have a chance to rehearse and understand it before expecting them to use it in earnest.

Another problem we encountered was a mismatch between the number of student projects and the time Clive Roux, our contact at Philips, had to review and critique their work. Even with the students pre-submitting work by e-mail for Clive’s review, students felt that they were not able to discuss their work adequately with outside critics, and that this affected their ability to internalize Philips’ approach to the design process. Next time, the students will work in groups, to provide more review time for each project.

There were also elements of the project that aren’t yet satisfactory to Philips. Philips is more interested in interesting questions than in definite answers, and the students’ bias toward creating objects, as opposed to examining questions, and their habit of making their designs and explorations their own by modifying processes and deliverables at will has led to a less consistent final result than Philips might have liked.

Additionally, Philadelphia University taught this project on the undergraduate level, which meant it had adequate resources for teaching and little else. Resources to convert the project from a one-time studio class with a heterogeneous group of end-products to an organized, accessible, thematically-consistent database to inform future design weren’t in place and are still being sought.

Both parties have, however, committed to turning this project into an ongoing series and pursuing the questions and methods we’ve begun to explore. The students and the university have realized tremendous value in redefining what “corporate perspective” means, and what innovative design processes can add in that context. For its part, Philips has a new means to tap new, fairly disciplined thinking on questions of interest, in what counts as a time-compressed “charrette” process by its usual standards. Moreover, as this thinking is accompanied by well-thought-out design solutions, it’s ready to plug into a design-driven corporate strategy process right out of the box, giving Philips more points it can use to plot the curves of the future.