Design for Future Needs
Case study of Project F: fabric care futures

Creating Imaginable Futures:
Using Design Strategy as a Foresight Tool

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Design predicts the future when it anticipates experience...
—**Augusto Morello**

Governments, corporations and institutions all need to plan for the future, but the difficulty of planning complex projects with long-term effects is well known. Decision makers need all the strategic foresight tools available to help imagine possible futures more fully and evaluate them more completely. Data generation, risk/opportunity assessment and scenario-building may not be enough. Design offers techniques for enhancing future scenarios with the visual, the spatial and the experiential. Design research methods can enhance the process of getting richer feedback from audiences. In addition, strategic design can be used to get deeper levels of understanding and buy-in from various stakeholders. All these activities can greatly augment and improve the quality of foresight and planning.

This case study of Whirlpool Europe's recent foresight projects shows how a corporation has used design as part of a multidisciplinary effort to shape its business policy for the next ten years. We highlight the approaches Whirlpool Europe used and outline how they could become useful tools not only for those setting strategy in corporations, but also for policy-makers.

Design methods (particularly strategic design, visualisation, prototyping, user experience assessment and feedback) can elicit tacit information that is invaluable to planning and yet difficult to gather any other way. Although these methods cannot predict the future, they can be used to gather better information about it.

Our paper explores how design helps to create an **imaginable future**—one leading to a richer response from customers and citizens, and to more relevant information for decision-makers. Visualisation methods ranging from sketches and renderings to computer modelling can help make ideas seem real in earlier stages of planning. Convincing physical prototypes can embody ideas for products, environments and systems. Scenarios of use (through storyboards, videos or demonstrations) can model ideas into seemingly real situations so that audiences have much more to respond to, prodding them into a fuller reaction. By giving more information through designed models and materials, and eliciting more in return, planners

can gather information, gain insights and affect the direction of projects much earlier in the process.

The case study focuses on *Project F: fabric care futures*, an advanced design research initiative by the Global Consumer Design (GCD) group of Whirlpool Europe (Cassinetta, Italy), led by design manager Richard Eisermann. This project explored what the future of fabric care could be in the next ten years and how this might affect the manufacturing of major domestic appliances.

Whirlpool used a combination of broad-based traditional market research, trends analysis and qualitative research to inform their strategic design process. Qualitative design research doesn't simply ask what consumers want; rather, it observes their preferences and actual usage. It employs techniques from anthropology and ethnography to gain insight about the actual behaviour of people. For *Project F*, the Whirlpool Europe Usability laboratory organised a qualitative in-home study in three EU countries, observing people during their typical laundry activities, to better understand their needs within the whole laundry process. This approach also allowed them to rethink the design of clothing care in general, not just people's interaction with washing machines. An external consultancy, FutureConceptLab, Milan, conducted a parallel quantitative research study about the concept of domesticity in six European countries. Using a variety of techniques to reveal various facets of the user experience, the company reframed the entire problem of what to design in the future.

Four design teams (three external and one from Whirlpool) imagined and developed concept products, in order to provoke ideas, dialogue and future decision-making about what type of innovations to the laundry process would best fit customers' needs and preferences in future years.

These were shown at key design exhibits and trade events in Europe (such as HomeTech, Berlin; Salone del Mobile, Milan), which generated extensive press coverage for Whirlpool and enhanced the company's reputation for innovation. The company will bring the prototypes back to the usability studio in 2003 to evaluate consumer preferences and inform the strategic planning for the Whirlpool 2004–05 product line.

By creating an innovation-friendly climate within the company, both *Project F* and the earlier *Macrowave* project (envisioning how microwave technology could be used in products quite unlike those we see on the market now) created an even greater impact inside Whirlpool than without. The quality of the project ideas stimulated internal interest, buy-in and support, and

opened up a dialogue between all the stakeholders involved: designers, marketers, engineers and executive decision-makers. GCD gained a great deal of credibility from the projects, so much so that divisions within Whirlpool Europe now vie for its strategic foresight services. By demonstrating its ideas through tangible means and gaining outside recognition, GCD gained a voice in discussions about corporate strategy and contributed an entirely new perspective.

Design research cannot be effective unless its results are communicated and acted upon. GCD Whirlpool Europe partnered with the company's communications department to position 'design research as a cornerstone of exciting corporate communication opportunities'. The company is committed to a follow-up project in 2003, demonstrating its desire to continue innovation in the field of design. In focusing first on products (microwaves), then on processes (like fabric care), next on products and processes in context (people's homes), Whirlpool Europe is positioning itself beyond the approach of the traditional appliance market. In creating imaginable futures, GCD is using the power of experience as a catalyst to shape visions of the company's future.

How can the process of creating an imaginable future be enhanced and extended?
There are several ways: scenarios could be displayed alongside the prototypes to show more vividly how they can be used. Involving users in the design process (participatory design) could give the company more feedback, particularly if it employed user experience assessments at the various stages of the process, and could help translate design research into realisable solutions earlier in the design process. Finally, integrating GCD's usability team into the evaluation of proposed user experiences could establish a feedback loop from imaginable futures into strategies the company could act upon.

The more important question, of course, is *how can such foresight activities be useful to decision-makers and policy-makers in other situations and organisations?* The Whirlpool Europe case study points to methodologies from the design professions that can augment the range of strategic foresight tools already available to policy-makers. We believe these design methods and activities offer a qualitative enhancement to current ways of planning for the future.

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Creating Imaginable Futures:
Using Design Strategy as a Foresight Tool

> *Design is the conception and planning of the artificial, that broad domain of human made products which includes: material objects, visual and verbal communications, organised activities and services, and complex systems and environments for living, working, playing and learning.*
>
> **—Victor Margolin & Richard Buchanan** (1995)

> *Design predicts the future when it anticipates experience…*
>
> **—Augusto Morello** (2000)

Introduction: How is design relevant to planning for the future?

Governments, corporations and institutions all need to plan for the future, but the difficulty of planning complex projects with long-term effects is well known. The further into the future we want to look, the harder it becomes. Decision-makers need all the strategic foresight tools available to help imagine possible futures more fully and evaluate them more completely. Data generation, risk/opportunity assessment and scenario building are all helpful, but they may not be enough. Even involving stakeholders may have only limited value if the responses they give are not gathered well. Complementary methods from the design fields could augment these activities and make them even more effective.

In the past, information about how corporations used design was usually limited to inspiring stories about design's role in creating better products. Policy-makers and the public generally thought of design as a creative work that companies use to make products and communications desirable, marketable and differentiated as brands. Even within corporations, many people still view design simply as 'packaging' (putting an attractive skin on something), not as making a deeper contribution.

Over the last two decades, however, design has proven to be much more: a discipline that offers a range of processes for dealing with complex subjects. Design research methods can uncover rich information about people's behaviours and cultural patterns. As a synthesising discipline, design can help planners spot and map opportunities. Design offers techniques for depicting future

scenarios with the visual, the spatial and the experiential. In addition, strategic design can be used to get deeper levels of understanding and buy-in from various stakeholders. All these activities can greatly augment and improve the quality of foresight and planning.

This case study of Whirlpool Europe's recent foresight projects shows how a corporation has used strategic design as part of a multidisciplinary effort to shape its business policy for the next ten years. We highlight the approaches Whirlpool Europe used and outline how they could become useful tools not only for those setting strategy in corporations, but also for decision-makers in many different situations.

Design methods (particularly strategic design, visualisation, prototyping, user experience assessment and feedback) can elicit tacit information that is invaluable to planning and yet difficult to gather any other way. Although these methods cannot predict the future, they can be used to gather better information about it.

Our paper explores how design helps to create an imaginable future—one leading to a richer response from customers and citizens, and to more relevant information for decision-makers. Designers can build scenarios to embody and preview future possibilities that go beyond verbal descriptions or quantitative data. These design embodiments can then be used to elicit responses from different groups of stakeholders to inform decision-making. Foresight activities are not a closed activity or an action unto itself; they are a way of stimulating processes and dialogue.

Project F: a research project and design experiment

This case study focuses on *Project F: fabric care futures*, an advanced design research initiative by the Global Consumer Design (GCD) group of Whirlpool Europe (Cassinetta, Italy), led by design manager Richard Eisermann. *Project F* explored what the future of fabric care could be in the next ten years and how this might affect the manufacturing of major domestic appliances for Whirlpool, one of the leaders in that marketplace sector.

In the past, household appliances were viewed as functional, but not very emotionally laden. Any improvements to the appliances

were generally incremental: simply the next engineering feature added to the traditional white box appliance, with little awareness of changes of attitude on the part of consumers. *Project F* revealed a great deal of information about the complexity of current domestic life, and uncovered attitudes about consumers' images of self, home, family and friends, as well as design and product preferences. This information led not only to new products but also to a change in strategy and communication for the company.

GCD Whirlpool Europe is responsible for strategy development, design research and the design of home appliances for the European market. The group strives for design excellence in products and services they develop. They combine their design expertise with a strong focus on meeting the company's business objectives, and they also focus on people, with the goal of creating products that become central to people's lives. In order to respond to rapidly changing and increasingly sophisticated consumer needs and desires, Whirlpool uses a combination of broad-based traditional market research, trends analysis and, most importantly, local, in-home observation and interviews with householders who use the products.

Whirlpool's shift to user-centred design

Over the past few years, GCD Whirlpool Europe has changed its approach to foresight activities. It has shifted its emphasis from focusing on the design of products themselves to focusing more on the way consumers use them. In *Project F*, Whirlpool Europe employed a user-centred design approach[1]. Also known as human-centred design, this way of working is based on the premise that in order to create valuable and compelling solutions for particular groups of people (in this case, customers), designers must understand those people's needs and circumstances. This often necessitates research and also means that the research must usually be focused on the real contexts in which people use the product or service being designed.

This is the second such design research project for Whirlpool Europe. (Two years before *Project F*, the *Macrowave* project had invited designers to envision how microwave technology could be

[1] While some object to the term 'user', we have used it here because it is the most common term in the literature of human-centred design

used in products quite unlike those we see on the market today.) The company spent about nine months on the research, design development, and prototyping for one of these projects, and another year to communicate them.

Steps in a user-centred approach

1. Understand people/users (qualitative and quantitative research, observation of users, experience modelling)
2. Think outside the box (brainstorm, generate scenarios, think across disciplines, prototype quickly)
3. Design with users (participatory design)
4. Assess the user experience
5. Feed evaluation into another loop of design and further evaluation

Design research: quantitative and qualitative

Qualitative design research doesn't simply ask what consumers want; rather, it observes their preferences and actual usage. Most consumers, in fact, find it much easier to express their opinion about the perceived usefulness of a concept product when they can react to a tangible representation of it, not just to an abstract idea.

For *Project F*, the Whirlpool Usability Group organised both a qualitative in-home study in three EU countries (Italy, France and the United Kingdom) and a study using focus groups. (The Usability Group includes a cultural anthropologist, a usability specialist and 2 or 3 support staff.) In-home studies have the great advantage over focus-group studies that researchers not only hear how people present themselves doing tasks (how they think they perform it, their idealised mental model), but also observe people's actual patterns and routines in a real context. The researchers observed people during their typical laundry activities, to help the company better understand users' needs within the whole laundry process, and to possibly rethink the design of clothing care overall, not just customers' interaction with washing machines.

In addition, an external consultancy, FutureConceptLab (FCL), Milan, led by sociologist Francesco Morace, conducted a parallel quantitative survey about the concept of domesticity. Conducted with 2000 households in six European countries (Italy, Spain,

France, Germany, Poland and the UK), this research resulted in a study called *'New Domesticity'*[2].

The research methods used by designers are not unique to design. Quantitative research uses familiar survey and statistical methods. Qualitative research adapts a variety of techniques from the social sciences, particularly from anthropology and ethnography, to gain insight into the actual behaviour of the people being studied.

When designers use research, however, their goal is different: they want to synthesise the findings into possible responses, be they products, services or systems. Even quantitative design research can require a high degree of initiative and interpretation. Dr. Morace of FCL describes design research as 'a permanent proactive process'. To successfully read shifts in cultural trends, he says, one must go beyond the data by developing a more impressionistic understanding of each test group.

Eliciting tacit knowledge and latent needs

The Italian designer Augusto Morello distinguishes between analytic design, which is solving problems, and synthetic design, which is creating solutions in an ill-defined problem space. Designing for future needs is often the latter.

Frequently decision-makers do not have all the possible information about the conditions they are planning for. Often information is known to users, but not to planners. One of the goals of qualitative design research is to elicit this tacit knowledge and to reveal latent needs and desires.

Researchers use various field research methods as cultural 'probes' to elicit unarticulated needs. They use observation techniques to reveal behaviours too common or ingrained for users themselves to notice or report. Techniques used by the GCD Whirlpool researchers included:

- Video ethnography;
- 'Shadowing' of the subjects' activities and tasks;
- In-depth interviews with the subjects;
- Prompted visual self-documentation by users (with diaries, cameras, etc.).

[2] For a more extensive description of the 'New Domesticity' study, see Appendix 1.

Researchers gain many different vantage points on their subjects from these techniques. With the information they have learned, researchers then try to create useful models and frameworks that illuminate relevant aspects of user experience and behaviour. This technique is known as experience modelling.

Experience models are useful representations that show how people experience, understand and act upon the activities, environments, interactions, tools and objects that are critical dimensions of the client's business. Experience models provide the basis for strategic idea generation and opportunity mapping. Qualitative research methods and experience methods can be used by many different kinds of organisations and institutions, not just corporations; they can help in the planning of services as easily as that of products.

How does design synthesise solutions from research?

For *Project F* design manager Richard Eisermann invited three external design teams (two from Europe, one from the US) and the internal designers of GCD Whirlpool Europe to develop concept products in response to the research. The aim was to provoke ideas, dialogue and future decision-making about what type of innovations to the laundry process would best fit customers' needs and preferences in the future.

During a first workshop in summer 2001, designers were introduced to the user-focused research insights as well as to new technological developments in the field of fabric care. The research insights enabled designers to go beyond a short-term horizon and gain a deeper understanding about domestic behaviour related to washing and the diversity of such behaviour within the EU countries studied. These became a valuable source of ideas for the designers' brainstorming activities and creativity workshops helping them to keep in mind a representation of users' perspectives at their encounter with home technology. During the workshops, the designers used various visual techniques to envision the experience of users interacting with alternative systems for domestic laundry.

The designers mapped the research findings visually to show the relationships between concepts. They then sketched their ideas and discussed the various scenarios for projects, until they charted

five themes around which to develop the concept products. After the workshop, each design group went back to their own studio and worked separately from the others for about a month, gradually developing ideas and refining them through sketches and two-dimensional models. Two of the design teams created animations showing how people would use the imagined products and in what setting.

The act of designing is not simply a process of combining all the research information or blending all the possible solutions. Designers must use their own tacit knowledge and their experience of synthesising a solution from multiple sources and ideas. Innovation processes, whether in a company designing products or in many other endeavours, need to be rooted both in analytical skills and in more intuitive, synthetic ones. Designers are particularly well equipped for synthesising alternative solutions to meet human needs (Dykstra-Erickson et al., 2001).

The designers for *Project F* explored innovative technologies such as nanotechnologies and waterless washing for cleaning future types of fabrics, like those equipped with electronics. They also examined environmental and ecological concerns, especially about energy consumption and water conservation.

The internal GCD designers had easy access to their research and engineering colleagues at Whirlpool, and there was considerable informal discussion about the user research findings beyond the formal information given in the initial workshop. This interdisciplinary exchange informed the solutions, and suggests why it is best not to keep design teams too separate from implementation groups. (The converse is also true, however: it is best not to let implementation concerns prevent the imagination of future alternatives.)

In a follow-up workshop about a month later, each team used visualisation techniques, such as sketches, storyboards, animations and rough prototypes, to present their respective design proposals to the other teams. Together, they selected the strongest ideas to be refined in further iterations in the design process.

How do we translate research into design?

One problem that arose during the initial workshop was that the research results were almost too suggestive of possibilities, yet were not immediately meaningful or 'actionable' for the design teams. Even when the research material seems clear, the act of designing involves a considerably larger step than simply taking available data and repackaging them.

The difficulty of readily translating research insights into design solutions is common in foresight activities. One possible way to overcome this problem is to take advantage of the fact that design is an iterative process, in which designs are created and refined incrementally in each successive version. Going back and forth between the research problem and the design solution during each successive iteration allows for the true development of design concepts informed by research. Integrating researchers and other stakeholders in the evaluation of proposed design solutions can also be valuable.

Another possible way of helping to translate research into design is to have designers and engineers participate in field research and user experience assessment (usability) studies to gain knowledge on location.

To avoid losing sight of potential users and their context as a project progresses, designers often create profiles (also called 'personas') of prototypical users based on the research findings; these profiles can be used as a device to measure how well a particular design solution will serve the sample user. (How would this design solution fit into the life of User A?).

From design ideas to 3-D prototypes

Steps in using design as a foresight activity:

1. Synthesise ideas, technology and user behaviours
2. Create an understandable language (visual, visceral, verbal)
3. Model ideas (visualisation and prototyping)

In *Project F* the five concepts that were chosen to be further refined represented not only a range of innovative laundry systems, but also different points on the potential timeline of product development. A few of them could be realised with

current technology, but others were dependent on the development of future technology, like waterless washing or nanotechnologies.

The next step was to translate the five final concept products into refined three-dimensional prototypes, so finished that they appeared to be manufactured products.

Finished prototypes, of course, are not the only option for embodying design ideas. Visualisation methods ranging from sketches, drawings and renderings to computer modelling can help make ideas seem real in earlier stages of planning. Convincing physical prototypes can embody ideas for projects of many kinds: not only for products, but also for environments and systems. Scenarios of use (through storyboards, videos or demonstrations) can model ideas into seemingly real situations so that audiences have much more to respond to, prodding them into a fuller reaction: one that draws more information from them than they would be inclined to give without the provocation.

One could say that design helps to create an imaginable future—one leading to a richer response from customers and citizens, which in turn can lead to more relevant information for decision-makers. By intensifying the discourse—giving more information through designed models and materials, and eliciting more in return—planners can gather information earlier, gain insights earlier and affect the direction of projects earlier in the process.

Imaginable futures stimulate internal discussion

Design embodiments can elicit:

- Responses to help evaluate alternative concepts and scenarios;
- Feedback to assist in assessment of alternatives to inform decision-making;
- Information for thinking ahead.

In complex, real-world projects, foresight activities are aimed at producing orientations rather than predictions. To do so they need to be informed by different perspectives, people and disciplines, which present and assess alternative options for decision-makers to choose. According to Richard Eisermann, the main reason to do a research initiative such as *Project F* is not necessarily to put a

specific concept prototype into production, but rather to get feedback about which possible direction to pursue in the future.

An interesting side effect of the three-dimensional modelling and prototyping phase carried out at Whirlpool Europe was that it fostered informal communication between the designers and the company's engineers about technical feasibility of the concept products, something that was facilitated by the tangible and engaging properties of the prototypes. Design created a 'shared space' (Schrage, 2000) for a constructive act of probe-and-learn by which development teams gained a visual and tactile experience of what they might later develop into a product. In this way design and prototyping (of whatever kind) can help illuminate experimentation as well as implementation.

Although the *Project F* prototypes will not be directly translated into actual products, the idea of user-focus and social change, as well as the kind of technology embedded in each of them, can provide the company with interesting possibilities worth exploring for the next several years.

The possibilities of participatory design

Other approaches for capitalising on users' experience to support foresight thinking and decision-making could also be envisioned.

In an ideal foresight process, the initial design concepts would be developed in collaboration with users and then evaluated by them, so that their feedback would be incorporated into a second series of design proposals, which would be evaluated and modified. Prototypes would be produced, and then again evaluated and refined.

Participatory design methods encourage the direct involvement of users or consumers in the design process, increasing the potential for a cross-fertilisation not only among the different professions and competences that can contribute to a foresight activity, but also among the principal stakeholders that might be affected by the ideas and decisions there developed. These design projects can become symbolic processes able to engage people in constructing their own context and 'point to something meaningful' that they have constructed (Stacey et al., 2000).

In the case of *Project F*, the adoption of such an even more user-centric approach might have produced a more dynamic feedback loop, helping to develop and shape research questions, as well as design proposals, in a more flexible and representative way.

Participatory design may be more appropriate for public and non-profit project planning, with its need for a higher degree of external stakeholder involvement, than for a corporate product development enterprise. Wherever it is used, however, the important thing is to plan how to involve different stakeholders at different levels of the process.

The impulse to involve as many participants as possible in design research and planning should be tempered with the understanding that even small samples of people can provide a great deal of information. (The field of human computer interaction, for example, has shown that much can be learned from a test group of as few as a dozen people.)

Communication of the prototypes

Whirlpool Europe displayed the concept prototypes at some of the main design exhibits and trade events in Europe (such as HomeTech, Berlin; Salone del Mobile, Milan), and gained extensive press coverage from them, which enhanced the company's reputation for innovation and consumer-focused design.

Exhibiting concept products is not unusual, however. What makes this project noteworthy, in part, is that not only the products but also the research itself piqued the interest of the European press. The combination of the research from *Project F* and the *'New Domesticity'* study provided European media with a wealth of material that stimulated commentary and debate around design, consumer trends and societal behaviour. This helped Whirlpool to present and communicate the relevance and foresight value of the *Project F* concept prototypes to a general audience.

Part of the purpose of this project was to reach the decision-makers who specify Whirlpool products in domestic or institutional environments; another aim was to reach opinion makers and influencers. The press coverage of the project helped achieve those goals. The business, style and design press all covered *Project F* extensively, enhancing the image of Whirlpool Europe as

an innovative and design-oriented company. Before *Project F*, the company hadn't seen nearly this quantity of material published about Whirlpool, especially in magazines dealing with the 'leading edge' in technology, trends and style.

By now, Whirlpool Europe has collected positive (although anecdotal) user reactions and appreciation. One of the prototypes has attracted much more attention than the others. Designed by the GCD Whirlpool team, the concept called *BioLogic* uses a 'slow wash' approach based on cyclical, natural processes of regeneration. Instead of a single wash drum, the laundry is distributed to a number of washing pods in a low unit containing hydroponics plants, which, if feasible, would purify 'grey' water used in washing. Power for the unit would come from fuel cell technology, producing only water and heat as by-products. *BioLogic* would capture and retain these as part of its resource conservation approach.

Why are audiences drawn to this particular object over the others? Because of its sculptural form? Because it incorporates plants? The GCD team wants to understand the reason for the positive reactions to the project, to get a better sense of the level of acceptance for such a dramatically different solution.

Of course, examples like *BioLogic* are concepts. The realities of technical standards and environmental requirements are very exacting, and will change the concepts into something far different. More engineering simulations will make these projects more plausible and closer to product.

At the beginning of 2003, the company plans to bring the *Project F* prototypes back to the usability studio to make a rigorous evaluation of consumer preferences. Whirlpool will then decide which ideas to develop and implement. The findings are intended to inform the strategic planning for their product line in 2004–05.

Design embodiments stimulate internal discussion about strategy

The impact of the *Macrowave* project and *Project F* inside the company was perhaps more dramatic than their effect outside. Whirlpool's GCD initiated the *Macrowave* project on its own, in part to create an innovation-friendly climate within Whirlpool Europe. The quality of ideas embodied in the prototypes

stimulated internal interest, buy-in and support. It opened up a dialogue between all the stakeholders involved: design, marketing, engineering and executive decision-makers.

By demonstrating its ideas through tangible means and gaining much outside recognition, GCD earned a great deal of credibility from the project, so much so that divisions within Whirlpool Europe began to vie for its strategic foresight services. GCD gained a voice in discussions about corporate strategy. After the *Macrowave* project, insights from their concept prototyping bypassed the traditional development process and actually influenced the product planning for 2002, resulting in a new product, the microwave '*Maximo'*. The ability to demonstrate its ideas so clearly and tangibly gave Global Consumer Design a new position on the team of those devising strategy for Whirlpool.

Like governments and large institutions, corporations like Whirlpool need to gather considerable resources to do large projects; for this they need extensive buy-in from many stakeholders.

Not only did the project open up dialogue; according to Richard Eisermann, the project also helped create integration among different tiers within the company. It brought together design research, design practice, communication and, to a certain extent, engineering (horizontal integration); it gained credibility and trust for the GCD with key decision-makers within the company (vertical integration).

From design to implementation: a 'call to action'

The company is committed to a follow-up project in 2003, demonstrating its desire to continue innovation in the field of design. In focusing first on products (microwaves), then on processes (like fabric care), next on products and processes in context (people's homes), Whirlpool Europe is positioning itself beyond the approach of the traditional appliance market.

In pursuing its policy of strategic design and innovation, GCD is currently re-thinking and planning how to continue the design foresight activities like those in *Project F*—but more readily producible within strategic and tactical timeframes.

Whirlpool Europe is also aware that strategic design can become key to shape its future production by exploring how new configurations of products (or services) could best meet users' expectations in the years to come. This would be more important than looking at how new aesthetic forms may differentiate future products from those of the competition.

How could Whirlpool Europe have gained more from *Project F*?

To make its next foresight initiatives even more effective, Whirlpool Europe could add several elements to its process.

First, when prototypes are displayed for communication purposes they should be accompanied by scenarios showing their use, thus creating a more vivid context for the products being modelled. When the *Macrowave* prototypes were exhibited, Whirlpool showed them in small environments that were evocative. Unfortunately, the *Project F* prototypes were displayed as sculptural objects on pedestals. Despite a video loop accompanying them at the exhibitions, the overall impression was of beautiful but isolated formal objects. Ideally the company should have done more to contextualise them, so that audiences would have a greater ability to de-code the futuristic design solutions and make judgments based on more than simple likes and dislikes.

Second, strengthening the activity of designing with users (participatory design) could encourage people to be willing to provide valuable contributions throughout the various phases of the project. Participatory design methods have proved to be a powerful means for turning users into the broader role of committed actors within a project. Often this change of attitude and role becomes vital for reaching deeper into people's desires, needs and orientations that are projected very far in the future. The company's decision-makers, at the same time, could find design projects of this kind more reliable test beds for measuring the strength and general acceptance of each concept proposal.

Third, integrating GCD's usability team into the evaluation of proposed user experiences could establish a feedback loop from imaginable futures into strategies the company could act upon.

Design as a foresight tool

Finally, the main question to be answered is, of course, how foresight activities such as those being done by corporations like Whirlpool Europe can be useful to decision-makers and policy-makers in other situations and organisations.

Whirlpool used foresight-oriented design to:

- Create dialogue between internal stakeholders (design, marketing, engineering and executive decision-makers);
- Synthesise ideas about new technology and user behaviours;
- Visualise ideas (abstract complicated ideas and communicate them to the public);
- Create alternative models;
- Spark internal/external communication;
- Create openness to multiple alternatives;
- Affect strategic decision-making;
- Communicate internally and externally to get buy-in;
- Develop a vision of its own future.

Design offers the possibility for enhancing future scenarios with the visual, the spatial and the experiential. Design research methods can support the process of getting more meaningful information about people's thoughts, desires and behaviours. Design embodiments can invite a rich response from audiences. In addition, strategic design can be used to get buy-in and understanding from various stakeholders, thus becoming a living way of doing business and a dynamic cultural force. The design projects here presented played an important role not only in stimulating innovation but also in helping to rearrange and express the company's resources, competencies and activities more effectively.

Methods learned from the design professions—such as strategic design, visualisation, prototyping, user experience assessment and feedback—cannot predict the future. However, they can help reveal opportunities, motivate action and improve the basis on which to make decisions. The Whirlpool Europe case study points to design methods and activities that offer a qualitative enhancement to current ways of planning for the future.

References

Dykstra-Erickson E., Mackay W. & Arnowitz J. (2001). Trialogue on Design (of). *Interactions*, Vol. 8(2), 109-117.

Margolin V., Buchanan R. (1995). Design History or Design Studies: Subject Matter and Methods. *Design Issues,* 11(1), 4-15.

Morello, A. (2000). Design Predicts The Future When It Anticipates Experience. *Design Issues*, 16(3), 35–44.

Schrage, M. (2000). *Serious Play: How the World's Best Companies Simulate to Innovate*. Boston, MA: Harvard Business School Press.

Stacey R.D., Griffin D. & Shaw, P. (2000). *Complexity and Management: Fad or Radical Challenge to Systems Thinking?* London and New York: Routledge.

Appendix:

1. *Project F* and *New Domesticity*: Process Documentation
2. Glossary of Design Methods Relevant to Foresight Activities

Design for Future Needs
Process of *Project F* and *New Domesticity*

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Introduction

Whirlpool Corporation is the world's leading manufacturer and marketer of major home appliances, and has gained much of the European market. Whirlpool Europe sells brands under the names Whirlpool, Bauknecht, Ignis, Laden and Polar.

In Europe, the major domestic appliance market is quite mature and price sensitive. It is becoming increasingly difficult to differentiate between brands solely from a technological or performance point of view, because changes in those areas are largely incremental. Design and innovation have come to be viewed as essential tools for manufacturers to highlight the values of their brands and to stand out among the conventional white boxes that predominate in the market.

Whirlpool began several years ago to develop its corporate capacity for innovation: it has enabled an innovation task force, fostered collaboration and knowledge exchange, and developed a strategic focus on design. Whirlpool Europe's design studio in Cassinetta, Italy, contributes to this effort. Led by Richard Eisermann, Design Manager, Global Consumer Design (GCD), the studio is responsible for design research, strategy development and its application to the design of home appliances.

Two years ago the design studio initiated a series of advanced research projects using design as a foresight method, in order to understand and fulfil consumers' future needs and desires. The intent is to foster design thinking as a way of provoking a strategic change within the company, by creating a climate open to innovation.

In the first of these projects, called '*Macrowave'*, started in the year 1999, Whirlpool Europe invited a number of well-known designers to work with GCD to develop new ideas about the future of microwave ovens, well beyond anything currently on the market. At least one new product in the 2002 line-up was influenced by the project, and divisions within Whirlpool Europe began seeking the services of GCD for further collaboration.

Project F: design as research

A second project, called *Project F: fabric care futures,* started in 2001, as a research project and a design experiment to investigate the domestic life of consumers today and to project what it might be tomorrow. The purpose of the project was not only to extend Whirlpool's understanding of the laundry process as it exists for consumers now, but also to offer a series of imaginative alternatives for fabric and clothing care in the future, beyond the 'white box' of the typical appliance.

In order to respond to rapidly changing and increasingly sophisticated consumer needs and desires, Whirlpool's design studio uses a combination of broad-based traditional market research, trend analysis and, most importantly, local, in-home observations and interviews with householders who use the products. The Global Consumer Design team recognises that to meet and anticipate people's needs, research has to be very focused on the real contexts in which products are used. In addition to its own usability group within GCD, Whirlpool used an external research consultancy, FutureConceptLab (Milan) to carry out a research project that examined changes in domestic life within Europe, resulting in a report called *'New Domesticity'*.

The *Macrowave* and *Project F* projects signalled a departure for Whirlpool Europe's design activity: integrating contextual user research into the strategic design and product development process. The involvement of different research and design groups in combination with Whirlpool's usability team stimulated the cross-fertilisation of ideas.

Project F: goals

Project F exemplifies research aimed at overcoming current preconceptions about how domestic appliances should look, proposing new possibilities based on a deep understanding of trends and future cultural models.

The goals for *Project F* were to:

- Understand current user needs and anticipate future desires;
- Pose questions that will influence product development in the future;
- Open the way for innovation within the company;

- Provoke cross-fertilisation between internal and external design teams;
- Invite buy-in from internal constituents (executives, marketing, engineering, etc.);
- Test the marketplace; and
- Set the pace for change within the industry.

A research project such as *Project F* typically takes nine to twelve months for research, design and prototyping and another year for communications. What follows is a summary of the process and the results of the project.

Context

There are three levels to innovating and realising new products within Whirlpool's design centre:

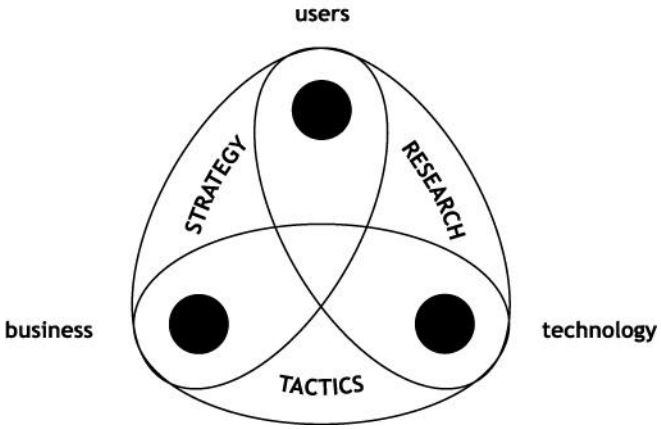
- The research level
- The strategic level
- The tactical level

The **research level** is an investigation of opportunities with few constraints, but it is always based on an understanding of three things: the potential users, relevant technological developments and the company's business aims. Whirlpool Europe began intensive design research two years ago with its '*Macrowave'* project. The purpose of the research level is not only to suggest future possibilities and get reactions from the public, but also to attain a high degree of innovation by providing a roadmap for products' development that can then be translated into specific design strategies. It serves to influence the minds of those within Whirlpool to be open to innovation. The design group translates the research insights into two- and three-dimensional concepts leading up to the development of design prototypes. These, in turn, can be important in evaluating the brand experience, product acceptance and usability.

The **strategic level** uses the investigations from the research phase to develop design solutions for the next 5 to 10 years. The product life cycle for major domestic appliances is long (10 to 20 years) compared to other industries, a factor which influences design and technological decisions for years to come. A design strategy helps to bring order and attain consistency in the range of

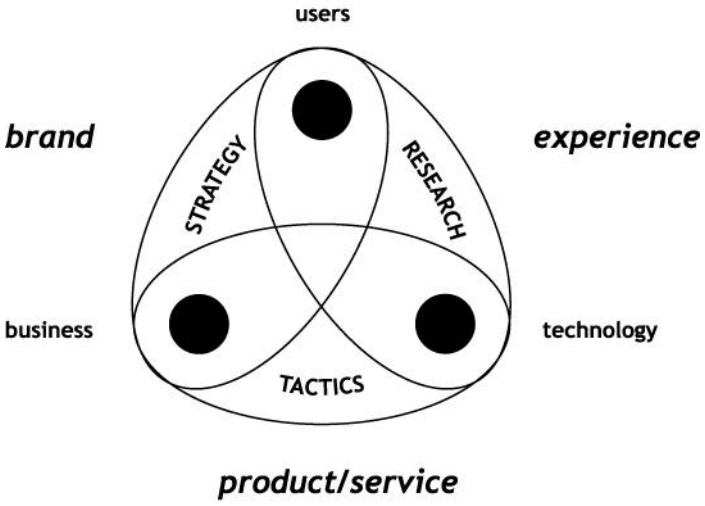
products the company presents to the market, raising the level of innovation produced.

The **tactical level** determines the day-to-day product line-up and development needs within Whirlpool. Tactical design decisions need to reflect the company's short-term goals, particularly the brand and design strategy. Here the time horizon is six months to two years. Tactical design responds to rapid changes in the marketplace, innovative competitor offerings, new consumer demands/trends, material and colour trends, and price differentiation through design.



Each level needs to inform the others. Design research uses a foresight approach and multiple techniques to create imaginable futures that inform design strategy. Design strategy guides the daily, tactical activities necessary to address the market, whilst feedback from the market may disclose new potential areas of research.

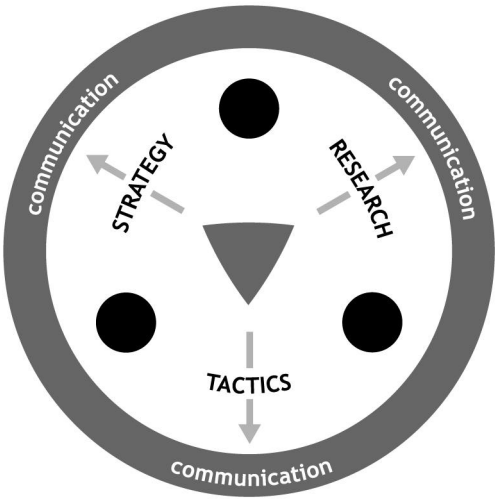
In synthesis, Whirlpool associates the tactical level with product, the strategic level with brand building, and does research with the aim of influencing imaginable user experiences.



A good product development is achieved when the company succeeds in coordinating innovation at the research, strategic and tactical level by creating the right balance between interests and needs of all the stakeholders involved with the poles of the user-technology-business triangle cited above.

Maintaining the link between strategic and tactical levels within an international company that operates at multiple locations, such as Whirlpool, requires effective internal communication, whether done in person or remotely. For example, the various divisions dealing with the design, production and marketing of laundry appliances are scattered throughout Italy and beyond: design takes place in Cassinetta, marketing in Comerio, and engineering in Naples (Italy), Amiens (France) and Schorndorf (Germany). Whirlpool as a multi-national company also has to coordinate design and production between Europe and its US operations.

Whirlpool attains this goal by supporting both internal communication and a proper dissemination of information in the different environments where it operates, as we describe in more detail in the following sections.



Project F —the process

Design research: understanding the user

In *Project F*, Whirlpool used both qualitative and quantitative research. The qualitative research was conducted by the Whirlpool Usability Group (4-5 people), which included a cultural anthropologist, a usability specialist and support staff. The research team conducted a study across Europe of in-home behaviours of people doing their laundry; the study focused on the user experience and the problems and tasks that users were trying to solve. The researchers observed the activities related to washing, the steps in which the laundry process is divided, and the factors affecting it. Visual considerations or brand perceptions were not evaluated.

The various field research methods included in-home video ethnography, researchers shadowing subjects' activities and tasks, in-depth interviews and visual self-documentation by users (prompted by diaries, and cameras, etc.).

In contrast to quantitative research, qualitative research uses a limited sample size but probes deeply to reveal information about families and their behaviours. For research to gain relevant insight, the critical factor is to choose representative households.

The study included households from Italy, France and the United Kingdom. Different typologies of families were studied during a period of 2-3 months: older couples, younger couples, with or without children, living in capital cities or smaller towns.

The researchers observed some differences between countries, mostly having to do with where consumers located their washing machines. (In Italy, machines were usually put in the bathroom; in the UK, in the kitchen or utility room.) The location suggested what kinds of activities might be related to the process of doing laundry and what associations consumers might have about them.

One subject that clearly emerged from the study was the psychology of 'things being clean'. Across cultures, consumers shared a positive feeling about being able to put on clean garments. There was a satisfaction in being able to do a load of laundry and have freshly scented clothes; this satisfaction was

linked to a feeling of control and, in some cases, even to pride (e.g. a mother's pride at being able to offer a clean school uniform to her child).

The concept of cleanliness that emerged from *Project F* went beyond the notion of hygiene or eliminating dirt, however. What 'clean' has come to mean for many is a sensorial experience of purity and transparency, linked to a feeling of well-being. Another finding was that design preferences are increasingly guided by a person's sense of self and a desire for products that reflect the articulated self-image.

In addition to the various field research methods, the company also used a second method, a focus group study carried out at Whirlpool Usability Laboratory. People were invited to describe their typical laundry activities. The aim was to better understand users' needs within the whole laundry process and to possibly rethink the design of their approach to clothing care, not just their interaction with the functional aspects of the washing machine.

One of the main findings was that for most users the complete laundry cycle usually lasts two days (starting with the step of separating clothes, and moving on to washing, drying, ironing, etc.). Users normally waited until they had accumulated a certain number of clothes before starting a new laundry cycle. It became clear that a purely technical improvement to the appliance, such as shortening the duration of the washing action by a few minutes, might not produce a significant benefit for users because of the mental model of the multi-day laundry cycle.

Although not applied to *Project F,* in this instance, the third phase of research is usually quantitative, focusing on reactions of consumers to specific designs and aspects of products. Its reach is wide, in its attempt to establish results of statistical significance.

Identifying opportunities: the design workshops

The research insights were used to inform the concept stage of *Project F*, which took place in a series of design workshops. Richard Eisermann invited three external design consultancies and the internal Whirlpool design team from Global Consumer Design to be part of the *Project F* initiative. The internal six-person team had considerable industry experience. Three external design groups were chosen to generate fresh ideas and add an international perspective: 'designkoop', based in Hanover/Berlin/Milan; 'deepdesign' from Milan; and 'designRAW' from San Francisco. Eisermann made a conscious decision to avoid well-known individual designers who might opt for an expected visual language or a signature style; instead, he selected groups of product designers for their ability to bring innovative solutions to the mix.

Both sets of teams were invited to a two-day workshop, held in June 2001, where they were first informed about consumer trends, advances in laundry technology, and the results of the qualitative and quantitative research. Using all this information, designers then took part in a number of creativity sessions where they brainstormed on the future of the laundry process. Together they identified opportunities for *Project F*, moving around a large room to various stations, jotting down ideas, making sketches and then collectively discussing the scenarios they had created.

One problem that arose during this initial workshop was that the research results had been very rich and suggestive of possibilities, but were not immediately meaningful or 'actionable' for the design teams. If anything, the problem with the research was that it was almost too complex, too 'woolly', suggesting a great deal, yet difficult to grasp, much less to narrow into a useful direction.

The difficulty of readily translating research insights into design solutions, as described by the Whirlpool team, is a common issue in foresight and strategic design. (The discipline of design planning has grown out of this very difficulty and need.)

One solution to this problem involves taking advantage of the fact that product design is an iterative process (in which designs are created and refined incrementally in each successive version). Going back and forth between the research problem and the

design solution, during each successive iteration, allows for the true development of design concepts informed by research. Integrating researchers and other stakeholders in the evaluation of proposed design solutions can also be valuable.

Another possible way to deal with the issue of translating research into design is to have designers and engineers participate in field research and user experience assessment (usability) studies to gain knowledge on location.

Some designers keep visual reminders of the research at hand, such as memorable images of users doing a particular task, which needs to inform the design. Others create profiles (also called 'personas') of prototypical users based on the research findings. These profiles can be used as a device to measure how well a particular design solution will serve the sample user. (How would User A act on this concept? How would this design solution fit into the life of User B?)

In *Project F*, after the workshop the design groups used the mapping made from the research findings to enrich their proposals and ideas. Some came back with many ideas; some groups were more focused on specific solutions. Early on, five themes emerged:

- An awareness of the senses;
- Space (and how to address the choice of location of an appliance);
- Ritual, social interaction;
- Fabrics of the future;
- Environmental concerns.

At this stage, ideas emerged about the possibility of fabric care as a service business apart from the manufacture of appliances. Whirlpool decided not to follow up on the service ideas at that time, because they foresaw difficulties in communicating those concepts to a larger audience at a design or trade fair, which was how they planned to display the concept prototypes.

The theme of connectivity was also suggested, but many companies were already looking at this subject, usually from the technological perspective rather than the user perspective. Even with a focus on the user, it didn't appear that this would be as fruitful a direction as some of the others.

The designers looked at innovative technologies such as nanotechnologies and waterless washing systems for cleaning future types of fabrics, such as those equipped with electronics. They also examined environmental and ecological concerns, especially about energy consumption and water conservation[1].

After the themes were established, each design group worked separately from the others—gradually developing ideas over the course of about a month through sketching, making 2-D models and refining them. Two of the design teams created animations, showing how people would use the imagined products and in what setting.

It should be noted here that the internal GCD designers had easy access to their research colleagues; the two groups worked closely together at Whirlpool and there was considerable informal discussion about the user research findings beyond the information given to designers in the initial workshop. GCD designers also had informal interaction with the company's engineers.

A second workshop was held at the beginning of August 2001. In a team session, all the proposals and concepts were presented and the strongest ideas were selected to be refined in further iterations in the design process.

[1] Whirlpool's actions in response to environmental policies, both voluntary and legislated, are too extensive to detail here and beyond the scope of this paper.

From design ideas to 3-D prototypes

The designs created by the teams were translated into three-dimensional prototypes during the fall of 2001. Some of the mock-ups fared better than others in the translation to 3-D; it was important, however, that all be at the same level of finish in order to be convincing. (Whirlpool built all the prototypes except for one, which was built in Milan.) The design manager acted as producer to oversee the prototyping process and ensure consistency of design quality and innovation.

The resulting prototypes represented a range not just of typologies of product, but different potential points on the timeline of product development. One or two of the concepts (e.g. designkoop's *'Body Box'*) could be realised with current technology; several others were dependent on the development of future technologies.

What follows are brief descriptions of the five concept prototypes:

'Body Box', the concept developed by designkoop is a piece of technological furniture that brings together both body care and fabric care. It houses a normal washer and dryer, along with different bins and containers—where tagged fabrics can be collected, sorted and washed automatically with the appropriate care cycle by using data stored in their label. *Body Box* is also designed to provide room for relaxing body-care activities, like chromo-therapy.

Deepdesign's concept for *'Pulse'* made the process inside the washing appliance more transparent and visible. They designed a new type of wash cycle based on centripetal (inward) force, typical of traditional hand wash, instead of centrifugal (outward) force. The rhythm of air and water flowing in and out of the machine was designed to give the sensation of a heart pulsing as the machine massages the load of laundry.

'Cleanscape', the proposal by designRAW, builds on the social aspects of laundry as a domestic activity done in the public realm. This concept is based not only on the memory of villagers washing clothes at a river bank, but also on the contemporary trend toward the development of 'third places', here a public laundry where social interaction is combined with other activities, tasks or services.

The GCD internal group developed a project called *'OM,'* the design of a waterless washing appliance utilising nanotechnology, for better care of different kinds of fabrics in the future, such as those that would be electronically enhanced. Mounted on the wall, this system suggested how fabric technology would evolve and be cared for in ways no longer dependent on conventional household plumbing.

The prototype that has stirred the greatest interest among audiences so far is called *'BioLogic',* also designed by Whirlpool GCD. *BioLogic* uses a 'slow wash' approach based on cyclical, natural processes of regeneration. Instead of a single wash drum, the laundry is distributed to a number of washing pods in a low unit containing hydroponic plants (plants which grow in a nutrient liquid without gravel, earth or another supporting medium), which, if feasible, would purify grey water used in washing. Power for the unit would come from fuel cell technology, producing only water and heat as by-products. *BioLogic* would capture and retain these as part of its resource conservation approach.

It is interesting to note that this project, which proved most intriguing to the public, was designed by the internal team, who had the most access to ongoing input about research and engineering from their colleagues at Whirlpool Europe.

The next steps in the innovation and research area would be for the internal design team to continue the development of product ideas with the same depth and conceptual quality as those in *Project F*—but more readily achievable within strategic and tactical timeframes. Resulting product concepts would need to undergo continuous user evaluation, beginning with the early design prototypes, perhaps even involving users in participatory design sessions.

Project F ideas are questions being posed. The answers to these questions will influence the product direction of Whirlpool Europe in the future.

Communicating the prototypes

After the prototypes were completed, *Project F* went into the communication phase. A great deal of work went into the physical display of the concept projects: an exhibit, a book, a CD-ROM and a website were all created to kick off the 'road show' that began in February 2002.

The physical prototypes presented alternative and innovative ideas about the future of the laundry process that readily captured the attention of stakeholders and provoked feedback.

Project F was introduced at Hometech Berlin to a mostly industry-specific audience. There Whirlpool Europe presented a symposium to discuss the insights gained from the *Project F* and the *New Domesticity* research studies. Follow-up presentations were held at the Salone del Mobile (Milan Furniture Fair) in April 2002, and at other trade or dealer-only showings, such as the 'Step into the Future' shows in Paris (June 2002) and Brussels (August 2002). Whirlpool Europe has been observing the reactions of the various audiences.

However, so far the company has had to rely on casual and anecdotal responses to the prototypes, because they could not send their usability group to gather input from the communication phase, which would have given valuable information from measurable feedback. A more structured process for capturing reactions will be done early in 2003, when the prototypes will be brought back to the usability lab for serious evaluation of user preferences.

Exposure and outcomes

Whirlpool as a company wants to position its namesake brand as innovative and user focused. The road show displayed innovative design in new products that reinforced the brand strategy. *Project F* (like the *Macrowave* project before it) helped Whirlpool Europe to break out of a stalemate in the domestic appliance industry, to provoke both imagination and discussion on future home appliances and beyond. At the same time, the project offered tangible examples of how these ideas could be implemented in new products that might redesign our physical and social interactions in the domestic environment in the near future.

Exhibiting concept products is not unusual, however. What makes this project noteworthy is that not only the products, but also the research itself, piqued the interest of the European press. The combination of the research from *Project F* and the *New Domesticity* study provided European media with a wealth of material that stimulated commentary and debate around design, consumer trends and societal behaviour. This helped Whirlpool to present and communicate the relevance and foresight value of the *Project F* concept prototypes to a general audience, the international press, consumers and the trade.

This project also aimed to reach decision-makers, opinion-makers and influencers who specify Whirlpool products in domestic or institutional environments. The press coverage of the project helped achieve those goals. The business, style and design press all covered *Project F* extensively, enhancing the image of Whirlpool Europe as an innovative and design-oriented company. *Project F* caused a significant increase in the quantity of material published about the company, especially in magazines dealing with the 'leading edge' in technology, trends and style.

Results of the project

As an exemplar, *Project F* shows how foresight activities deploying design can contribute to a company's strategic aims and vision. With this project Whirlpool Europe:

- Integrated exploratory and strategic design thinking into its approach to innovation;
- Used design research to understand users' current needs and behaviours, and to anticipate future ones;
- Created prototypes both as physical embodiments, answering these needs, and as imaginable futures;
- Stimulated internal strategic decision-making and knowledge exchange;
- Opened up a dialogue about future fabric care with many levels of stakeholders;
- Supported Whirlpool's brand strategy to position itself as an innovative company.

The project also showed that integration between foresight research and design is more effective when there is a user experience assessment group working very closely with the designers' daily practice.

Internally, *Project F* was a motivational experience for many employees of Whirlpool Europe. An internal communication audit would be the next step to gauge the perceived value of *Macrowave* and *Project F* among employees. Such an audit would be valuable as a measure of the 'softer' motivational value and benefits of design research and communication.

Externally, *Project F* has established a unique position for Whirlpool within its industry; there are very few other competitors who are yet acting in the arena of design research.

In terms of economic benefit to the company, the value of the media coverage and space in publications at least matches the original budget allocated to the project's development. Whirlpool is currently assembling a regional analysis and measurement of the media coverage achieved by *Project F* in terms of monetary value and space in publications as a return-on-investment. The percentage increase in unsolicited media calls will also be measured.

Beyond *Project F*

Foresight initiatives like *Project F* could be enhanced and extended in a number of ways. First, participatory design approaches and techniques could establish a closer and more direct interaction between users and designers. Stronger involvement of users throughout the design process could extend the influence of user data on the designers' work until the prototypes are released to a wider audience.

Second, within the short duration of an effort such as *Project F* (less than a year), building finished prototypes became very time consuming. While the level of finish of the models was consistent with those of the previous *Macrowave* project, other ways of prototyping are possible. The use of other design techniques, such as computer visualisation, video and animated scenarios might sometimes be appropriate to stimulate discussion of foresight ideas, with the added benefit of being more feasible to rework if necessary.

Project F prototypes were exhibited as individual objects with only a computer display showing their actual use. The display of prototypes during communication events would be enhanced by showing specific scenarios of how people might actually use them, based on actual interface elements and routines. Both designers and audiences would benefit from seeing proposed solutions in clear contexts that could be experienced more directly.

Third, a more systematic approach to collecting the reactions of visitors to the *Project F* exhibitions could feed back to designers and company decision-makers, to inform future projects and product development.

Finally, integrating the Whirlpool usability team into a more structured and systematic evaluation of user experiences (during the exhibitions and beyond) could establish a feedback loop from the imagined future products into strategies the company could act upon. Setting up clear evaluation criteria during the design process, covering perceptual-motor, cognitive and emotional aspects of the user experience with the prototypes, would be valuable for obtaining relevant feedback from users to inform the company's next steps.

Data obtained from these observations could inform the implementation phase of the project, but also better link its research and tactical levels. They could suggest ideas for establishing partnerships with other product or service companies to promote further innovation in fabric care in the future.

New Domesticity: Current Trends in European Domestic Life

A sociological approach to forecasting future needs

New Domesticity was a research study on new trends in European domestic life developed by FutureConceptLab (FCL) for Whirlpool Europe, as part of the activities informing *Project F*. The study was led by sociologist Francesco Morace, president of FCL, a research institute in Milan (Italy) specialised in marketing issues and trends in consumption.

The investigation ran parallel to *Project F*, and was carried out during the period of September–November 2001, building on a long-standing collaboration between Whirlpool and FCL, which had begun in 1997.

The study applied a sociological approach to the integration of different forecasting techniques. It combined a qualitative and ethnographic-oriented method for hypothesis generation in addition to the use of more traditional, quantitative market research tools aimed at extending the investigation's scope.

What follows is a description of the research: its forecasting methods, its findings, the trends it identified, and the contribution it made to *Project F*.

FCL research methods

According to Dr. Morace, the shared perspective at FutureConceptLab is not to 'follow trends passively' but 'to construct them together with those who create them'. The method used at FCL for reaching this aim is to uncover concepts that may represent new worlds of reference and help to increase awareness about new modes of thinking and behaviours emerging in our society.

FCL research practices are informed by disciplines such as semiotics and those of the social sciences: sociology, social psychology and anthropology. FCL seeks to integrate methods and contributions from several of these fields, depending on their relevance to a particular study.

The observational infrastructure supporting this activity was set up about 8 years ago when FCL developed a network of 50 correspondents (called 'cool hunters' and 'cult searchers') operating in 25 different countries worldwide. About 20 are currently operating in Europe.

The people FCL involves in this network are young professionals and researchers that work as highly sensitive 'antennae' within a specific geographic territory. Their role is to detect interesting signals or behaviours emerging in that zone which, when analysed, can help FCL client companies understand the cultural characteristics and consumption patterns of a particular market.

Correspondents are asked to constantly observe, capture and send documentation of fresh and spontaneous cultural expressions noticed during their daily life. They pay attention to the look and behaviours of people encountered in the street; to the places that attract interest and become important nodes of social activity (like new shops and bars); to projects and plans promoted by magazines; and to successful events at universities or other local institutions. In short, their job is to monitor cultural tastes.

These data, mainly photographs, form an information resource on which two FCL initiatives, the *Body Signals* and *Street Signals* Programmes, are based.

While the specific focus of these programmes consists in observing behavioural expressions and phenomena, another initiative at FCL, the MindStyles Programme studies thinking processes and styles by sifting through a collection of expressive media that affect people's imagination all over the world: music, cinema, literature, but also new media, art, fashion and design.

The analysis, integration and interpretation of this information is carried out by a task force of experts involved in a programme FCL calls the *Genius Loci* Program. Started in 2000, this programme

identifies and defines specific profiles and keywords that help to characterise each of the different countries observed.

The kernel of the *Genius Loci* Program is to uncover the talent or energy of a place, a concept that might be useful to companies or other business operators to develop customised solutions and successful marketing strategies to promote innovation in that specific city or region. The concepts and keywords emerging from this ethnographic-oriented research programme are often used to generate more detailed hypotheses and focused studies that may require the application of traditional and quantitative methods of inquiry.

Although this research approach may lead to designing studies biased towards the confirmation of the initial hypotheses and an underestimation of other potentially relevant signals of change, its value consists in providing a very flexible and updated information repository to work from; a resource from which ideas and guidelines for further investigation or interpretation of social trends can be generated relatively fast.

Studying domestic change

At the beginning of the *New Domesticity* study, the idea was to analyse current and future changes in domestic life by observing certain primary factors, such as the relationship between couples in the different European countries and their everyday interaction with specific objects in the house, especially home appliances.

Quantitative research based on focus groups and phone interviews was set up by FCL in collaboration with various market research institutes around Europe, who contacted about 2000 couples living in Germany, France, Italy, Poland, Spain and the UK. About half of these couples had children; half did not. The target group consisted of working women between the ages of 27 to 45.

The findings

The results of the *New Domesticity* study revealed some traditional attitudes, on the one hand, but also indications that a new vision of domestic life is surfacing, one that embraces conviviality and shared domesticity.

One of the study's main findings was that although couples share some household tasks, European workingwomen are still the real 'managers' of domestic life. They are in charge of the home and look after its general running and upkeep. The data also showed that there are some kinds of tasks that women are not willing to delegate to other members of the family. For example, 80% of the women interviewed said they preferred to personally take care of the laundry and to exclusively manage the use of the washing machine.

The study also showed some differences between countries. In Italy, for example, women generally carry out all everyday duties, from the laundry to the table setting, while in northern Europe a larger number of household tasks are shared with the partner.

For other types of household chores, like general cleaning, gardening, maintenance or administrative jobs, the burden is more equally shared between the couple; likewise, with all the activities related to the kitchen, like cooking for guests, preparing the table and washing the dishes.

One interpretation of the ethnographic signals collected by FCL suggests that the concept of domesticity has changed in recent years. Domesticity is a shared experience. The home is increasingly assuming more positive connotations both as a space for peace and family privacy, and as a place to enjoy social gatherings with friends.

Another change is in the relationship between public and private space. As the two now have much more in common, the preciousness of the private becomes more important.

The study also looked at the changing models of family, from the traditional family structure to more alternatives emerging in the last two decades, for example, more single-parent families and families without children.

The personal relationship between members of a couple is also changing and affecting how people experience domesticity. One trend is toward the formation of 'twin couples', where partners seek similarities and affinities in their companions, as in professional partnerships. However, this relationship is also kept open to include family and a close circle of friends.

The study also looked at the role of technology in the house, and showed how technology today has a pervasive presence in the domestic environment. Because technology can isolate people, the reaction is a desire for conversation and 'sociable domesticity'.

Yet the increased sense of the home being a hub of activity also derives from the so-called 'intelligent home' and 'home automation' models, proposing highly rational and rationalised kitchens based on advanced technology. These innovative design models have to be user-friendly and flexible, not only efficient.

Setting up a home is not just about furniture; it's about the relation of the body to the environment. Consumers are spending increasing amounts of money on both food and body care.

FCL is presently working to extend the results of this investigation by using qualitative research methods, to overcome the limitations inherent in interview-based studies, where people are typically asked to describe their everyday practices instead of being directly observed in action. With a more qualitative mode of research, FCL hopes to integrate 'street signals' with 'home signals' and to observe people's behaviours in real life situations.

The impact of the *New Domesticity* study

The findings of the *New Domesticity* study were first communicated to the public in collaboration with Whirlpool Europe at the HomeTech Exhibition held in Berlin, in February 2002. Other presentations of results specific to the different countries investigated, took place in Italy and Spain this year.

FCL's research findings did not become available to Whirlpool Europe until after the design concepts for *Project F* had already been developed and were about to be translated into prototypes. These findings were used to inform the *Project F* communication

and implementation activities currently in progress, and certainly constitute an important source of knowledge to draw from in Whirlpool's next phase of product innovation.

However, striking parallels emerged between the qualitative approach of *Project F* and the findings of *New Domesticity*. According to Richard Eisermann at GCD, the strong correlation between the two demonstrated the value of a polyvalent approach to consumer understanding.

According to Dr. Morace, ten years ago, a foresight activity like *Project F* might have been too difficult to present to a general audience. Today such a strategic design project is considered useful to stimulate curiosity and interest on the part of consumers, to get buy-in and understanding from various stakeholders, and for Whirlpool itself to effectively communicate its image as an innovator.

Design for Future Needs

Glossary of Design Methods Relevant to Foresight Activities

Interaction Design Institute Ivrea

Actors	*See 'Users'*
Concept Models*	Diagrammatic representations of a solution's main categories and features that seek to reconcile business needs with user needs and technical capabilities.
Concept Testing*	Research with target users to evaluate the conceptual framework of a solution and generate refinements of that solution.
Context Research*	Review and gap analysis of existing user research, positioning the current experience within a relevant context.
Creativity Workshops	Fully immersive, day-long sessions dedicated to brainstorming aimed at stimulating innovative ideas for the design of products/services/systems. Often these activities are supported by sketching ideas (on post-its, boards, etc.) in collaboration among interdisciplinary workgroups.
Customers	*See 'Users'*
Diaries	*See 'Self-Observations'*
Design	*See 'Human-Centred Design', 'Participatory Design', 'Strategic Design'*
Ethnography	Type of social science research that investigates the practices and life of a community, by becoming one of its members. It is based on learning about a context and the people living in it, by understanding their values, needs and vocabulary. It usually requires long periods of time playing this role and a faithful report of what is experienced or observed avoiding any interpretation or evaluation as far as possible. Within the field of interaction design, ethnography or video ethnography are methods used to capture human behaviour in the context of the person's natural environment, as a means of gaining insights about user behaviour and unarticulated needs, in order to create innovative solutions. A more adequate terminology might be cultural, design or industrial ethnography.

Experience Modelling*	User research that describes the dimensions of a user experience, suggests how to support an existing user experience, and identifies how to transform and redefine this user experience. This may include observing users in context, observing what people say and do to support the creation of useful models and frameworks that illuminate relevant aspects of experience and behaviour.
Experience Models*	A useful conceptual representation of a user experience; used as the foundation for opportunity generation and solution design.
Focus Group	Representative samples of a target group, usually involved in qualitative-quantitative research, with the aim of understanding behaviours, needs and preferences of a specific population relative to innovative products, services and systems that are under development.
Human-Centred Design or User-Centred Design	Putting People First. Human-centred design is based on the simple premise that in order to create and deliver valuable and compelling solutions for people, businesses or governments, designers have to understand experience and apply that understanding to strategy and design. This approach guides the systematic and iterative development of desirable, usable, useful and sustainable solutions for governments, businesses and their constituents.
Laboratory Observations	Qualitative or experimental studies used to analyse cognitive and behavioural responses of people in specific (recreated) situations. Usability laboratories usually apply techniques such as simulations, video observations or observation through mirror walls.
Map	*See 'Opportunity Map'*
Market Research	Quantitative studies often based on the use of questionnaire/interview techniques to uncover social phenomena and trends on a larger scale, providing results at a statistical level.

Models	*See 'Concept Models', 'Experience Models', 'Task Models'*
Modelling	*See 'Experience Modelling'*
Observations	*See 'Laboratory Observations', 'Self-Observations'*
Opportunity Map*	An experience-based analysis of gaps in the current experience that reveal new business opportunities.
Participants	*See 'Users'*
Participatory Design	A term used to describe various activities through which users provide input, ideas and feedback to researchers and designers to help shape the concept and design of new products and services.
Participatory Design Activities	Participatory design activities include concept testing, collaborative prototyping, card sorting and scenario testing - that aim to foster the evolution of concepts and the development of prototypes.
People	*See 'Users'*
Primary Research	Actual, unmediated field research dedicated to understanding users within their environments (home; work place; public, retail or entertainment environs). Research techniques include interviews, video ethnography and self-documentation by users etc.
Process Flows*	Visualised representations of the interactions between the user and product or service functions in the design solution.
Research	*See 'Context Research', 'Market Research', 'Primary Research', 'Secondary Research'*
Prototype Testing* (low/medium fidelity)	Testing interim solution designs with users in order to evaluate the usefulness and usability of the design.

Prototyping

Development of 2D-3D physical objects implementing ideas about future products/services/systems that can help to understand their benefits, drawbacks or other issues related to their future use by consumers in the intended contexts. The observation of user interaction with behavioural prototypes allows the designer to gain insights on what works, what doesn't and why, at an early stage of the design process.

Scenario Building

A character-based story line describing the assumed practical context of use for a product or service. It helps to communicate the essence of the product/service idea within a defined and probable context of use. In focusing on the 'what if' question, scenario building helps to delineate desired or problematic outcomes.
See also 'User Scenarios'

Secondary Research

A review of published articles, papers and other relevant documents useful to develop an informed point of view on the state-of-the-art within an area and to identify trends in the field.

Self-observations/ Diaries

Method used when it is difficult or impossible to directly access a certain place (like people's homes) or access is too time consuming. It consists of asking people to provide self-observations about their activities in the form of log reports or diaries, for example. Although this method involves the subjectivity of the participants in the data collected, it can be valuable to get a glimpse of life through the eyes of the people that are being studied.

Strategic Design

Strategic design helps to manifest the company's vision/image/goal of a marketplace to come, the position/placement of its products and services in relation to other competitors, and its answer to anticipated user needs. Strategic design is based on and shapes mid- to long-term business strategy and goals. It concerns the whole product system, i.e. the integrated body of products, services and communication with which a company presents itself to the market and society, giving form to its strategy.

Task Models*	Description of how users think about and accomplish goals which serves as a foundation the concept, functionality and features of a product, service or website, etc..
Testing	*See 'Concept Testing', 'Prototype Testing', 'Usability Testing'*
Usability	Usability is the extent to which users can access the functionality of a system with effectiveness, efficiency and satisfaction to achieve specific goals.
Usability Testing* (medium/high fidelity)	Testing final or near-to-final designs with users in order to evaluate the usability (i.e. ease of use) of the solution.
User	A term chosen to refer to people involved during the design, evaluation or actual usage of new products, services or technological systems. Actors, customers, participants and people are other terms in common usage and reflect the design philosophy most relevant to the situation or process described.
User-Centred Design	*See 'Human-Centred Design'*
User Scenarios	Personalised, fictional stories with characters, events, products and environments; used to shape the design of concepts, test prototypes and validate the design of the solution.
User Segments*	Representations of user groups that provide the basis for a strategic design that will meet user and business needs.
Workshops	*See 'Creativity Workshops'*

Reference

* Armstrong M., Burrell M., et al, (2001). User-centered Design at Sapient. *Poster.* New York: Sapient publication.

Interaction Design Institute Ivrea

Interaction-Ivrea is a new centre for education and research in interaction design, based in Ivrea, Italy, with students and staff from 24 different countries. Its mission is to explore potential futures with interactive computer technology, and to develop new methods and insights into their design. The Institute has three arms: a masters programme, a laboratory for design research, and a knowledge-sharing initiative. Its founding sponsors, Telecom Italia and Olivetti, established Interaction-Ivrea to foster innovation and collaborations among designers, technologists, social scientists and business people.

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Dr Silvia Gabrielli is a cognitive psychologist who has contributed to develop the Whirlpool Europe DFFN case study. During the last eight years Silvia has participated in different EU funded research projects aimed at the design/evaluation of information and educational systems. These research experiences have made Silvia a strong supporter of the 'participatory design' approach that she has applied to the development of new technologies for both children and adults. Silvia is currently working as a researcher at Interaction Ivrea (Italy).

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