

A PRACTICAL APPROACH TO PRODUCT DESIGN FOR FUTURE WORLDS USING SCENARIO-DEVELOPMENT

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ABSTRACT

The focus of consumer product design is shifting from primarily offering functionality, towards experience and emotion driven product characteristics [1]. At the same time the functioning of products is more and more defined in its social context. Product designers can play a major role in developing our future social context, as long as they are aware of the responsibility towards users, society and environment. In the master 'Design & Styling' of the Industrial Design Engineering program of the University of Twente, we created a course "Create the Future", addressing both these future- and society oriented aspects of design. In this paper we describe the course structure and the associated teaching methods, give examples of student results and discuss the points of interest and application possibilities. In the 2008 edition the students explored the future of food. First the students created a future context by investigating, building and visualizing multiple scenarios. Subsequently they designed a future product concept within these scenario contexts. It showed that the structure of this course was particularly suitable for designing products for the not so near future, i.e. 15-20 years ahead. Especially scenario development proved to be a good instrument for the students to be able to create a tangible context for designing future products and services.

Keywords: Product design, future, society, scenario development

1 INTRODUCTION

In this paper we assess how systematic scenario writing can boost students' design projects for future worlds, addressing both technological development and society issues at the same time.

Within the Industrial Design Engineering education program at Twente University there is a solid base in the traditional design disciplines like sketching, modelling, shaping and the technical background. In addition society, social behaviour and consumer emotions get attention. These days, consumers no longer buy just a product that functions, but they buy a 'concept' of something they want to be or want to achieve. As Erlhoff stated in as early as 1990; "in other words, design does not have to compensate for the technical shortcomings of the products [...], but rather for the psychological shortcomings of human beings or of society itself. Nowadays, beholders or users demand of objects that they display qualities they cannot possibly have: identity, individuality, the meaning of life, the fulfilment of the widest range of wishes and cravings. The concept of function has suddenly undergone boundless expansion." [2].

These topics are embedded in a two year master curriculum 'Design & Styling' that ranges from the past (design history) via the contemporary to the future. The product designer can play a major role in developing this future, as long as he or she is aware of the responsibility towards users, society and environment. As Victor Papanek [3] said: "It is important to remember that architecture and design are the social arts par excellence. It is possible to avoid theatre and ballet, never to visit museums or galleries, to spurn poetry and literature and to switch off radio concerts. Buildings, settlements and the daily tools of living however, form a web of visual impressions that are inescapable."

This paper describes the structure and teaching methods associated with the course 'Create the Future' that is aimed at the future oriented part of this master program. Examples of the results of the course come from the latest edition where the students addressed the 'Future of Food'. We chose the food

theme, because this is a field with a very strong relation to everyday society. The habits of what, when and where we eat form a large part of our social behaviour and social status. Moreover future developments like genetic improvements, globalization and industrialization of agriculture have a strong impact on society and do affect the social aspects of food. Look for instance at the interest for biological agriculture or the slow food movement, and on the other hand the exploding engineered health food assortment with all sorts of (vitamin) supplements. Our habitual relations with food make it difficult to conceptualize different food practices in the future, while at the same time the pressures on and developments of current food production systems make it unlikely that these practices will not alter in the next 15 years. For these reasons the food industry seemed an appropriate theme, not only to design future product concepts, but also to familiarize the students with the interrelatedness of technology, society and design.

In this paper we describe the structure and contents of the course and will give some examples of students' results. The paper is completed with a discussion and conclusions from our findings.

2 STRUCTURE OF THE COURSE

The course was set out as project oriented education [4], arranged around an open-end assignment. In this particular example the assignment was "Create a food-related product concept for the year 2025". The execution of the assignment itself was largely left to the students' self activity. The total duration of the course was 10 weeks, part-time with a total workload of 10 European Credits. The first half of the project is dedicated to the future scenario development and is concluded with a session where the groups present the scenarios they created. The second half is for the development of product concepts within these scenarios. The educational input given in the first part of the course directly supported the student's execution of the project, and consisted of a series of three lectures on forecasting methods and two workshops in scenario writing. In the design phase additional input was provided by guest-lectures from professionals in the field of interest. The input was more loosely related to the students' work and the diversity of the food-theme was reflected in the invited guests. They ranged from a dairy food development manager, via a high rated restaurant chef to a packaging research professor. During the whole project the students' progress was reviewed in project-meetings with the supervisors.

3 SCENARIOS

For future forecasting, several techniques have been developed to stretch the time horizon beyond the common sense. These include trend-analysis, Delphi studies, expert studies, simulation, time-series, causal modelling and scenario writing [5]. One of the most powerful of these techniques, fit to product design, is scenario-development [6]. The advantage of scenario development over other techniques is its flexibility in the time dimensions, details and imagination and the possibility to include the results from other methods. The scenarios can be written text or visualized in any way, adapted to the underlying design problem. By writing multiple scenarios, designers can also take into account the inherent uncertainty of the current developments. And though one might discern typical patterns in product development and product use, combined with other technical and social developments, tensions may arise, with unpredictable but not unthinkable outcomes as a result [7].

4 SKETCHING THE FUTURE OF FOOD

In our project the future of food was assessed by using explorative, context scenario's. This scenario technique, based on the methodology developed for future energy business research by the Shell Strategy Group [8], is adapted to the aims of product design and consists of five steps.

1. Choosing an actor as a central focussing point for the development of scenarios, product concepts and strategic issues of the actor. This can be either; a commercial company, a government body, an ngo or a special interest group, but it is essential that it is likely that future developments will affect the actor.

2. Analysis of an industrial sector, commercial market or societal field (like agriculture, public transport or entertainment) related to the chosen actor, by identifying other main actors, critical factors and main drivers of future developments. For further analysis these are mapped in an uncertainty/importance matrix. For an example of an uncertainty/importance matrix within the food theme, see Figure 1. Items that are both important and uncertain will lead to different scenarios. Items that are

actor to meet the demands, opportunities or threats of the future scenario. The project approach in this part was left to the choice of the students.

4.2 Assessment

At the end of the course the groups had to present their work to the audience in a twenty minute (computer supported) presentation, followed by a discussion with the public. The students are explicitly invited to incorporate the results from the discussion in their final submission. To facilitate this, the presentation session is held two weeks before the submission deadline of the final report. The groups were then evaluated by two staff members and rated for the quality of the product concepts, the soundness and consistency of the scenarios, the future orientedness, and the quality of the presentation and report. As there is no feature implemented in the course to rate the individual performance of the students, they received a mark as a group.

5 PRODUCT CONCEPTS IN FUTURE SCENARIOS

The groups could choose their own field of interest (represented by the chosen actor) within the food sector. The end results therefore differed largely, although several groups had focussed on supermarket retail. Some of the projects realized were; a new design for a web-shop competitive real life supermarket; a restaurant design based on a combination of environmental friendliness and health; an environmental friendly and socially enhanced McDonald's corner; a fully modular self sustaining fish nursery and a supermarket design addressing social safety. Below we will present three of these projects with a short explanation of scenarios and related product concepts.

5.1 A web-shop competitive real life supermarket

In this scenario the Dutch food retailer Albert Heijn was the imaginative actor, based on the central question; 'How is the waste disposal market organized in 2025?' The group developed three scenarios. In each scenario waste disposal had become a more important issue for the retailer, but the way responsibilities for waste disposal were organised was considerably different. By combining the waste issue of packaging with social demands in supermarket design, the group came up with a new concept that would be a robust solution within each scenario. A shop was developed where the products are displayed virtually, with the use of interactive technology. The consumer will choose his products with a PDA-like device and send this to the shop's depot. There the goods are packed in a standard box to be taken home (Figure 3).



Figure 3. The 'SmartShelves' concept for a future supermarket. The products are displayed virtually in interactive display boxes on the wall. The packaging for the supermarket goods is anonymous and efficient. The marketing is done by the displays in the shop.

Because the display quality of the individual products is communicated virtually, the actual packaging of the goods can be rather anonymous, efficient and standardized, and therefore optimized for recycling. To be able to compete with web-based supermarkets, the shop was provided with extras like a sample kitchen with demonstrations and advice, and a lounge bar where the shopper can hang out with friends while waiting for his delivery.

5.2 A restaurant design based on a combination of ecological food and health

This project was set up around the Netherlands based 'LaPlace' chain of restaurants as the central actor. The scenario's emphasized on the developments in both ecological and gene-modified food

production. In the chosen scenario (shown partly in Figure 2) public attitudes towards food would largely be influenced by an (imaginary) breakout of crop disease amongst gene-food. The product concept was based on serving ecological produced food. Because of the growth of the population the ecological food would not be produced in a biological but in an industrial context. The restaurant concept was accordingly changed from a market-place like situation to a concept where the emphasis was on the healthiness of the ecological food. The central metaphor to communicate this healthiness was the spa-resort (Figure 4).

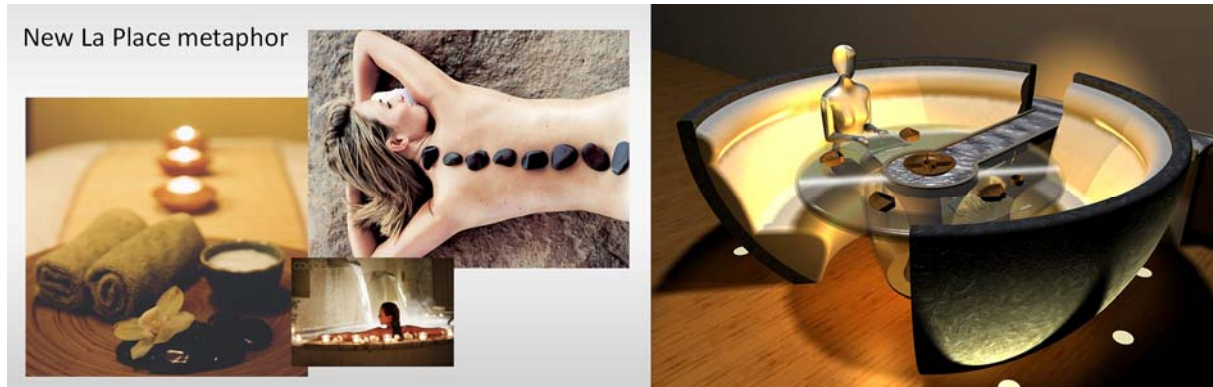


Figure 4. Left; The new metaphor for communicating the healthiness of the restaurant food. Right; A part of the final concept. The ordered food is transported to the cosy table arrangements by means of a gently rippling stream of water.

5.3 An environmental friendly and socially enhanced McDonald's corner

In this project the students investigated energy supply, meat production and McDonald's as a global player in offering food (see also Figure 1). The challenge of this project was to develop future concepts for an actor with a strong global identity, based on contested food concepts. In the chosen scenario, presented in newspaper-style, sustainable energy supply would be organized locally along with the food production. According to the students, McDonald's should react to this scenario by downscaling its restaurants into self-supporting units at neighbourhood-size (Figure 5).

While radically different from the current positioning of McDonald's, the presented concept is still recognizable as a McDonald's. Therefore the transition becomes imaginable.

6 DISCUSSION AND CONCLUSIONS

The scenario development proved to be a good instrument for the students to be able to create a tangible context for designing future products and services. The structure of this course was particularly suitable for designing products for the not so near future of 15-20 years ahead.

The food theme formed a good umbrella for the students to work out their own assignments. A complication is assessing the results in a proper way. From the beginning the level of abstraction of the assignments was dispersed and therefore the results as well. It appeared impossible to rate against objective achievement levels. This is reinforced by the high level of students' self activity in the development stage and the inherent uncertainty of the future. Therefore the grading was largely determined by the outputs produced by the groups. The scenarios were assessed mainly on internal consistency rather than the actual contents and meaning. The product concepts were rated for how well they would fit into the chosen scenario rather than for their likeliness to resolve our future. When for instance sketching a future scenario with growing individualism, flexible online technology and a segregated society, it is not likely to develop a standardized supermarket concept that should fit all customers. In such a scenario one would also accept very different consumer profiles rather than one, standard individualised consumer.

A pitfall in the concept development stage of the project was the mixed input with guest-lecturers. By limitations of the available professionals and the wide variety of chosen actors, the relevant input differed for the several student groups. This can be improved by carefully selecting the relevant speakers or by defining the assignment more closely. In this case for instance 'the future of how we consume food' or 'how food is produced'. The latter will help the students to focus their projects and will also make evaluation and comparison of the outcomes easier. It seems important to keep some

space for the students to choose their topic, because they appreciate this high in the evaluations. Overall the course scored 7.7 out of 10 and the study load was rated lower than the given 10EC, which normally indicates that the students worked on the project with pleasure. It also indicates that the requested deliverables for the development phase can be more demanding.

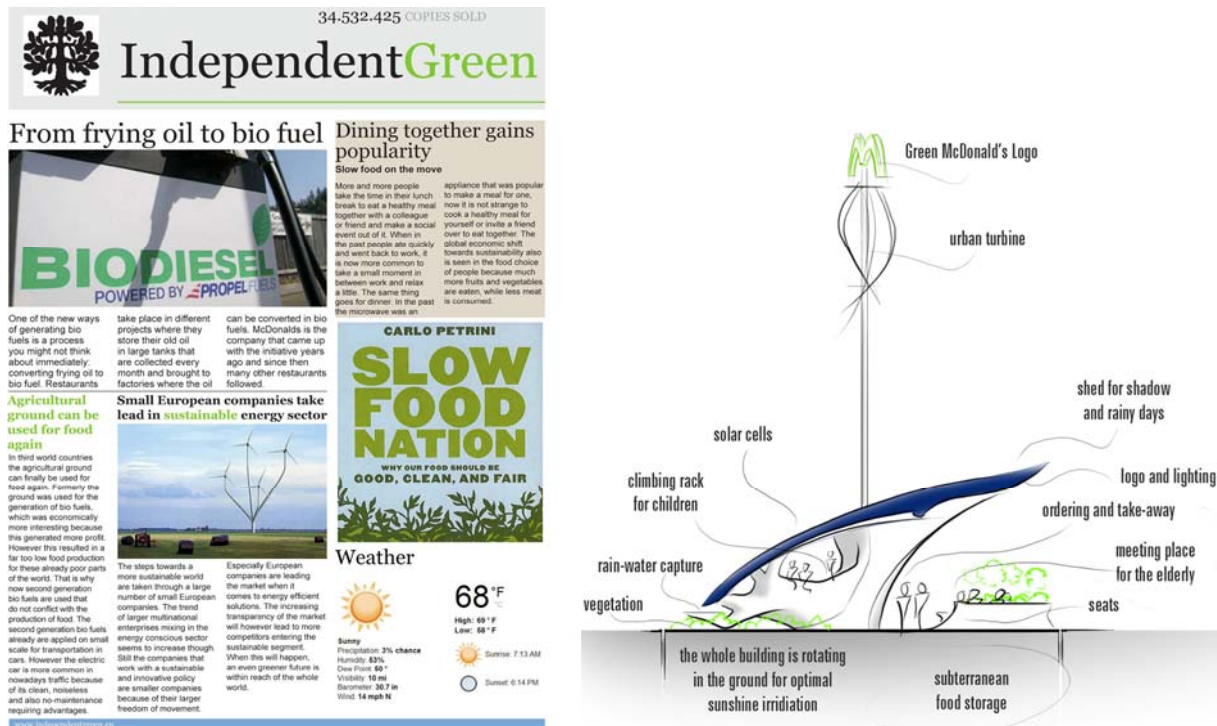


Figure 5. Left; Visualization of the independent green scenario, using a newspaper. Right; Artist impression of the self supporting McDonald's corner. The pavilion serves both as a food-outlet and a meeting point for the neighbourhood.

An important aim of the course was to stimulate students' thinking on integrating product design with technology development and societal issues. By emphasizing on the three issues in the scenario development stage, supported by the lectures and workshops, the students learned to recognise and incorporate these topics in their vision of the future. And the visualization of the scenarios forced the students to mix these issues into appealing images.

In the end the students showed a range of interesting future product concepts with representation of all three aspects (product, technology and society). What is important is that with the help of the scenarios, the emphasis came on the ideas behind the product concepts, instead of the products itself. This appears to be very suitable for the design practice nowadays, where more and more attention is given to abstract ideas such as brand-identity, authenticity and emotional impact, as foreseen by Erlhoff.

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