

## THE INFLUENCE OF THE DESIGNER'S GENDER

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### 1. Product design from a gender perspective

Product design has a large influence on the buying behaviour of people. At the moment, many products are at the end phases of their development. Designs are used to segment or to individualise products (Eger, 2007). As a result, people can choose from different varieties and brands when buying, for instance, a certain type of iron or vacuum cleaner. Other aspects, such as super-functional aspects, are important to consumers as functionality is now expected (McDonagh and Weightman, 2003; Creusen and Schoormans, 2005). A rational distinction between similar products is becoming more difficult. Therefore, a purchaser often relies on emotional decision-making. Product appearances influence this emotional decision making of purchasers to a large extent (Jordan and Green, 1999; Norman, 2004). Emotional decision making can also be explained from our current societal state of the art. We are living in an experience economy and we want products to match our preferences and lifestyles (Pine and Gilmore, 1999; Piet, 2004;). In combination with the approach of this paper, it is important to know what women or the feminine consumer want (Milner and Fodness, 1996; Johnson and Learned, 2004). What are the preferred characteristics in product design? Many women do feel the almost physical discomfort in response to a marketing effort that discounts them, pegs them as "typical" women, or mistakenly or superficially uses flowers and pastels in their designs to reach them. Take for instance the "as-long-as-it's-pink" focus, where existing products are "redesigned" for women, only by giving it a pinkish colour (Milner and Fodness, 1996; Johnson and Learned, 2004). When designing for the feminine market, a good approach is necessary.

### 2. The female market is rising

The female market is rising. American marketing research shows that women have a good earning power. And their spending power is even larger. Over 80% of the consumption purchases are spent by women (Johnson and Learned, 2004). This trend is not only occurring in the USA. European numbers show a similar trend. Spending patterns in couples are found in analysing data from the 1993-4 Family Expenditure Survey (FES). Where both the man and the woman are in full time employment, women are responsible for 76% of spending on food, 59% on household goods, 49% on holidays and 38% on motor vehicles. Another UK survey in 1996 bears out the importance of the female consumer of cars, revealing that 60% of new car sales are to women (Moss, Gunn et al., 2006). In the Netherlands, a generation of women is emerging that will have a higher educational level than men (Portegijs, W., Hermans, B., et al., 2006; Latten and Dijk, 2007). A major increase of women at the labour market in the Netherlands has already occurred between 2001 and 2004. It is an increase of 39 thousand in 2001 to 200 thousand in 2004. The bruto labour participation increased from 55,6% in 2001 to 62,8 % in 2004 (Janjetovic and Sebo, 2006).

### **3. The female preference in product design**

Often, designers assume to know the female consumer and the criteria needed to design for them. Design methods, such as user representations and moodboards, are used to gain a vision of the target consumer (Rommes, 2000; McDonagh and Denton, 2005). Nevertheless, often a personalised or a stereotypical approach appears to be used, resulting in a mismatch between the vision on the user and the real user (Rommes 2000). Some studies have been performed to analyse the preference of the female consumers. Take for example the as-long-as-it's-pink transformation of products, which is the result of a very narrow perspective. Gloria Moss and others have conducted a lot of research on the topic over the years. She describes that, at the risk of generalizing, females tend to like bright colours, surfaces replete with detail, curvy as opposed to straight lines, etc. Against this, males tend to prefer darker colours, surfaces devoid of detail and so on (Moss, 2003). In her research approach, she made another interesting step. She analysed whether the gender of the product designer has influence on the appearance of the product. This is the case. A survey of forty people connected with design, revealed that 73% of those interviewed perceived a difference between men's and women's designs (Moss, 2003). When combining the difference in design approach and the different preference by consumers, it appeared that a mirroring principle existed. People tend to prefer designs made by their own gender (Moss, 2003; Moss, Gunn et al., 2006). Actually, this should not be a surprise, considering a design approach in which people often reflect their designs against their own opinion. They use their tacit knowledge to judge their design sketches (Bruce, 1985). In her analyses Gloria Moss used two dimensional designs only. She studied business cards, Christmas cards and a lot of websites (Moss, 2003; Moss, Gunn et al., 2006). From these analyses, distinctive criteria for the two dimensional products could be derived. In judging the differences between the websites designed by men and women, the criteria were grouped in three main areas: language, visuals, and navigation. Visuals include elements such a preference for straight lines and fewer colours by men and rounded shapes and more use of colour by women (Moss, Gunn et al., 2006). A two dimensional design has different qualities in comparison to a three dimensional design. A simple fact is that three dimensional designs have a backside. The research question of this study will focus on this translation.

### **4. Study to the appearance of products and the differences between the sex of the designers**

A study has been performed to gain hands on insight in the research of Gloria Moss. And, more over, to investigate whether the found criteria for two dimensional products, such as websites, is also applicable for three dimensional designs, such as consumer products. Interesting results were derived.

#### **4.1 Participants**

Participants are first year students of the Industrial Design Engineering programme at the University of Twente. They are following a first semester course that was developed to stimulate the students' awareness of and reflection on IDE. Students' opinions, interests and motivations were elicited by discussions, written questionnaires and small group discussion meetings. As part of the course, students were obligated to fill in the questionnaire.

In advance, students were told that part of the information would be used in a research. 69 students filled in the questionnaire and 64 entries could be used of which 20 were female students and 44 were male students. Missing entries are for instance students which assumed that a product designed for women is most probably designed by a woman, which is often not the case.

#### **4.2 Method**

The significant differences found in the research by Gloria Moss were used to test whether these differences could be found in three dimensional design as well.

The products to analysed are searched for by the students themselves as part of their course. They had to search for two samples of a single product type. One product had to be designed by a male designer and one by a female designer. A random check of the students' survey method to the product designers and their products, showed that mostly the internet was used, searching on a product type and the

Dutch words for 'female product designer'. The IKEA magazine and design competition sites or books, such as the Red Dot, were used as well.

Questions, concerning their selected products, were asked using an Internet questionnaire. The first year students were free to fill in the questionnaire where and when they wanted, as long as it was before the set deadline. The questions of this study were added to an existing questionnaire which has been used within the course for several years now. The questionnaire contained questions concerning the functionality of the product, the use of the product and the appearance of the product. Also general questions related to their educational interest were asked. The questions derived from the research of Gloria Moss were added to the appearance part of the questionnaire.

The statistical analysis of the results has been performed with the same statistical test as was used in the research of Gloria Moss (Moss, Gunn et al., 2006). A Chi-Square test is used in combination with a Frequencies analysis that was split on the variable 'sex of the designer'.

### 4.3 Instruments

The products to analyse were gathered by the students themselves. The digital images were handed in.

Within the existing Internet questionnaire the following questions were asked based on the research of Gloria Moss. These questions are derived from two articles by Gloria Moss: (Moss 2003; Moss, Gunn et al., 2006). From her research the specific mentioned variables are used and criteria that showed a significant difference. The questions that did not show a significant difference, and the questions specifically related to websites, such as formality of typography are not used in this study. The questions were asked in Dutch, as the course was given in Dutch. Questions eight and nine were added based on a combination of several variables. The information between the bracket gives the multiple choice answers to the questions. Answers could be given via radio buttons or a pull down menu

1. Number of colours (1.one;2. two to three;3. four to six; 4. more than seven)
2. What are the used colours (1.blue/black; 2.pink/mauve/yellow; 3.mixture; 4.else)
3. What are the used colours (1.darker colours; 2.lighter colours; 3.soft,sweet colours; 4.bright colours; 5.screaming colours; 6.mainly white; 7.white and bright colours)
4. The product appearance consist mainly of horizontal lines (1.yes; 2.no)
5. The design has in its shape (1.mainly rounded lines; 2.mainly straight lines; 3.mixture)
6. The design exists of round, fluent shapes (1.yes; 2.no)
7. The design has an aggressive sign language (1.yes; 2.no)
8. The design consists of geometrical shapes (1.yes; 2.no)
9. The design has a soft, delicate sign language (1.yes; 2.no)
10. The different parts of the design (1. are a consistent, coherent assembly; 2.has recognisable different parts: a discontinuity in the design; 3. there is a focus on a part of the design.)
11. The product has innovative elements in its design (1.yes; 2.no)
12. The design has (1. a emphasis on three-dimensionality; 2.less emphasis on three-dimensionality: many shapes in the two dimensional space)
13. Are there related products: is it part of a series?: yes, namely (1. one; 2.two to five; 3.six to eight; 4. nine to fourteen; 5. more than fifteen; 6. no; 7. I don't know)
14. Humour/ a subtle use of humour in the design: (1. yes; 2. no)
15. Functionality is important in this design (1. yes; 2. no)
16. The theme of this design is focussed on (1. more on women; 2. more on men; 3. more on none; 4. more on both)
17. The theme of the design is focussed on nature/ plant life: (1. yes; 2. no)
18. The theme of the design is focussed on vehicles, like cars (1. yes; 2. no)
19. The surface of the product has detail (1. a lot; 2. a bit; 3. none)
20. The surface of the product has patterns (1. yes; 2. no)
21. The surface of the product is (1. soft surface; 2. hard surface)

### 4.4 Results

The following results were obtained from the questions given above, from the Internet questionnair.

**Table 1. Statistical results using the Chi-Square Test and a Frequencies analysis**

Q	Significance using Chi-Square		Designed by a woman	Designed by a man	Q	Significance using Chi-Square		Designed by a woman	Designed by a man		
1	0.12	1	37,50%	32,80%	11	0.034 *	1	37,50%	56,30%		
		2	43,80%	54,70%			2	62,50%	43,80%		
		3	12,50%	7,80%			12	0.344	1	64,10%	71,90%
		4	6,30%	4,70%					2	35,90%	28,10%
2	0.971	1	18,80%	20,30%	13	0.803	1	3,10%	6,30%		
		2	4,70%	3,10%			2	26,60%	17,20%		
		3	14,10%	14,10%			3	3,10%	3,10%		
		4	62,50%	62,50%			4	3,10%	1,60%		
3	0.462	1	25,00%	31,30%	14	0.683	5	6,30%	9,40%		
		2	37,50%	26,60%			6	17,20%	21,90%		
		3	7,80%	3,10%			15	0.689	7	40,60%	40,60%
		4	15,60%	18,80%					1	23,40%	26,60%
		5	1,60%	6,30%			2	76,60%	73,40%		
		6	9,40%	7,80%			16	0.000 ***	1	75,00%	71,90%
		7	3,10%	6,30%					2	25,00%	28,10%
4	0.008 **	1	21,90%	43,80%	17	0.008 **	1	40,60%	9,40%		
		2	78,10%	56,30%			2	3,10%	25,00%		
5	0.230	1	39,10%	26,60%	18	0.349	3	12,50%	17,20%		
		2	39,10%	40,60%			19	0.533	4	43,80%	48,40%
		3	21,90%	32,80%					1	43,80%	21,90%
6	0.289	1	56,30%	46,90%	20	0.020 *	2	56,30%	78,10%		
		2	43,80%	53,10%			1	14,10%	20,30%		
7	0.843	1	26,60%	28,10%	21	0.404	2	85,90%	79,70%		
		2	73,40%	71,90%			1	18,80%	15,60%		
8	0.132	1	6,90%	73,40%	22		2	51,60%	45,30%		
		2	39,10%	26,60%			3	29,70%	39,10%		
9	0.047 *	1	68,80%	51,60%	23		1	39,10%	20,30%		
		2	31,30%	48,40%			2	60,90%	79,70%		
10	0.969	1	73,40%	75,00%	24		1	26,60%	20,30%		
		2	10,90%	10,90%			2	73,40%	79,70%		
		3	15,60%	14,10%							

In this test the significance is indicated as follows: \* refers to 95% level or <0.05, \*\* refers to 99% or <0.01, \*\*\* refers to 99.9% or <0.001. No \* indicates no significance. Each level of significance represents the complete set of data for that variable.

## 5. Discussion

The significant differences in this study will be reviewed in more detail in the following. Question 4. Designs by male designers have, on average, mainly horizontal lines in their designs. Designs by female designers hardly had horizontal lines in their designs. This is in line with the research of Gloria Moss. (Moss, Gunn et al. 2006)

Question 9. Products designed by female designers mostly have a soft sign language, whereas by products designed by male designers the soft sign language could be found in half of the cases. This is in line with the research where soft surfaces and colours are preferred by female designers.

Question 11. More products designed by male designers than by female designers, have innovative elements in its design. This question cannot be compared to the research of Gloria Moss, as the question should have been whether unconventional or unusual elements were used in the design. Examples of unconventional shapes are usage of circles, or squared business cards. Apparently it is a distinctive criterion and will be used in further research.

Question 16. The theme of the design related to humans had a high significant level. The designs of female designers focussed more on women and on both men and women. The theme of the designs by male designers focussed more on both men and women. Female designers appear to focus the least on men and male designers appear to focus the least on women. This is in line with the research of Gloria Moss where men focus more on men and women more on women (Moss 2003).

Question 17. The theme of the design by male designers didn't focus on nature/ plant life. The plant life theme in designs by female designers was evenly used and not used. This result is in line with the research of Gloria Moss (Moss 2003).

Question 20. Most of the analysed products didn't have patterns on the surface. However more designs made by female designers had patterns on the surface. This result is in line with the research of Gloria Moss (Moss 2003).

The study to the different characteristics in the design of products, made by male and female designers, showed a significant score for six out of twenty-one questions. This is a percentage of 29%. These results indicate that indeed the criteria can be translated from two dimensional designs to three dimensional designs.

When analysing the this study, possible solutions were considered on how and if this score could be improved in further studies. One reason that might have limited the score could be the choice of and the approach used by students when filling in the questionnaire. The free planning of the students in combination with a rigid deadline to fill in the questionnaire might have resulted in a rough entry of the questions due to time limitations. The free choice of products and the place to find the product has resulted in a wide range of products in type and quality. Another reason might be the low expert level of the students as they were freshmen in the first semester of their education. They have little experience with the possible aspects related to a product's appearance analysis.

The questions Gloria Moss used in her research are derived from her research. Perhaps those non significant criteria in the two dimensional designs, could be significant in the three dimensional designs. And the criteria used in the study of this paper, was based on two studies of Gloria Moss only, where she has performed several more studies over the years. Perhaps a broader based list will help in a better definition of the criteria.

Interestingly, even though not all questions show significant differences, a similar trend as in the research of Gloria Moss could be found.

## 6. Conclusion and recommendation

This paper showed that it is necessary to focus on the female consumer and that special care is necessary in the approach. The research method in this study focuses on differentials in the design approach by male and female designers. Different criteria were analysed in two dimensional websites by Gloria Moss. And this study showed that part of these design criteria are also applicable on three dimensional product designs. However a limited score of significance of 29% of the questions was found in this study. Therefore a follow up of this research is needed, with more attention to the analysis of the design approach and the set of criteria to be tested.

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