

**GENDER DIFFERENCES IN MUSIC
REPRODUCTION EQUIPMENT: A DESIGN
PERSPECTIVE**

**M.Sc. Thesis by
Mithat F. KONAR, B.S., B.A.**

Department : Industrial Product Design

Programme: Industrial Product Design

JUNE 2007

**GENDER DIFFERENCES IN MUSIC
REPRODUCTION EQUIPMENT: A DESIGN
PERSPECTIVE**

**M.Sc. Thesis by
Mithat F. KONAR, B.S., B.A.**

(502041959)

Date of submission : 7 May 2007

Date of defence examination: 12 June 2007

Supervisor (Chairman): Prof.Dr. Nigan BAYAZIT

Members of the Examining Committee Prof.Dr. Nur ESİN

Assoc.Prof.Dr. Özlem ER

JUNE 2007

**MÜZİK DİNLEME SİSTEMLERİNDE CİNSİYETLERE
GÖRE FARKLILIKLAR: BİR TASARIM PERSPEKTİFİ**

**YÜKSEK LİSANS TEZİ
Müh. Mithat F. KONAR
(502041959)**

**Tezin Enstitüye Verildiği Tarih : 7 Mayıs 2007
Tezin Savunulduğu Tarih : 12 Haziran 2007**

**Tez Danışmanı : Prof.Dr. Nigan BAYAZIT
Diğer Jüri Üyeleri Prof.Dr. Nur ESİN
Doç.Dr. Özlem ER**

HAZİRAN 2007

TABLE OF CONTENTS

LIST OF TABLES	iv
LIST OF FIGURES	v
ÖZET	vii
SUMMARY	viii
1 INTRODUCTION	1
1.1 Objectives	1
1.2 Problem Statement and Explanation	3
1.2.1 Focus	5
1.2.2 Limits	5
1.3 Benefits	5
1.4 Methodology	7
1.5 Findings and Discussion	7
2 LITERATURE REVIEW	8
2.1 Literature on Gender	8
2.1.1 Gender in general	8
2.1.2 Gender and cognition	9
2.1.3 Gender and design	10
2.1.4 Gender and technology	12
2.1.4.1 Gender and computing	13
2.1.4.2 Gender and leisure electronics	15
2.2 Literature on Methodology	15
2.2.1 Methodology in general	15
2.2.2 Design research	17
2.2.3 Reflective practice	18
2.2.4 Visual anthropology	19
2.2.5 Grounded theory	19
2.2.6 Miscellaneous methodologies	21
2.3 Miscellaneous Literature	21
3 METHODOLOGY: REQUIREMENTS ANALYSIS	23
3.1 Gender and Technology in General	23
3.2 Gender in Design	25
3.3 Gender and Musical Reproduction Equipment	26
3.4 The Case for a Qualitative Approach	26
3.5 A Preliminary Research Plan	27
3.6 Survey of Methodologies	28
3.6.1 Grounded theory	28
3.6.2 Case study	28
3.6.3 The repertory grid	29
3.6.4 Methods of sketch analysis	30
3.6.4.1 Reflective practice	30

3.6.4.2 Semiology	30
3.6.4.3 Visual anthropology	31
3.7 Summary	31
4 GROUNDED THEORY AND DESIGN	32
4.1 The Appeal of Grounded Theory in Design	32
4.2 Grounded Theory Concepts	33
4.2.1 Theory generation vs. verification	34
4.2.2 Inductive vs. logico-deductive theory	34
4.2.3 Process	35
4.2.3.1 Open coding	36
4.2.3.2 Selective coding	39
4.2.3.3 Sorting	39
4.2.3.4 Writing up	39
4.2.4 Criteria	40
4.3 Applicability of Grounded Theory in Design	41
5 TOWARD AN IMPLEMENTATION OF SEMIOLOGY IN DESIGN	44
5.1 Framing Semiology for Design	45
5.2 Toward an Integrated Framework	48
5.2.1 The Case for a Return to Fundamentals	48
5.2.1.1 Formal Methods: A General Perspective	48
5.2.1.2 Semiology, convention, and culture	49
5.2.1.3 Design Analysis via Semiology	50
5.2.1.4 Requirements for Creativity	51
5.2.1.5 Reconstruction	51
5.2.2 An Integrated Process Based on Semiological Concepts	52
5.3 A Brief Example: The Folk Guitar as Semiological Artifact	53
5.3.1 Theme	54
5.3.1.1 Folksiness	54
5.3.1.2 Gender	56
5.3.2 Variations	56
5.3.2.1 Counter-cultural treatments	56
5.3.2.2 Transformative treatments	58
5.3.2.3 Contra-cultural treatments	60
5.3.3 Creative Reconstruction	62
5.4 Discussion	64
6 THE METHODOLOGY USED	65
6.1 Methodology in detail	66
6.1.1 Overview	66
6.1.2 Details	68
6.1.2.1 Participant selection	68
6.1.2.2 The design brief	69
6.1.2.3 The sketch and its coding	70
6.1.2.4 The repertory grid	70
6.1.2.5 The interview	71
6.2 The Designer as Social Informant	72
7 FINDINGS	73
7.1 Participant profiles	73

7.2	Overview of Participant Sketches	74
7.3	Semiological Findings	81
7.3.1	Analysis of prototypical non-portable music reproduction systems	81
7.3.1.1	Formal conventions	81
7.3.1.2	Significations	84
7.3.2	Semiological analysis of participant sketches	86
7.4	Repertory Grid Findings	88
7.4.1	Perceived similarity and gender	90
7.4.2	Criteria terminology and gender	95
8	DISCUSSION	97
8.1	The Need for New Forms	97
8.1.1	Universal dissatisfaction	97
8.1.2	Gender differences	98
8.1.2.1	Form	98
8.1.2.2	Integration	98
8.1.2.3	Power relations	99
8.1.2.4	Personality	99
8.2	Comparison with Logico-Deductive Theories	99
8.3	A Case for Gender-Neutral Solutions	101
8.4	The Enthusiast vs. the General User	101
9	CONCLUSION	103
	REFERENCES	106
	APPENDICES	115
	ABOUT THE AUTHOR	212

LIST OF TABLES

	<u>Page No</u>
Table 5.1	Strategies for reconstructing the guitar 63
Table 7.1	Stances taken by male and female participants toward significations 87
Table 7.2	AI's repertory grid data..... 88
Table 7.3	AT's repertory grid data..... 89
Table 7.4	CA's repertory grid data 89
Table 7.5	GT's repertory grid data..... 89
Table 7.6	HB's repertory grid data 90
Table 7.7	GT's self-difference data 90
Table 7.8	HB's self-difference data 91
Table 7.9	AI's self-difference data..... 91
Table 7.10	AT's self-difference data 92
Table 7.11	CA's self-difference data 92
Table 7.12	Frequency of use of criteria categories 96
Table H.1	Criteria identification terms and their categories..... 199

LIST OF FIGURES

	<u>Page No</u>
Figure 4.1	Grounded theory workflow 36
Figure 5.1	Handheld electronic device 46
Figure 5.2	Handheld electronic device phone in use context 46
Figure 5.3	Model of iterative idea development 49
Figure 5.4	Taxonomy of relationships of artifact's significations with a prototypical form 51
Figure 5.5	Creative process diagram 53
Figure 5.6	Martin D-45 folk guitar 54
Figure 5.7	Typical folk (left) and classical guitar (right) rosettes 55
Figure 5.8	Tobacco sunburst finish 57
Figure 5.9	Black lacquer finish 57
Figure 5.10	Back view of flamed maple 58
Figure 5.11	Adamas guitar (comprehensive and detail views) 59
Figure 5.12	Folk guitar with cutaway 60
Figure 5.13	Zeidler archtop guitar 61
Figure 5.14	Fender Stratocaster 62
Figure 6.1	Methodology flowchart 67
Figure 7.1	AI's fantasy system 75
Figure 7.2	AT's fantasy system 76
Figure 7.3	CA's fantasy system 77
Figure 7.4	DA's fantasy system 78
Figure 7.5	GT's fantasy system 79
Figure 7.6	HA's fantasy systems 80
Figure 7.7	Prototypical system 1, € 2743 82
Figure 7.8	Prototypical system 2, € 3053 82
Figure 7.9	Prototypical system 3, € 6210 82
Figure 7.10	Prototypical system 4, € 6389 83
Figure 7.11	Prototypical system 5, € 61645 83
Figure 7.12	Average self-differences for each participant 94
Figure E.1	AI fantasy system (a) 126
Figure E.2	AI fantasy system (b) 127
Figure E.3	AI fantasy system (c) 128
Figure E.4	AT fantasy system (a) 129
Figure E.5	AT fantasy system (b) 130
Figure E.6	AT fantasy system (c) 131
Figure E.7	AT fantasy system (d) 132
Figure E.8	AT fantasy system (e) 133
Figure E.9	AT fantasy system (f) 134
Figure E.10	CA fantasy system (a) 135
Figure E.11	CA fantasy system (b) 136
Figure E.12	CA fantasy system (c) 137
Figure E.13	DA fantasy system (a) 138

Figure E.14	DA fantasy system (b)	138
Figure E.15	GT fantasy system (a)	140
Figure E.16	GT fantasy system (b)	141
Figure E.17	GT fantasy system (c)	142
Figure E.18	GT fantasy system (d)	143
Figure E.19	GT fantasy system (e)	144
Figure E.20	HB fantasy system (a)	145
Figure E.21	HB fantasy system (b)	146
Figure E.22	HB fantasy system (c)	147

MÜZİK DİNLEME SİSTEMLERİNDE CİNSİYETLERE GÖRE FARKLILIKLAR: BİR TASARIM PERSPEKTİFİ

ÖZET

Hem Türkiye’de hem de diğer ülkelerde, sabit müzik dinleme sistemlerinin tüketiminde belirgin boşluklar bulunmaktadır. Bu çalışma sabit müzik dinleme sistemlerini bayan kullanıcılara daha çekici hale getirmek için nasıl tasarlanması gerektiği konusuna odaklanmaktadır. Tasarımcıların gizli toplumsal bilgilerini grounded kuramının epistemoloji temellerine dayanan ve semiyoloji, repertuar ızgarası, ve diğer analiz yaklaşımları içeren orjinal araştırma metodolojisi kullanılarak, tezin kuramı oluşturulmaya çalışılmıştır.

Eşit sayıda erkek ve kadınlardan oluşan bir grup tasarımcıya ve tasarım akademisyenine kendi kullanımları için ideal, fantastik sabit müzik dinleme aletlerinin taslaklarını yapmaları istenmiştir. Bu taslaklar daha sonra semiyolojiye, repertuar ızgarasına ve diğer analizlere konu olarak kullanılmıştır. Katılımcıların kişisel görüşlerini veya fikirleriyle ilgili detayları belirtebilmelerine olanak sağlamak için, yapısal olmayan görüşmeler düzenlenmiştir. Bu görüşmeler sonucunda, kuramı anlamak ve oluşturmak için grounded kuramının epistemoloji temellerine dayanan tümevarımlı, sürekli-karşılaştırmalı süreci kullanılmıştır.

Sabit müzik dinleme aletlerinin sistem entegrasyonunun kolaylaştırılması, sistem bileşenlerinde görsel entegrasyonun artırılması ve geleneksel sistemlerdeki görsel karmaşanın azaltılması sonucunda, sistemlerin bayan kullanıcılar için daha cazip hale getirilebileceğini görülmüştür. Prototip sistemlerde erkek kullanıcılar için önemli olan güç ilişkisinin bayan kullanıcılar için önemli olmadığı saptanmıştır. Bayan kullanıcıların kişilik konusunda erkek kullanıcılardan daha duyarlı olduğu izlenimi edinilmiştir. Ne tür kişilikler tercih edildiği konusu araştırılmamış; ancak kişilik konusunda genel bir tercih belirleme konusunda çalışılmamıştır. Tüm genel kullanıcıların yukarıda belirtilen değişikliklerden faydalanabilecekleri düşünülmüştür.

GENDER DIFFERENCES IN MUSIC REPRODUCTION EQUIPMENT: A DESIGN PERSPECTIVE

SUMMARY

A significant gap in the consumption of non-portable music reproduction equipment exists. This study focuses on how products that implement non-portable music reproduction technologies can be designed to be more appealing to female users. Using an original emergent methodology based on the epistemology of grounded theory, the social knowledge tacitly held by designers was used as a basis to generate theory.

A mixed gender group of designers and design academics were asked to sketch ideal fantasy non-portable music reproduction system for their own use. These sketches were subject to semiological, repertory grid and other analyses. Unstructured interviews were conducted with participants to allow them to elaborate on or clarify their ideas and attitudes. The collected results were used in an inductive, constant-comparative process to produce insight and generate theory.

Results indicate that non-portable music reproduction systems can be made more appealing for female general users by increasing the ease of system integration, increasing visual integration of the system components, and decreasing the visual clutter associated with conventional systems. The signification of power relations in prototypical systems seen of value for male users is largely of no value for female users. Female users are more sensitive to issues of personality than males. What kinds of personalities are preferred have not been identified, however a general preference for personality has.

1 INTRODUCTION

1.1 Objectives

The subject of this thesis can fall generally into the category of gender studies and more specifically into the category of gender and technology. More specifically yet, this study focuses on women and their relationship with non-portable music reproduction equipment¹. Evidence strongly indicates that there is a gender gap in the consumption and use of non-portable music reproduction equipment. In the U.S.A., data from the publisher of the leading enthusiast² periodical *Stereophile* indicates 99% of their readers are male (Primedia, 2005). The president of Audio by Van Alstine, Inc., a systems retailer and manufacturing company in the U.S.A., states that, “Less than one tenth of one percent of my customer base is women.” (Van Alstine, 2005). In addition, Van Alstine also states, “I suspect that almost all of my single women customers were gay,” perhaps unwittingly underscoring a chauvinism that permeates the industry. My personal experience as an enthusiast, engineer, and consultant within the field in the USA over the last 25 years suggests that this consumption pattern is representative of the industry as a whole.

The situation in Turkey appears to be no better: A dealer of non-portable music reproduction equipment in İstanbul estimates that approximately 3% of his customers are women (Arduman, 2007a). Furthermore, a male participant (CA) in this thesis’ research, a self-identified enthusiast in the field, indicates that while he knows of at least ten men who are also enthusiasts, he knows of no women who are, and another male participant (AI) indicates that of the half-dozen audiophiles³ he knows, none are female.

Insofar as it is unlikely that this reflects a general lack of interest in music on the part of women, it raises a question as to what it is about these products that causes most

¹ A definition of this term appears in the appendices.

² A definition of this term appears in the appendices.

³ A definition of this term appears in the appendices.

women to feel alienated from them. Thus, the primary motivator of the research is to produce a body of knowledge that can be applied to the design of music reproduction equipment in such a way as to make non-portable music reproduction technologies more appealing to female users.

The area of gender studies is one that has received much attention in recent years in academic circles, and not without reason. It has long been taken for granted that we exist in male-dominated societies. Whether that view is strictly correct or whether there is a subtler balance of power is debatable. However, what is not debatable is that gender roles have been a major component in almost all cultures, and that these roles tend to influence and limit *a priori* what a person can or cannot do or be. More recently, interest in gender studies has been applied directly or indirectly to the study of gender and technology. It has been appreciated that girls and women in general are less avid users and consumers of technology—apart perhaps from technologies that are directly related to the performing of traditionally female roles—washing machines, vacuum cleaners, dishwashers, and the like. Reasons for and appropriate responses to this situation are actively being sought and debated.

Echoing the interest in academic circles, books from the popular press such as Gray (2004), Brizendine (2006), and Vincent (2006) suggest that there is a high level of interest regarding gender differences in popular culture as well. The design community has also shown some interest in the influence of gender—particularly with respect to how it influences design process and working environments (Bruce and Lewis, 1990; Gorman, 2001; Remington, 2006) and in education (Clegg and Mayfield, 1999).

What distinguishes this study's research from that which has preceded it is twofold. First, most prior work in the area of gender and technology has focused on what I will call "necessary use" technologies—that is, technologies whose use is impossible to avoid (e.g., computers used in workplaces or medical technology as used by medical professionals) (Fountain, 1999; Morris and Venkatesh, 2000; Wilson, 2002; Gilbert, et al., 2003; Wilska, 2003; Baron, 2004; Gallivan, 2004; Baron, 2005; Russell, 2004). In contrast, the focus of this thesis' research is on the use of technology in a leisure context. This is significant in that the quality of our leisure time defines to a large extent our overall quality of life. Second, the work on gender from a design perspective has tended to focus in the influence of gender on design

processes, work environments, and education. However, the issue of gender as an influence on design requirements has been largely ignored. Both of these aspects are explored more completely in subsequent chapters.

Inasmuch as the industry surrounding non-portable music reproduction equipment is a reasonably small one, the number of people who will be interested directly in the research results will be relatively small. However, it is hoped that the methodology employed in the discovery of gender differences as applied to this specific field will be useful in developing methodologies in other contexts. Also, it is hoped that some of the underlying principles that are discovered can be applied to different contexts.

Finally, while the reasons for a gender gap in the consumption and use of music reproduction equipment may be multifaceted, it is important to note that the research is specifically concerned with the role design plays in creating the gap and, more importantly, can play in closing the gap.

1.2 Problem Statement and Explanation

The low rate of consumption of non-portable music reproduction equipment by female users may be attributable to any or all of several reasons including cultural, sociological, biological, marketing, promotion, retailing, and design issues. The influence of cultural, sociological, biological issues has been the domain of most gender and technology literature. The impact of marketing, promotion, retailing, and design issues are more specific to the context of music reproduction equipment. Non-portable music reproduction equipment is rarely marketed to female users. Rather, these products are usually marketed through male-oriented magazines or specialist journals reflect a strong male bias. In addition, it is possible that retail outlets where luxury and near-luxury are sold are perceived to be meeting places for male consumers, a sort of boy's-only club with a boy's-only way of doing business. Finally, it is possible that since the designers of music reproduction equipment are generally male and since it has been a male-dominated consumer field since almost its inception, the needs of female users have (unwittingly) not been factored into the design of the products.

If the overall objective is merely to sell more music reproduction equipment to female users, then it may be possible to solve the problem entirely through different marketing and retailing methods. However, whatever the dominant cause of the

problem may be, there is little doubt that through proper design music reproduction technologies can be made more appealing to female, and possibly all, users.

Thus, the problem can be expressed in terms of three different questions, one more general and the other two more specifically design oriented:

1. “Why are women such reluctant adopters of non-portable music reproduction technologies?”
2. “How can designers contribute to making non-portable music reproduction technologies more appealing to female users?”
3. “How can products that implement non-portable music reproduction technologies be designed to be more appealing to female users?”

Each question has its advantages; however the latter two questions, being specifically design oriented, are preferable to the former. The last of the three is the most focused and is therefore the most preferred of the three. It is important to note here that “appealing” is used in a very general sense: better integrated into a lifestyle, more visually attractive, cognitively better suited to use, better integrated into a concept of what kinds of products a user buys, etc.

Early speculative thinking about the problem identified several areas that could limit the appeal of existing music reproduction products. These include:

- Lifestyle issues—the, “I don’t want a huge thing in my living-room,” problem.
- Perceived complexity issues—the, “It’s too hard to setup and use,” problem.
- Psychological/identity issues—the, “It clashes with my concept of what ‘feminine’ is,” problem.
- Cognitive differences—the, “I map instructions and interfaces in a different way than you,” problem.

In each of the above, design can be used to address the issue once it has been articulated and its relative significance understood. While the above list suggests that there is a focus on what available solutions are doing wrong, it will be useful to consider what available solutions are doing right and how they can do them even better.

1.2.1 Focus

Insofar as there is no body of work that is directly relevant to the problem under consideration (this issue is discussed at length in a subsequent chapter), my research has tried to generate as much depth as possible. This should not be misconstrued to mean that the research lacks focus. The problem being investigated belongs to the larger domain of gender and technology, which is itself a part of a larger field of gender studies. The selected area of study—non-portable music reproduction equipment—is a highly specialized segment of the consumer electronics industry. Within that specialized product group, I have focused exclusively the role that design can play in making those products more appealing to female users.

1.2.2 Limits

As mentioned above, the gender gap in non-portable music reproduction products may owe itself to several factors. While all relevant factors must be kept in mind by anyone trying to effectively understand the problem, the focus of this study was on the role that design can play in making these products more appealing to female users. The design focus of the research thus means that other issues mentioned as having possible influence will not be considered or explored to any great extent.

Also, while a more general (non-gender specific) analysis of non-portable music reproduction equipment may prove beneficial to all users of music reproduction equipment (male and female), the focus of this study is specifically on the needs and preferences of female users since they appear to have been so significantly alienated from these products. The specific needs that men may have over and above what is being offered in available products, while perhaps an interesting topic, is not the immediate focus.

1.3 Benefits

The benefits associated with this research can be expressed in terms of three categories: benefits to users, benefits to the industry, and benefits to the design discipline.

As previously mentioned, most studies regarding gender and technology have focused on “necessary use” technologies (e.g., technologies used in the workplace: computers, medical devices; arguably telephones) and learning technologies.

However, the use of technology in leisure has been much less explored. This is a significant lapse because the quality of our leisure time is a significant component of our overall quality of life.

When it comes to non-portable music reproduction equipment, roughly one half of the population is not fully reaping the benefits that these products can deliver. Therefore, the greatest benefit to users is that the half the population that has traditionally been alienated from these products will be better able to enjoy their benefits. A secondary benefit to users is that a more complete understanding of the needs of female users may lead to enhancements for male users as well. Gender identity is not a binary phenomenon; most people in various ways have both masculine and feminine characteristics that may vary over time. It is quite possible that a product that simultaneously appeals to both genders will have greater appeal to both.

In terms of benefits to the industry, half the population currently is not active in an entire segment of consumer products. If interest by this neglected half can be motivated, the sales and profit potential is immense. Also, as discussed above, by incorporating multi-gendered appeal into products, it may be possible to develop products that have greater appeal to a broader range of traditional (i.e., male) consumers of music reproduction equipment.

Regarding benefits to the industrial design discipline, the available literature suggests that the issue of gender differences has not been significantly explored in terms of the role it can or should play in design requirements. As indicated above, most of the interest in gender and design focuses on its effect on the design process and environment. Indeed, my literature review did not uncover even a single published source that discusses the impact of gender on design requirements. Any research that makes advances in this direction would therefore appear to be a good thing.

An additional benefit to the design discipline regards the area of design methodology. Within this thesis I present an original approach to semiology intended for general use in design analysis and creativity. I feel that the semiological methodology presented here can be applied to a wide range of design problems. In addition, the research explores the idea of designer as social informant, which has potential impact for design practice and research. These ideas are more completely explored in the following chapters.

1.4 Methodology

This thesis uses an original emergent methodology based on the epistemology and methodology of grounded theory. An inductive process of data collection and analysis was used to produce insight and theory regarding the problem area. More specifically, a set of six study participants (five advanced degree design students and one design academic), of which three were female and three were male, were asked to sketch their ideal fantasy non-portable music reproduction system for use in their own home or office. These sketches were then subject to semiological and other analysis. In addition, the sketches were used as bases for the construction of repertory grids for each of the participants, and those grids analyzed. Finally, unstructured interviews were conducted with each participant to allow them to elaborate on or clarify the ideas in their sketches and express their general views. The results of all the preceding were used as elements in an inductive, constant-comparative process to produce insight and theory regarding the values and expectations of the participants and any gender relationships suggested by the same.

1.5 Findings and Discussion

The results of the study outlined above indicate that non-portable music reproduction systems can be made more appealing for both male and female general users by increasing the ease of system integration, by increasing visual integration of the system components, and by decreasing the visual clutter associated with conventional systems (e.g., exposed interconnection cables). However, the need for integration, both physical and visual, is more acute for women, who tend to see systems as elements in a larger context—both physically as well as in activities and lifestyle—than men, who are more likely to view a system as an isolated object. Perhaps owing to this more holistic view, female users do not find the machine-like aesthetic of conventional systems appealing.

In addition, the signification of power relations in prototypical systems is seen of value for male users; however it is largely irrelevant for female users. Perhaps in lieu of power relations, female users are more sensitive to issues of personality. Identification of what kinds of personalities are preferred has not been performed in this study, however a preference for personality in general has.

2 LITERATURE REVIEW

The literature relevant to this study can be broadly divided into two categories: the literature dealing with gender issues and the literature dealing with methodology. Within each I have identified a number of more specific categories. The taxonomy is summarized below, and each category is discussed in turn. Some sources are mentioned in more than one class because they have relevance to both; in such cases, only the properties appropriate to the class under consideration are discussed.

Literature on Gender

- Gender in general

- Gender and cognition

- Gender and design

- Gender and technology

- Gender and computing

- Gender and leisure electronics

Literature on Methodology

- Methodology in general

- Design research

- Reflexive practice

- Visual anthropology

- Grounded theory

- Miscellaneous methodologies

Miscellaneous Literature

2.1 Literature on Gender

2.1.1 Gender in general

In the last decade, several successful popular books in the area of gender studies and

gender differences have been published. Gray (2004) discusses gender differences at length. While the focus of the book is how gender differences affect primary relationships, the popularity of the book (the cover of the paperback edition proclaims that it was a “#1 New York Times Bestseller”) does point out the recognition of and interest in gender issues in popular culture. Vincent (2006), a self-declared lesbian feminist, masquerades as a man for 18 months to try to better understand gender issues. She walks away with a sense that it is not as easy to be male as conventional feminist thinking suggests, and that being female has advantages not dealt with by conventional feminist ideology. Comments about the limited emotional range and avenues of expression allowed to men seem particularly poignant. Brizendine (2006) attempts to familiarize the reader with emergent research on brain gender theory. The text has a disquieting “girls against boys” tone that, while perhaps serving to make the reading more interesting, detracts from its substantive issues. The text focuses on the female brain's purported heightened ability to communicate compared to male brains.

2.1.2 Gender and cognition

Carey (2005) summarizes research led by Richard Haier of the University of California, Irvine that indicates that the structures of men's and women's brains differ. The article points out that despite these structural differences, intelligence is essentially identical. Lloyd (2006) presents findings of the work of Larry Cahill of the University of California, Irvine. His findings indicate that structural differences in male and female brains affect the way emotions are processed. Darlington (2002) provides a rigorous survey of the state of brain gender research circa 2002. Basic brain neurochemistry, functional differences, perception and cognition, neurology, psychiatry and other issues are discussed. While the text presents fascinating information regarding the differences in male and female brains, the presented information is impossible to operationalize in a way that is useful to the study of gender's impact on design requirements.

In general, the available literature in the area of gender and cognition points to structural differences between male and female brains. However, the field does not appear to be sufficiently well developed at present to facilitate operationally useful theories regarding gender and technology or gender and design.

2.1.3 Gender and design

Bruce and Lewis (1990) describe the state of female designers in England and also the USA. Their work indicates that for years the field of industrial design has been viewed as a “boys club,” and as a male-dominated field it expresses a male-oriented perspective. This lends support the view that there is a systematic problem with the product development and design process that leaves the concerns of women underrepresented in technological products. They also indicate that graphic design does not suffer from the gender imbalance to the same extent that industrial design does.

Clegg and Mayfield (1999) address “the ways women, and men, are attracted into different areas in design education and, in particular, the pattern of women's under representation at the industrial and product end of thee spectrum.” They engage this interest by studying “the discourse of design as an inclusive or exclusionary set of practices.” The chosen method is a case study of students in higher education design courses at a British institution. The report of their results begins with what male and female students appear to have in common. Even here some gender bias is indicated: both males and females seem to have selected design because they both like creating and derive pleasure from craft-oriented activities. However, Clegg and Mayfield suggest that there is a difference in the kinds of crafts boys and girls have engaged in. Whether this is an *a priori* assumption on the authors' part or something supported in their data is not especially clear.

Clegg and Mayfield identify what they call the “Hammer Problem” as a deterrent to women entering technology classes. The Hammer Problem is, “that by not being able to perform certain technical tasks, women are made to feel that ... because they are a woman they can't do it,” and as such is an aspect of the larger problem that, “certain sorts of competence are treated as gendered.” This then leads to the dichotomy of art-based versus technical-based design (e.g., interior versus product design), where art-based design is associated with femininity and technical-based design with masculinity. Again it's not clear whether Clegg and Mayfield take these gender associations as givens or whether their data support that view. Their findings in the area of graphic design are consistent with those of Bruce and Lewis (1990); namely that of all the design areas the one with the best male-female population balance is graphic design. According to Clegg and Mayfield, however, the increasing use of

computers in graphic design education may be threatening this balance.

The role of mentors is briefly discussed as having a large influence on the decisions students make in entering design fields. However, there is nothing in this discussion that effectively addresses the issue of gender bias in design. In conclusion, Clegg and Mayfield in their study appear to suggest that the primary biasing agent in the selection of design courses was the genderification of technology. They also point out the need not to generalize their study to all UK schools or internationally, and they “offer no specific prescriptions beyond an insistence that as well as an academic object of study, gender balance is also a political project and inequality should be challenged.” All of which leaves the reader with a sense of, “So what was the good in all that, then?”

Gorman (2001) discusses recent scholarship in gender and design and suggests that feminism’s failure to have, “the earthshaking effects on design history, theory, and practice that some might have desired,” is due to an, “anti-theoretical bias or avoidance of theory, all of which will conspire to damn them in the eyes of those who are not already self-identified feminists.” Furthermore, “if the exhibition and publications [reviewed here] are indeed representative of contemporary feminist design scholarship, then I believe the form and the content of the discipline’s rhetoric needs ‘reshaping and rethinking’ far more urgently than the history of design itself does.”

The influence of gender in design is not new. Remington (2006) reviews Anja Baumhoff's book, “The Gendered World of the Bauhaus: The Politics of Power at the Weimar Republic's Premier Art Institute.” He states, “Gendered stereotypes and attitudes of male dominance were typical of the 1920’s and the Bauhaus was no exception.” From this, we may be led to wonder what makes the Bauhaus an interesting example. While the reviewer feels that the book presents an excellent case study, from the content of the review it seems that there is very little that is particular or interesting. Two exceptions include the support the book gives to the often-stated view (in different terms) that women are frivolous “decorators” and men the truly productive “constructors”; and second the assertion that the Bauhaus’ prevalent use of the square and circle had gendered semiological underpinnings—the square being a male sign and the circle signifying the female.

2.1.4 Gender and technology

Since music reproduction equipment is a technological construct, the issue of gender and technology is very relevant to our study. Several works that address gender-technology issues from a general perspective are discussed below.

Gill and Grint (2000) review a number of “theoretical” (i.e., logico-deductively derived) perspectives on the issue of gender and technology. They discuss the pros and cons of each perspective and in the process (whether deliberately or not is not clear) underscore that there is a marked lack of consensus toward a theoretical approach to the issue. The remaining parts of the book explore theoretical developments in more detail and summarize a number of case studies on gender and technology.

A taxonomy of three competing and essentially mutually exclusive views is presented, summarized and critiqued. The three theoretical views they present are Eco-Feminism, where technology is seen as, “an example of the way in which men try to dominate women,” Liberal Feminism, where, “technology itself is neutral; what is at issue is the different ways in which men and women are positioned in relation to it,” and Technology as Masculine Center, wherein, “it is argued that women's alienation from technology is a product of the historical and cultural construction of technology as masculine.” Each of the above assert fundamental assumptions or reach fundamental conclusions that conflict with the others, thereby making the choice of theory highly dependent on ones ideological, rather than truly logical, leanings.

Brunner, et al. (2000) summarize their research in the area of gender and technology and outline speculative standards for electronic games that will be more appealing to girls without overly reinforcing socially constructed gender frameworks. They observe, “The problem of designing for gender and diversity is quite complicated, particularly with respect to technology.” In their view the domination of technology by white males has roots in numerous sociological causes (e.g., girls opting out of advanced math and science education), economic causes (e.g., attainability of technology), and psychological causes (e.g., the encouragement of consumer collusion in the narratives provided by interactive products) causes. Their empiric research aims at developing an understanding of the gender-technology relationships. While their focus is on the development of technology-based games for girls, they

address gender and gender-technology issues on a more general level. Their empiric research employs a “fantasy sketching” methodology, which I discuss in greater detail elsewhere.

Wilska (2003) tries to quantify mobile phone use in terms of consumption patterns and includes some gender analysis. The author states that mobile phone use can be characterized in terms of gender and that there is a strong link between female use and attitudes and environmental concerns. The author goes on to assert that, “There are numerous other studies suggesting that there is much more suspicion towards new technology among girls/women than among boys/men.” In a similar vein, Gilbert, Kelley and Barton (2003) examine gender differences in technological anxiety in mobile internet technology and state that the, “consensus among several studies is that females report higher levels of computer anxiety than males.”

Morris and Venkatesh (2000) examine gender differences in the use of technology in workplaces. Their findings indicate that men “were more strongly influenced by their perceptions of usefulness,” while “women were more strongly influenced by perceived ease of use and subjective norm.”

Wilson (2002) discusses the relationships and issues surrounding gender, nursing, and health-care. Lach (2000) discusses gender differences in perceptions of “dot-com” brands. An anonymous review entitled ‘Language, Technology, Gender, and Power’ (1992) of a work by the same name written by Fiona Wilson claims the book explores how language creates a gendered world and where technology is used as the test case. Finally, Dolliver (2004) summarizes a study of students aged 18 to 30 regarding their use of technology. It is claimed that the gender gap is decreasing, and the claim is backed up with data.

2.1.4.1 Gender and computing

Occupying a special place in the pantheon of gender-technology literature is the area of gender in computing. Likely motivated by the increasing importance computing is taking on in the developed world, gender in computing is rich in scope and depth. While less relevant to this study than more general inquiries into gender and technology or more specific inquiries into gender and leisure electronics, gender and computing may still offer useful insights into the problem.

Kirkpatrick and Cuban (2000) summarize major sociological factors that discourage

girls and women from developing an interest in computing technology. These include parents and teachers giving greater encouragement to boys than to girls to take computer classes, the cultural perception that computers and programming are masculine activities, and the location of computing in education under mathematics, which is an issue because “females are less confident in their math skills than their female counterparts.”

Bombardieri (2005) provides quantitative data regarding the decreasing proportions of women graduating with degrees in computing from U.S. universities. The percentage of women versus men graduating with computer science bachelor's degrees peaked at 37% in the mid-eighties and by 2001 (the last year for which results were published) it had dropped to a level equal to that in 1979 of 28%.

Counterbalancing this is Fallows (2005), who describes differences in Internet usage among men and women—both in terms of amount of use as well as kinds of use. According to the author, “Women are catching up to men in most measures of online life. Men like the internet for the experiences it offers, while women like it for the human connections it promotes”

Baron (2004; 2005) discusses the characteristics of Instant Messenger use by university students in the U.S.A., including the influence of gender. The author presents a quantitative framework for the study of online communication as well as results of a study employing this framework. The study reveals that, “female interlocutors were more ‘talkative’ than their male counterparts,” and that, “females used fewer contracted forms than did males suggests that females have a greater tendency towards treating IM as a written medium (since in the academic domain, students are still taught that contractions should not be used in formal writing).”

Russell (2004) reviews of the book “Unlocking the Clubhouse: Women in Computing” by Margolis and Fisher. According to the reviewer, Margolis and Fisher find that, “women are not less interested or skilled in computer science than men; rather, they are often discouraged by society from acting on those interests.” In another review Liff (2003) discusses the book “Virtual Gender: Technology, Consumption and Identity” by Green and Adam. It is claimed that the book discusses gender issues in information and communication technologies in general and virtual reality games in particular.

Cornford and Habib (2002) discuss home computing from a gender perspective that focuses on the concepts of domesticity and domestication in the U.K. Based on interviews with seven families, they, “struggle to identify in this study any fundamental between the male and female in commitment to the domestic.” Furthermore, they “do not perceive the process of domestication to be the particular preserve of men or women,” and regarding computing, they “cannot establish any uniform gender pattern across the families studied.”

Gallivan (2004) reports on the findings from a study of the influence of gender in IS departments. The study employed qualitative and quantitative methods, which confirm that, there is a “lack of gender effect for turnover intentions,” and “that managers perceived women as having weaker technical skills.” They also point out the study partially confirmed that the women felt more stressed at work. Goodwin (2004) discusses an attempt in the U.K. to attract more girls to IT, and Fountain (1999) discusses women in IT from a policy point of view, arguing that women are needed in IT to improve its policies as well as its product.

2.1.4.2 Gender and leisure electronics

While the area of gender and leisure electronics is central to the problem, available sources that examine the issue have proven very sparse. The exception is Crupi (2005), which presents findings of a study by the Lifetime cable television network indicating the acceptance of the Digital Video Recorder (DVR) by women in the U.S.A. Most telling is that, “48 percent of married women say the decision to purchase a DVR was their own, while 55 percent of the wives claim they understood how to interface with their unit’s myriad features better than their husbands.” Lifetime network’s VP of research states, “Three-quarters of the women surveyed said that the reason they fell in love with DVR is that they are extremely intuitive and much easier than a VCR.”

2.2 Literature on Methodology

In preparing the methodology for this study, the following sources on methodology were consulted.

2.2.1 Methodology in general

Turner (1993) summarizes a number of academically oriented research methods for

the purpose of “easing beginners in to the shallow end and encourage them to strike out by themselves into the deeper parts of the pool.” Turner discusses theory, fact, and hypothesis; induction versus deduction and theory generation versus testing; and validity versus reliability. Following are guides to surveys, observation, interviews, experiments, and using documents. An extended reading list rounds out this work. Rawlings (n.d.) offers a similar body of work, but focuses on qualitative research.

Flick (1998) and Maxwell (2005) provide comprehensive introductions to qualitative research, while Ackoff, et al. (1962) offer a comprehensive guide to classical quantitative theory verification methodology. Hesse-Biber and Leavy (2006) cover newer and mostly qualitative methods in the social sciences. In this context, “emergent” appears to be taken to mean “new” rather than in the sense more widely accepted in social sciences meaning “emerging from data.” Whether this was done to cash in on the cache around the “emergent” term or not is unclear.

Banister, et al. (1994) present a collection of writings that provides a survey of qualitative methods applied to psychology. Included are discussions of observation, ethnography, interviewing, personal construct approaches, discourse analysis, action research, feminist research, and evaluation issues. The chapter on personal construct approaches (Tindall, 1994) is notable for its presentation of an approach pioneered by George Kelly as part of his personal construct psychology. Of particular interest here is its discussion of a qualitative approach to the repertory grid, a technique by which can be discovered a research participant’s values in terms of parameters that the participant himself or herself has also identified.

Two works offering methodological approaches that are difficult to more specifically categorize are worth mentioning here. The empiric research of Brunner, et al. (2000) aims at developing an understanding of the gender-technology relationships through the use of a “fantasy study” methodology: an approach where subjects under study are encouraged to fantasize about the role that technology may play in their lives. The authors have applied such fantasy studies to adult male/female groups as well as children. Their findings suggest that for women “technology is a fellow creature on earth, a child of humanity, promising but problematic... needing care and guidance, to grow to its best potential within... the social and natural network in which it lives” (p. 170) For men, technology is praised, “because it increases our command and control over nature and each other” (p. 170) And, “women and girls are much more

likely to be concerned with how new technologies can fit into the social and environmental surroundings, whereas men are much more likely to be preoccupied with doing things faster, more powerfully, and more efficiently regardless of social and environmental consequences” (p. 173). The authors eschew ideological and “theoretical” concerns, and instead concentrate on the operative essence of the gender gap, which according to their research is the different expectations each gender places toward technology, with women seeing technology as instrumental for reinforcing social behaviors, and men seeing technology as a performance-oriented or enhancing tool.

Desmet (2003) proposes a model to be used to analyze emotional response to consumer products. Individual models are constructed from user data. In the area of gender and music reproduction equipment, it may be possible to use such a model to test theories regarding gender and technology by having users evaluate different embodiments of products. However, a prerequisite for such an approach is the availability of a suitable theory to be tested. Desmet’s method may also be used to help uncover and articulate attitudes toward music reproduction technologies by constructing a model of emotions toward music reproduction equipment and examining gender differences.

2.2.2 Design research

Ireland (2003) reviews the increasing use of qualitative methodologies in practical design research. He discusses the use of focus groups, ethnography (including field, digital and photo ethnographies; ethnofuturism, enactments, and Personas), participatory methods (development panels and in-home placement). While the review is very useful for the practicing designer, it is less so to the context of academic design research. The exception here is the taxonomy and elaboration of ethnography, which is a helpful to in both practical and academic contexts.

Plowman (2003) reviews the use of ethnographic methods in the context of design. While the focus is again on professional design practice, much of the content is relevant to academic design research as well. Plowman begins with a brief history of ethnography as an anthropological technique, followed by a mapping of different ethnographic techniques in terms of two axes: quantitative-qualitative and verbal-visual. He then discusses the role of participant observations (from the qualitative/visual quadrant) in business and academia and the differences involved in

each. Plowman also gives a brief history of the use of ethnography in design, touching on uses by early design schools (Bauhaus, HfM, and Kunstgewbeschule), Henry Dreyfus' *Designing for People*, Wentworth's use of photographic ethnography, and in human computer interaction (Xerox PARC and others). He concludes by discussing the issue of high versus low culture, pointing out that ethnographic research should not allow itself to cater to one or the other.

Friedman (2003) offers insight into theory construction in the context of academic design research. He points to the need for design to move beyond its arts-and-crafts basis and exchange an exclusive reliance on tacit knowledge for one that also incorporates theory. He also cautions against thinking that "practice is research and practice-based research is, in itself, a form of theory construction" and seems to advocate an approach similar to grounded theory in the social sciences. Offering a different point of view is Gray and Malins (2004), who provide a guide to setting up a research plan based on a "journey" metaphor. Their focus is on design practice research in general and design as research in particular.

2.2.3 Reflective practice

Schon (1983) introduces the concept of reflective practice and uses it to analyze a number of different professions. He argues that the way rational practice suggests the way professions work doesn't fully express the way professionals really work. What is required is a methodology to explore how professionals really approach their work, with specific care taken to include non-verbal and intuitive processes. Most interesting from a design perspective is his use of reflective practice to explore how the student-teacher relationship and sketching work in the context of a higher education architecture studio. This work is continued in Schon (1986).

Dorst (1997) applies Schon's reflective practice methodology to analyze various aspects of design practice. He relies heavily on sketching and its relation to reflective practice. Valkenburg (2000) applies Schon's method of reflective practice in the context of team-oriented design processes. Dorst and Valkenburg demonstrate the relevance reflective practice has for the study of the design process, and Schon's own work concentrated on using reflective practice to study how people work in a variety of fields. So while reflective practice has proven a useful tool for the analysis of design practice, it seems poorly suited to evaluate design output, which is what is required in the present study.

2.2.4 Visual anthropology

Margolis (1998) provides a broad overview of the essentials of visual ethnography. Margolis states that, “visual ethnography attempts to study visual images produced as part of the culture,” and that, “visual images are constructed and deconstructed.” In addition to the use of visual recording devices to collect data in the social sciences, he also mentions the technique of photo elicitation, which involves, “asking research subjects to discuss the meaning of photographs, films or videos.” Finally, he discusses the ways that visual methods can be used to communicate findings about ethnography.

Pink (2001) offers a series of articles relevant to the use of visual ethnography in research, while Prosser (1998) has edited a collection of articles covering theoretical, procedural, and practical aspects of image-based research.

2.2.5 Grounded theory

Glaser and Strauss (1967) provide a comprehensive though somewhat early guide to grounded theory, which they are generally credited with pioneering. Discussed in detail are the central elements of grounded theory including the generation of theory by comparative analysis, the flexible use of data, and implications of the grounded theory approach. They introduce grounded theory as a means of generating theory as opposed to testing it and the techniques that can be used in the process. Markedly absent is the sense that grounded theory and its reliance on qualitative data is a substitute for hypothesis testing or the use of quantitative methods. Rather, the sense is that grounded theory is viewed as an approach that complements hypothesis testing and the use of quantitative methods. Glaser elaborates on concepts introduced in this text in Glaser (1992) and Glaser (1996). Much of Glaser’s elaboration centers on the differences between Glaser’s interpretation of grounded theory and that of Strauss that evolved after publication of their coauthored work.

Borgatti (n.d.) offers a review of grounded theory wherein he draws on Strauss and Corbin (1990) as well as Glaser and Strauss (1967). Therefore it might be assumed that Borgatti's perspective is closer to Strauss than to Glaser. Borgatti reviews the concepts of goals and perspectives; open, axial, and selective coding; and memoing.

Dick (2005) provides a concise yet comprehensive description of grounded theory, by his own admission adhering to the perspective advocated by Glaser rather than

that of Strauss or Strauss and Corbin. He includes discussions regarding hypothesis testing versus emergence, data collection, coding, and sorting, and writing and a comprehensive bibliography.

Haig (1995) presents a more-or-less philosophical work wherein he reconstructs grounded theory “as a problem oriented endeavor in which theories are abductively generated from robust data patterns, elaborated through the construction of plausible models, and justified in terms of their explanatory coherence.” Haig proposes that grounded-theory’s weakness lies in its relation to problem formulation and presents means by which this weakness can be solved. Specifically (according to Haig) grounded theory views “problems and methods are separate parts of inquiry.” Also, grounded theory “involves the belief that the problems component of method is a temporal phase that is dealt with by the researcher, who then moves onto another phase, and so on.” Both of these are solved by employing what Haig calls “abductive explanatory inferentialism (AEI).” Haig also takes on the criticism leveled at grounded theory that it represents a return to Baconian positivism. He points out that inasmuch as grounded theory utilizes abduction in the process of theory generation, it does not fit nor does it support conventional notions of a positivist scientific method. Additional support for grounded theory as a justifiable adjunct to the scientific method is given, and it is often claimed that this support is strengthened through a reframing via AEI.

Kinach (1995) offers a response to Haig (1995). She starts with a review of the theoretical context in which grounded theory came about in the 1960s. She points out that grounded theory was intended to address the dominance of “great men” theories and the problem that “positivist theories became more removed from the social phenomena they were supposed to explain.” She follows with a summary of Haig's paper in the form of five subheadings: 1. Naive Baconian Induction, where Haig “confirms ... that (Glasser and Strauss) held to the philosophy-of-science view that observation is theory laden”; 2. Abduction vs. Induction, where the distinction between inductive inference and abductive generation of theories is made; 3. Data vs. Phenomena, where she states that Haig feels that grounded theory should root itself on phenomena rather than data—as is suggested by Glasser and Strauss; 4. Problem-Centered Method, where “Haig reminds us that research problems are initially ill-structured, and that the ‘basic task of scientific inquiry is to better structure our

research problems by building in the various required constraints as our research proceeds;” and 5. Theory Generation vs. Theory Appraisal, where she states that Haig has gone beyond Glasser and Strauss in his use of AEI and Thagard's work in theory testing to motivate the generation of theories that explain a greater range of facts than its rivals.

Kinash then questions whether Haig correctly interpreted grounded theory and whether his reconstruction “is indeed a ‘new’ theory.” However, rather than directly refute his arguments, she instead focuses on a more general discussion of tensions in the use of grounded theory in education. She points out that “the shortfalls Haig underscores for social science also exist in the field of education.” In the end, she calls for a more rigorous approach to educational research, a rigor that can be adopted from the social sciences.

Grounded theory suggests itself as a rigorous and powerful means of theory construction. A more comprehensive discussion of grounded theory and its relevance to design can be found elsewhere in this thesis.

2.2.6 Miscellaneous methodologies

In general, while I decided early on that the following approaches would not be useful for the topic under study, I include them here for completeness and because some of the issues they raise may be of some interest.

Dick (2000) reviews the basics of action research, which he defines as “a family of research methodologies which pursue action and research outcomes at the same time.” Mayring (2000) discusses Qualitative Content Analysis, another qualitative method that may be useful to our study. Ritchey (2003; 2005) discusses “General Morphological Analysis,” a qualitative method that may be useful to our study.

2.3 Miscellaneous Literature

The following sources offer information useful in the study of gender and music reproduction equipment, but are difficult to incorporate into the taxonomy above.

Primedia (2005) presents a standard mailing package intended to entice would be advertisers to Stereophile, a leading USA hobbyist periodical in the area of music reproduction equipment. The provided data indicate that 99% of subscribers are male, the average age is 49, and 65% are married.

Audio by Van Alstine, Inc. president Van Alstine (2005) talks about the paucity of female clients in his business as does Arduman (2007a).

Biases in gender and technology in the popular media can be gleaned from the following two sources. Sardone (2006) provides a list of top valentine gifts for women, and amongst roses, heart pendants and the like includes the iPod Video and iTunes gift certificates. "Gender Wars" (2004) is a list from a popular online information source where "two tech experts recommend gadgets geared for gender-specific appeal." For men it recommends the full-sized iPod, which "can hold up to 10,000 songs, thousands of digital photos and works as a personal voice recorder," and for women the much smaller iPod-mini, which "comes in five colors."

3 METHODOLOGY: REQUIREMENTS ANALYSIS

In this chapter, I will attempt to identify the requirements for a research methodology in the investigation of gender differences in music reproduction equipment from a design perspective. First I explore concepts from the relevant literature and draw implications from that discussion. I then outline the requirements for a research plan and explore a number of ideas regarding appropriate research methodologies.

3.1 Gender and Technology in General

The relationship between gender and technology as a general area of study has received significant attention in recent years. It has been analyzed from a number of different perspectives, with different motivations. Arguably, what is most notable about this body of work is the lack of consensus regarding fundamental issues. While there is a consensus that women lag men in their adoption of technology, there appears to be nothing approaching a consensus regarding the reasons behind and causes for the gap.

This state of affairs can be seen most acutely in Gill and Grint (1995), who discuss the pros and cons of a number of logico-deductive perspectives and in the process (whether deliberately or not is not clear) underscore that there is a marked lack of consensus toward a theoretical approach to the issue. They state, “The cultural association between masculinity and technology in Western societies is hard to exaggerate. ... Some analysts see it as biological in origin, others as social, but there are few who seek explicitly to challenge the idea that technology and masculinity go together” (p. 3). They then present a survey of perspectives that represent “theoretical” (i.e., essentially deductive and ideological) approaches to gender and technology relations. Within this survey, a taxonomy of three competing and essentially mutually exclusive views is presented, summarized and critiqued. The three theoretical views they present are as follows:

Eco-Feminism, where technology is seen as, “an example of the way in which men try to dominate women” (p. 4). This perspective argues that women are biologically

endowed with the ability to understand the world based on “emotions, intuition, and spirituality” (p. 5). Eco-feminism is problematic for Gill and Grint because of its biological determinism and the consequence that the “only principled course for eco-feminists is separatism—to retreat into their female culture and produce ‘woman-friendly’, feminine technologies (and) intellectual work” (p. 6).

Liberal Feminism, where, “technology itself is neutral; what is at issue is the different ways in which men and women are positioned in relation to it.” Within this perspective, “gender is conceived as a system of representations, an ideology, which has been overlaid on authentic, unspoilt and equal human beings” (p. 6). Gill and Grint feel that liberal feminism's greatest shortcoming is its lack of theoretical development. In particular, “its idea of a true and unspoilt human nature which lies untouched behind the distortion of gender is difficult to maintain,” and “...it offers no principled way of distinguishing between those aspects of identity which are deemed to be natural... and those which are... socially constructed” (p. 7), and finally its tendency to ignore class, race, and other dimensions of power.

Technology as Masculine Center, wherein, “it is argued that women's alienation from technology is a product of the historical and cultural construction of technology as masculine” (p. 8). This view hinges on the concept of identity: quoting Wajcman, the authors state, “the idea that women lack technical competence is not merely a sex stereotype but ‘does indeed become part of the feminine gender identity’” (p. 11). While the authors find this perspective superior to both eco-feminism and liberal feminism owing to the emphasis it places on the relation between gender and technology, they are critical of it due to various problems. Among the problems are variability in the use of key terms such as “men” or “males”, an ambiguous relationship with ideology, and what the authors call a “tendency to functionalism,” or the tendency to explain “men's and women's relationship to technology only in terms of its functions for gender identity” (p. 16).

A more empiric perspective on the gender-technology relation can be found in Brunner, et al. (2000). In this work the authors summarize their research in the area of gender-technology relations and outline speculative standards for electronic games that will be more appealing to girls without overly reinforcing socially constructed gender frameworks. They observe, “the problem of designing for gender and diversity is quite complicated, particularly with respect to technology” (p. 168). In

their view the domination of technology by white males has roots in numerous sociological (e.g., girls opting out of advanced math and science education), economic (e.g., attainability of technology), and psychological (e.g., the encouragement of consumer collusion in the narratives provided by interactive products) causes.

Their empiric research aims at developing an understanding of the gender-technology relationships through the use of what they call “fantasy studies”: an approach where subjects under study are encouraged to fantasize about the role that technology may play in their lives. These fantasy studies have been applied to adult male/female groups as well as children. These findings suggest that for women “technology is a fellow creature on earth, a child of humanity, promising but problematic ... needing care and guidance, to grow to its best potential within ... the social and natural network in which it lives.” For men, technology is praised, “because it increases our command and control over nature and each other” (p . 170). And, “women and girls are much more likely to be concerned with how new technologies can fit into the social and environmental surroundings, whereas men are much more likely to be preoccupied with doing things faster, more powerfully, and more efficiently regardless of social and environmental consequences” (p. 173). Thus, these authors attempt to eschew ideological and theoretical concerns, and instead concentrate on the operative essence of the gender gap—which according to their research is the different expectations each gender places toward technology, with women seeing technology as instrumental for reinforcing social behaviors, and men seeing technology as a performance-oriented or enhancing tool.

Doubtless, researchers and practitioners in other disciplines—cognitive science and product marketing to name two—will generate additional underlying reasons and causes for the gender gap in technology. What is important to note for our purposes is not the specific stated reasons and causes underlying the gender gap in technology emanating from these varying perspectives, but rather that there is a lack of useful consensus across and within disciplines regarding what those reasons and causes are.

3.2 Gender in Design

Studies concentrating on gender within the field of design have tended to focus on gender bias in the workplace and the role gender plays in the design process and in

education (Bruce and Lewis 1990; Clegg and Mayfield 1999; Gorman, 2001; Remington 2006). Studies regarding gender and designed-objects or gender's role in establishing design requirements are scant at best. While such research may be taking place among practitioners, my literature review uncovered no published sources.

3.3 Gender and Musical Reproduction Equipment

Evidence indicates that there is a significant gender gap in the consumption of musical equipment technology. The readership of the popular U.S.A. enthusiast periodical *Stereophile* is 99% male (Primedia, 2005). The president of Audio by Van Alstine, Inc., a systems retailer and manufacturing company in the U.S.A. with a history that spans over 40 years, states that, "Less than one tenth of one percent of my customer base is women [and] many only because they were the ones with the family credit card in their name." (Van Alstine, 2005). My personal experience as an enthusiast, engineer, and consultant within the field in the U.S.A. over the last 25 years suggests this is typical. The situation in Turkey appears to be no better. A dealer of non-portable music reproduction equipment in İstanbul estimates that approximately 3% of his customers are women (Arduman, 2007a). Furthermore, a male participant (CA) in this thesis' research, a self-identified enthusiast in the field, indicates that while he knows of at least ten men who are also enthusiasts, he knows of no women, and another male participant (AO) indicates that of the half-dozen audiophiles he knows, none are female. What is doubtless is the existence of a wide gender gap. What is far less clear is the reasons for it.

3.4 The Case for a Qualitative Approach

The two factors discussed above, the lack of a consensus regarding general theoretical foundations and the paucity of available research closely related to this problem, indicate there is a need to develop a body of insight and theory in this area. For this reason, a qualitative rather than a quantitative approach is proposed. Quantitative methods make the most sense when testable hypotheses, which themselves are based on theoretical principles, are available. In the case of gender differences in music reproduction equipment, we do not have this luxury; we are ourselves in need of developing theory relevant to the problem, from which testable hypotheses may evolve and be tested at some later time.

However, to develop yet another theory based on logico-deductive methods in the area of gender and technology seems of dubious value given the number of mutually exclusive theories already developed in this way. This suggests that what is required for this study is a methodology that is based on emergent principles, that is, a methodology that generates theory from the analysis of collected data.

3.5 A Preliminary Research Plan

Early thinking about the requirements for this thesis led to the idea that the design aspect of the research would be underscored if a bulk of the empirical research centered on the visual aspects of music reproduction equipment. I was also strongly attracted to the fantasy sketch technique used by Brunner, et al. (2000) in their work with children as means by which research participants are able to reveal underlying values and expectations. I therefore formulated a similar approach to analyze the problem of gender and music reproduction equipment. A target group of males and females would be asked to sketch their ideal domestic music listening system without regards to cost. These sketches would then be analyzed with respect to characteristics that are correlated to gender.

A similar approach to decoding the values and expectations of children is described by Wetton and McWhirter (1998). Their technique, which they label “draw and write,” is said to be “derived from the principles of developmental psychology.” It attempts to overcome the major shortcoming of standard questionnaire-based techniques, which are said to, “provide answers to questions which *adults* have posed in *adult* language with predetermined answers in a language which *adults* have chosen” [emphasis original]. To help shift the frame of the inquiry from the researcher’s perspective to the participant’s, participants (children of various ages in this case) are asked to draw their response to a certain concept (e.g., draw pictures that show all the things you do to make yourself healthy) and then attach words to the drawing to complement the drawing (e.g., “write at the side of each picture what it was [you] were doing”). Data collected in this way was used to develop an improved understanding of children’s understanding of health issues and to improve the curriculum for health education in the U.K.

The most appealing aspects of the sketch analysis technique for this study are that the participants are free to express their values and expectations in terms of their own making and that the medium to be analyzed has a strong visual component.

The overall goal of the fantasy sketching is to let participants reveal their underlying values and expectations regarding music reproduction equipment. Early thinking also suggested that additional data collection in the form of interviews or other techniques ought to be used to complement the data generated by sketch analysis.

3.6 Survey of Methodologies

In the following, I will briefly discuss a number of approaches that were considered for both aspects of the proposed approach outlined above. I limit the discussion to selected methods that lend themselves to qualitative, emergent approaches.

3.6.1 Grounded theory

Arguably, the most rigorous of the emergent methodologies is the grounded theory approach pioneered by Glaser and Strauss (1967) and further developed by Glaser (1992; 1996). Glaser (1992:72) offers a definition of grounded theory as “the systematic discovery of theory from data as the concepts emerge and integrate using the constant comparative method as an inductive device.”

One of the potential pitfalls of grounded theory is a direct consequence of its strength. The level of rigor required by grounded theory may make a grounded theory approach difficult or impossible to implement fully in the context of this study’s problem. Furthermore, Turner (1993) advises that, “if you are still exploring your research field, still trying to build a picture of the situation from which to draw testable hypotheses, a looser format is better.” A more complete analysis of GT and what it has to offer design research appears in the following chapters.

3.6.2 Case study

The case study approach as outlined by Rawlings (n.d.) and Turner (1993) also suggests itself as a credible means of generating insight required for theory generation. Case studies typically are less structured in comparison to grounded theory and offer the opportunity to analyze a more limited number of participants’ data in greater depth.

However, insofar as the case study requires the selection of one or more cases to study, and inasmuch as there are no positive examples in the area of women and non-portable music reproduction equipment, there exists something of a problem for this study. While negative or hypothetical cases might be studied, the expected utility of such an undertaking makes it less than appealing for this study.

3.6.3 The repertory grid

Tindall (1994b) discusses the use of personal construct approaches originated by George Kelly as part of his personal construct psychology in psychological research. Of particular interest is the discussion of a qualitative approach to the repertory grid, a technique by which a research participant's values in terms of parameters that the participant himself or herself has also identified can be discovered. The repertory grid was originally designed to help participants discover or reveal the way in which they construct generally their relationships with "elements" (items under study, typically people), and specifically with a set of elements under study, typically limited to about seven elements.

The process can be broken into three phases: the establishing of criteria for assessing elements, the assessment of elements, and the evaluation of results. The establishing of criteria is led by the research leader, but the criteria are actually set by the participant. The research leader presents arbitrarily selected subsets of three of the set of elements under study and asks the participant in what way two of the subset are like each other in a way that is different from the third. The participant thus offers a pair of evaluative terms, and these terms are then used as poles on an evaluative scale. This process continues until a sufficient number of evaluative pairs (defining evaluative scales) are constructed. In the second phase, the participant is asked to rate all of the elements in terms of the evaluative scales that he or she has constructed in the previous phase. The evaluation can be binary or graduated. In the final phase, the researcher analyzes the resulting grid of data for interesting patterns. Tindall mentions several forms of analysis, qualitative and quantitative, and the ones relevant to this study will be elaborated on more completely in a succeeding section.

The repertory grid has appeal for at least three reasons. First, it serves as a mechanism by which participants can systematically reveal their views regarding elements of interest in a study. Second, the fact that the criteria by which elements are evaluated are also constructed by the participant gives giving the researcher

additional data regarding the values and expectations of the participant (as well as helping to minimize the projection of the researcher's own values and expectations into the research structure). Third, the results of a repertory grid lend themselves to both qualitative and quantitative analysis.

3.6.4 Methods of sketch analysis

Methodologies for the analysis of verbal data—both written and oral—are generally well developed. However, methodologies for the analysis on non-verbal data—in our case sketches—are less so. Below I consider some approaches to the analysis of sketching. These include reflective practice, semiology, and visual anthropology.

3.6.4.1 Reflective practice

Reflective practice has been applied in the study of design education (Schön, 1983; Schön, 1985), design methodology (Dorst, 1997) and team-oriented design practice (Valkenburg, 2000). In each of these works, sketches play a significant part in an overall analysis owing to the fact that sketching is pillar of design practice and a major conduit of design information. The focus of each study is a specific kind of process or process environment, and these works demonstrate the strength reflective practice has in the study of design processes.

In contrast, my study is interested in the output of a process rather than the process itself; I am interested in what a sketch embodies about the relationship the sketcher has to the object sketched. I am not interested in how the sketcher constructed the sketches or the role the sketch plays in their process of expression—rather, of interest is what the sketchers are expressing through the medium of sketching. Therefore, despite the precedence of the application of reflective practice in design and the role sketching has played within it, I do not find reflective practice appropriate to the present task.

3.6.4.2 Semiology

Semiology has a long history as a tool for the analysis of written and visual artifacts. Barthes (1970a; 1970b), Baudrillard (1981a; 1981b) and others have used semiology as analytic instruments in sociology and political theory. Metz (1974), Giannetti (2002), and Dick (1990) discuss semiology as a tool for analyzing films. Vakeva (1990), Vihma (1990), and Jeudy (1993) have explored the use of semiological concepts in product design as analytic tools, and Lupton and Miller (1999) have done

the same in graphic design. The promise offered by semiology is that through a careful analysis of what is being represented in signs and how, a clearer understanding of what is truly being communicated will emerge. I discuss semiology in greater detail in a later chapter.

3.6.4.3 Visual anthropology

The field of visual anthropology is composed of several sub-specialties, only a small portion of which concerns itself with content analysis in a way appropriate to this study. Margolis (1998) mentions the technique of photo elicitation, which involves, “asking research subjects to discuss the meaning of photographs, films or videos. In this case the images can be taken specially [sic] by the researcher with the idea of using them to elicit information, they can belong to the subject, ... , or they can be gathered from other sources” However, most of the available literature on visual ethnography treats the visual as an extension of direct observation (Margolis (1998), Pink (2001), and to a lesser extent Prosser (1998) all emphasize such approaches), thereby making it less than optimal to the content analysis tasks required in this study.

3.7 Summary

The lack of theoretical foundations in the areas related to this thesis makes a verificational study impossible. The present state of the field indicates that what is required for this study is a methodology that generates useful theory. For this reason, a qualitative, empiric approach that combines sketch analysis of “fantasy systems” complemented by interviewing and other data taking techniques in the overall context of an emergent methodology suggests itself as a productive course.

Given the relevance that grounded theory has for this study as a rigorous emergent methodology, I present in the next chapter a discussion of grounded theory and its relation to design. In the chapter following that, I present an original method of analysis based on semiology that is applicable to the present study. Following these, I present an outline of the methodology ultimately used in the remainder of this thesis.

4 GROUNDED THEORY AND DESIGN

Grounded theory is a research methodology first formalized in the 1967 monograph, “The Discovery of Grounded Theory” by sociologists Barney Glaser and Anselm Strauss (Glaser and Strauss, 1967). The monograph outlines an inductive, emergent methodology “drawn from the analytic methodology and inductive quantitative analysis ... discovered by researchers and students in the Department of Sociology and the Bureau of Applied Social Research at Columbia University in the 50’s and 60’s” (Glaser, 1992).

Following grounded theory’s inception, a split ensued between its co-authors. Glaser felt that Strauss’ development of grounded theory as set forth in Strauss and Corbin (1990) diverged significantly from the goals stated in their own 1967 monograph. Glaser discusses this divergence and argues convincingly the pitfalls of Strauss and Corbin’s developments in Glaser (1992). In comparing the two schools of grounded theory, Dick (2005) finds “Glaser’s approach more clearly emergent and more clearly justified as emergent.” Throughout the remainder of this chapter, I will use the concepts of grounded theory as set forth in Glaser and Strauss (1967) and further elaborated on by Glaser (1992) and Glaser (1996).

This chapter attempts to evaluate what grounded theory has to offer in the realm of design research and theory. I will begin with a brief discussion regarding why one might consider a link between grounded theory and design, then discuss some fundamental concepts of grounded theory, and conclude with analysis regarding grounded theory’s applicability to design.

4.1 The Appeal of Grounded Theory in Design

In many ways, the goals of grounded theory echo the goals of many designers. A concept that holds importance in the minds of many design practitioners is the idea of “throwing out the book” and developing design solutions unencumbered by precedent or other expectations. The feeling is that design should implement what “works best” for the given situation from a “fresh” perspective. This closely

resembles grounded theory's approach to the discovery of theory. Grounded theory attempts to build theory based on direct analysis of data, without reliance on so-called "great men" or any other *a priori* theories (Glaser and Strauss, 1967:ch. 1). A central idea in grounded theory is to develop theory that "works best" with the given, appropriately sampled data, and no more. Thus, both design and grounded theory share a *tabula rasa* approach to producing something that "works best."

Another way that grounded theory intersects design regards specifically the area of product and interface design practice. The essential process of grounded theory is "the inductive generation of theory based on the analysis of properly acquired data" (Glaser, 1992:72). This closely resembles the process used by product and interface designers in user studies. Both rely on the inductive analysis of data for generating useful abstractions.

Finally, like any discipline, design involves a social dimension. From this point of view, it may be useful to try to understand how grounded theory can be used to uncover the social dimensions of design as an activity or discipline, as well as of designed artifacts.

4.2 Grounded Theory Concepts

Grounded theory was developed as a tool to produce theory that is based on data. It is, "...the systematic discovery of theory from data as the concepts emerge and integrate using the constant comparative method as an inductive device" (Glaser, 1992:72). Furthermore, "The grounded theory approach is a general methodology of analysis linked with data collection that uses a systematically applied set of methods to generate an inductive theory about a substantive area. ... [T]he yield is just hypotheses! Testing or verificational work on or with the theory is left to others interested in these types of research endeavor," (Glaser, 1992:16).

From the above, we can see that two distinguishing aspects of the grounded theory process are that it is used for theory generation rather than verification, and that it is based on an inductive rather than deductive approach. I will discuss each of these in turn.

4.2.1 Theory generation vs. verification

Classic scientific method has as its primary concern the verification of theory through observation and measurement, as outlined in Ackoff, et al. (1962). Its main concern is the formalization of one half of the scientific endeavor: that of verification of theory. Grounded theory, in contrast, is an attempt to formalize the other half: that of generation of theory. As Glaser (1992:6) puts it, “The main goal of grounded theory ... is the systematic generating of theory from systematic research.”

Glaser and Strauss (1967:8) suggest that there is a need for this kind of formalization because those involved in theory generation, “will be able to use [grounded theory] effectively to help systematize their theorizing; for until they proceed with a bit more method their theories will tend to end up thin, unclear in purpose, and not well integrated”. The scope over which grounded theory can be applied as originally formulated is (as I shall discuss later) limited to certain kinds of social science research. However, keeping in mind the distinction between theory verification and theory generation, as well as the goal of grounded theory being the formalization of the theory generation half of the relationship, is critical to developing a clear understanding of grounded theory. Glaser (1992:29) underscores this when he says, “Hypotheses are probability statements, not facts that are verified. Grounded theory is not verificational”.

This development of a methodology to formalize and support the generation of theory was a response to a particular need in a particular field in a particular historical context. The field of sociology c. 1965 was dominated by verificational research, and a means to encourage the generation of useful new theory was strongly needed (Glaser & Strauss, 1967:ch. 1). However, the basic delineation between theory generation and theory verification and the need for methods to assist each is a universal problem, independent of application or historical. This perhaps accounts for the continued interest in grounded theory, four decades after its initial formulation.

4.2.2 Inductive vs. logico-deductive theory

The other distinctive feature of grounded theory is that it is a methodology based on an inductive process. Glaser and Strauss (1967) go to great lengths to differentiate theory based on logical or logicalistic deduction and theory based on induction. They point to the potential for “logically deduced theories based on ungrounded

assumptions such as some well-known ones in the ‘social system’ and on ‘social action’ can lead their followers far astray,” whereas grounded theory, since it is based on “hard study of much data”, must produce theory which is strongly supported by real-life observation (p. 4).¹

A further danger with logically derived theory is what Glaser and Strauss (1967:5) call “exemplifying.” In exemplifying, the theorist finds examples to support his or her theory *after* the theory has been developed. The danger pointed out here is that this creates an illusion of a proof when in fact the chosen example can be irrelevant outside its utility in “confirming” a theory. Another limiting aspect of this approach is that an example cannot be used to improve the theory, “since the example was selectively chosen for its confirming power.”

According to Glaser and Strauss (1967), data based, inductive theory generating methods do not suffer any of the above weaknesses. They furthermore have the advantage of longevity. “Theory based on data can usually not be completely refuted by more data or replaced by another theory. Since it is too intimately linked to data, it is destined to last despite its inevitable modification and reformulation” (Glaser and Strauss, 1967:4).

4.2.3 Process

The grounded theory process can be divided into four phases: open coding, selective coding, sorting, and writing up. I will briefly discuss each of those phases below; the overall process is shown in Figure 4.1. Unless otherwise noted, the content below is based on Glaser (1992) and Glaser and Strauss (1967).

¹ I discuss the lack of consistency and/or incompatibility between several logically deduced theories in the area of gender and technology—mostly drawn from Gill and Grint (2000)—in previous chapters.

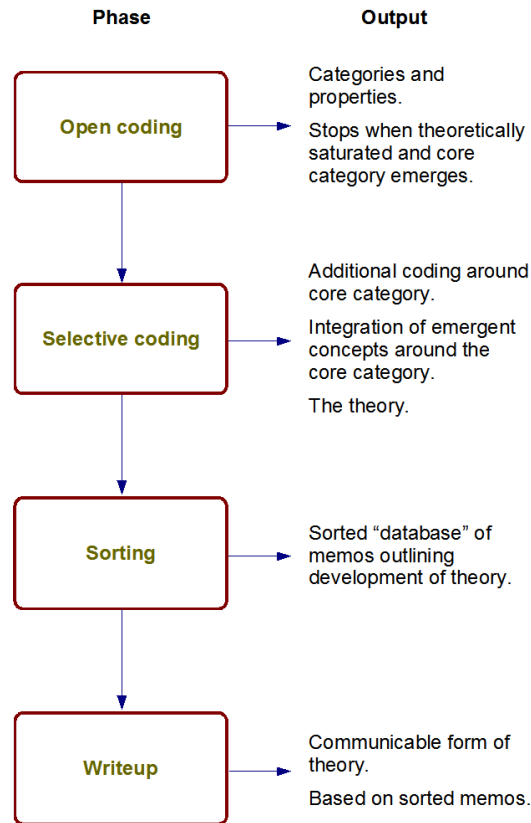


Figure 4.1: Grounded theory workflow

4.2.3.1 Open coding

The grounded theory process begins with open coding. The analyst enters the open coding phase with no preconceptions about what is to be found or what is to be studied; he or she exits with a core variable that will form the basis for further study. Starting open coding with an open mind is critical. “[The researcher] is admonished to forestall the need to know concepts beforehand which are derived from either his experience or whatever other learning, as the constant comparative process will soon, even quickly, lead to emergent categories and their properties and theoretical codes” (Glaser, 1992:39).

The analyst’s job during open coding is to collect and analyze data so as to produce *categories* (a high level abstraction of the patterns observed in the data) and *properties* (conceptual characteristics of a category). Data collection is typically performed through direct observation of and unstructured interviews with the members of the social group under study—although any form of data, including quantitative data, is valid if it permits the goals of open coding to be reached.

The ultimate aim of open coding is to identify a *core category* for further study. Open coding will produce a number of categories, associated properties, and theoretical codes connecting them. However, if the analyst allows open coding to continue long enough (according to Glaser (1992)), a dominant category will emerge, and this category will become the basis for the next phase of the study.

Constant comparative analysis

Central to the process of open coding, as well as all other phases of the grounded theory process, is the *constant comparative analysis* method of qualitative analysis. Under constant comparative analysis, the analyst continually reflects on previous coding incidents and incorporates concepts that have emerged from those incidents into the present incident. For each incident, the analyst attempts to identify categories and properties suggested in the data, as well as theoretical codes that connect these to other categories and properties or other concepts.

The standard medium for the recording of constant comparative analysis is the *memo*, a note written by the analyst that records all insights and relevant information from an incident, or as Glaser (1992:108) puts it, “the theorizing write-up of ideas as they emerge, while coding for categories, their properties and their theoretical codes.”

Glaser and Strauss (1967:106–107) summarize constant comparative analysis in the form of two “defining rules”: 1) “*while coding an incident for a category, compare it with the previous incidents in the same and different groups coded in the same category,*” and 2) when you have spent some time working with a category or categories and have some theoretical insights or concerns, you should “*stop coding and record a memo on your ideas*” [emphasis from the original].

Theoretical sampling

Grounded theory employs a method of *theoretical sampling* to develop the sample groups used in a study. It is used in both grounded theory’s open coding phase and the selective coding phase that follows.

In conventional verificational studies, sample groups are often selected based on some kind of random sampling to ensure representative coverage of the population under study. In theoretical sampling, the primary criterion is not whether or not the

group under study has been representatively sampled. Rather, the primary criterion is *where to go to get the next relevant piece of data*. Glaser and Strauss (1967) state:

Beyond the decisions concerning initial collection of data, further collection cannot be planned in advance of the emerging theory (as is done so carefully in research designed for verification and description). The emerging theory points to the next steps—the sociologist does not know then until he is guided by emerging gaps in his theory and by research questions suggested by previous answers.

...

[T]heoretical sampling is the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges. This process of data collection is controlled by the emerging theory ...

The basic question is theoretical sampling ... is: what groups or subgroups does one turn to next in data collection? And for what theoretical purpose?

...

Our criteria are those of theoretical purpose and relevance—not of structural circumstance (Ch. III).

Typically, a category is worked on until it has become *theoretically saturated*. A theoretically saturated category is one where “no additional data are being found whereby the sociologist can develop properties of the category” (Glaser & Strauss, 1967:61). In other words, theoretical sampling for a category can stop when more sampling fails to yield useful insights. There is an element of subjectivity in making this assessment, for the analyst can never know with absolute confidence whether or not the next interview will yield a useful insight or not. Glaser and Strauss (1967:64) state that, “Learning [when to stop] takes time, analysis and flexibility, since making the theoretically sensitive judgment about saturation is never precise.” Glaser (1992:55) points out that a complete grounded theory study requires “lots of” data, and that “with 60 to 100 theoretically sampled interviews ... it is not hard to write ... a grounded theory monograph” (Glaser, 1996:xvii).

Summary

The final output of the open coding phase of grounded theory is the identification of a core category for further study that has emerged through the saturation of theoretically sampled data analyzed by the constant comparative method.

4.2.3.2 Selective coding

Once open coding has produced a core category, selective coding can begin. Whereas open coding was an unbounded affair applied over a broad domain, “to selectively code means to ... delimit coding to only those variables that relate to the core variable, in sufficiently significant ways to be used in a parsimonious theory” (Glaser, 1992:75). The two core techniques used in open coding, namely theoretical sampling and constant comparative analysis, are also employed in selective coding. The major difference between open and selective coding is that selective coding focuses on development of the core category for producing theory regarding the core category.

The theory that emerges as selective coding advances relies on a process of integration. Glaser argues that if the techniques of theoretical sampling and constant comparative analysis are followed properly, the integration of concepts to produce a theory will emerge spontaneously. “Integration is simply the emergent connection between categories and properties based on theoretical codes, and it just happens, because the world is integrated and we are discovering the world—not creating it!” (Glaser, 1992:76).

4.2.3.3 Sorting

Sorting refers to the process of sorting the memos that one has taken during open and selective coding. It is a central part of the grounded theory process and is intended to produce a coherent and integrated packaging of the ideas reflected in the memos. It is “the key to formulating the theory presentation to others in words or in writings” (attributed to a prior work by Glaser in Glaser (1992:109)). While sorting, “the analyst starts with no idea of an outline and thereby lets the concepts outline themselves through emergence” (Glaser, 1992:110).

4.2.3.4 Writing up

The final phase of a grounded theory research project is the writing up. According to Glaser, the structure of the write-up, “just emerges from sorting memos. When the sorting of all the memos is done, it is just obvious when to write and what to write about and how to present the integrated picture” (Glaser, 1992:111), and “the sorting is the final analysis of the memos, and the composition is the write up” (Glaser, 1992:114).

Thus, in a grounded theory study, and again unlike many non-emergent and verificational methodologies, it is not possible to construct a report outline ahead of time. Somewhat evoking the method of theoretical sampling, the structure of the report emerges as part of a “just-in-time” process, when it is needed and no earlier.

4.2.4 Criteria

Owing to the different intention of grounded theory versus verificational scientific methodologies, the criteria for judging grounded theory research is different from that of verificational scientific methods. Glaser (1992:18) states that the output of a grounded theory process, which is scientific theory, needs to be judged *as* scientific theory: “Grounded theory meets the two prime criteria of good scientific inducted theory: parsimony and scope.” Glaser and Strauss (1967:111) state that “[the emergent theory] achieves two major requirements of theory: (1) parsimony of variables and formulation, and (2) scope in the applicability of the theory to a wide range of situations, while keeping a close correspondence of theory and data.”

Glaser (1992:15) elaborates that the criteria by which a grounded theory can be evaluated center on fit, work, relevance, and modifiability:

A well constructed theory will meet its four most central criteria: fit, work, relevance, and modifiability. If a grounded theory is carefully induced from the substantive area its categories and their properties will fit the realities under study If a grounded theory works it will explain the major variations in behavior in the area with respect to the processing of the main concerns of the subjects. If it fits and works the grounded theory has achieved relevance. The theory itself should not be written in stone or as a “pet”, it should be readily modifiable when new data present variations in emergent properties and categories.

And in Glaser and Strauss (1967:3):

By “fit” we mean that the categories must be readily (not forcibly) applicable to and indicated by the data under study; by “work” we mean that they must be meaningfully relevant to and be able to explain the behavior under study.

Notably absent from the preceding criteria is any reference to verifiability. Regarding verifiability in grounded theory, “The theory should provide clear enough categories and hypotheses so that crucial ones can be verified in present and future research; they must be clear enough to be readily operationalized in quantitative studies when these studies are appropriate” (Glaser & Strauss, 1967:3). If and when verification fails or new data become available through other means, “[a] theory is neither

verified nor thrown out, it is modified to accommodate by integration the new concepts” (Glaser, 1992:15).

4.3 Applicability of Grounded Theory in Design

Glaser points to a multi- or trans-disciplinary use of grounded theory when he states, “Grounded theory methods are *not bound* by either discipline or data collection ... its methods work quite well for analyzing data within the perspective of any discipline [and] it is a useful methodology for multidisciplinary studies” [emphasis original] (Glaser, 1992:18). He adds:

Sociologists and other social psychologists are not the only researchers who use the qualitative analysis of grounded theory. People also use it who are in public health, social work, political science, educational sociology, and nursing, *as well as researchers and practitioners in fields that concern themselves with issues relating to human behavior in organizations, groups, and other social configurations* [emphasis added] (Glaser, 1992:13).

However,

One property of grounded theory must be clearly understood: The theory can be developed only by professionally trained sociologists, but can be applied by either laymen or sociologists (Glaser & Strauss, 1967:249).

I believe it is important to underscore the limited domain that Glaser refers to in the latter quotes, in spite of the seemingly contradictory statements regarding its broad applicability in the former. The structure of theory presented in both Glaser and Strauss (1967) and in Glaser (1992) is based on the needs of sociology, which should not be at all surprising given that the methodology was developed for use in that discipline. I believe an assessment that fairly reconciles Glaser’s two seemingly contradictory points of view is that grounded theory as formulated by Glaser is directly applicable over a wide range of disciplines as long as the specific problem to be investigated has a strong social aspect. However, adapting grounded theory’s inductive methodology to non-social situations requires a significant extension to what Glaser presents.

Specifically regarding design, grounded theory directly recommends itself in design problems that involve “human behavior in organizational, group, and other social interactions.” However, a more general use of grounded theory in design is problematic. Grounded theory was created to meet the needs of developing theory

relevant to its authors' specific area of interest. While, as I have already stated, this does not mean that it cannot be adapted to the specific needs in other disciplines, there must be a clear understanding of what constitutes theory in the area to which it will be adapted for this to be a successful endeavor. This presents an acute problem in the general area of design, since at present I feel there is limited consensus regarding what constitutes design research and theory, and what their standards are. (See, for example, the opposing perspectives offered by Friedman (2003) and Gray and Malins (2004).)

Ironically, this lack of consensus in design likely has its basis in one of the key values in design culture: creativity. Attempts at any formalization or consensus of design process and theory are frequently seen as obstacles to rather than facilitators of creativity. "Consensus is the antithesis of creativity," could be the mantra of many. Whether this view is valid or not (I personally feel it is not), it is very likely that its prevalence has impeded the development of a consensus regarding what constitutes design theory, how it is structured, and its standards.

This is not to say that there are not systems of what I will call "private design theory." Most designers have a methodology that can be described, analyzed and therefore theorized. (And by this I do not mean a designer's *stated* methodology or theory—as discussed by Bierut (2005). Rather, I am referring to the *actual* methods and theories used by the designer—even if known only tacitly to him or her.) However, such private design theory does not have much relevance beyond the individual designer—at least not until the designer opens up his or her theory to public inspection, criticism, comparison, and discussion. Therefore, owing to its lack of documentation and contribution to the design discipline, "private design theory" will not be considered any further in this context.

Therefore, the first requirement for adapting grounded theory to design is that the researcher must have a clear idea regarding what kind of theory he or she is trying to construct. There is an additional limitation with grounded theory that must be considered when trying to apply it to design research. Glaser (1992:22-25,105) states that grounded theory is "the study of abstract problems and their processes, not units," and that "the grounded theory researcher ... moves into an area of interest with no problem;" furthermore, "the research question in a grounded theory study is not a statement that identifies the phenomenon to be studied," and "one purpose [of

grounded theory] is to enter the field with no idea what is to be studied until it emerges.” In other words, grounded theory as formulated by Glaser is not an appropriate methodology to use in highly focused work. It recommends itself as a method through which problems can be discovered; however, it has not been developed as a tool to support research where the problem has been identified beforehand. Thus, while it may be a fruitful methodology for developing an understanding of the problems faced by female designers working in Turkey, its utility will be much more limited when trying to develop a model of automotive dashboard control locations based on class differences.

In summary, grounded theory’s reliance on emergence from an inductive consideration of data has great appeal as a means of theory generation. As presented by Glaser, grounded theory can be used directly in design research in problems that have a significant and general social dimension. It may also be possible to adapt grounded theory to a wider range of design research problems. However, for this to be a fruitful endeavor, the researcher must have clear standards regarding the kind of theory he or she is trying to construct. Additionally, if the research has already acquired some focus, further modification to the grounded theory process will be required. In any event, in attempting to expand grounded theory’s scope, the adopter of grounded theory must exercise care so as not to inadvertently transform the methodology into one of data forcing (as Glaser accuses Strauss of throughout (Glaser, 1992)) or otherwise turn out a methodology that is something other than, “the systematic discovery of theory from data as the concepts emerge and integrate using the constant comparative method as an inductive device” (Glaser, 1992:16).

5 TOWARD AN IMPLEMENTATION OF SEMIOLOGY IN DESIGN¹

Since Ferdinand de Saussure first conceived of the science of semiology and Charles Peirce the philosophy of semiotics almost a century ago, they have been applied in a wide array of fields (de Saussure, 1966; Silverman, 1985). In this chapter, I present an application of semiology in the context of design. The general area of interest is the relevance semiology has for design as an adjunct to analysis and creativity in general, and in particular the development of a theory that integrates its use in both analysis and creativity. Throughout this text, I use the terminology developed by Saussure (1966) rather than that of Peirce as my approach relies to a greater extent on the former's perspective and works derived from this perspective.

To help refine the scope of the intended enquiry, I will first briefly explore two fundamental and interrelated dichotomies. A relationship between design (or any creative activity) and semiology (as well as many other theoretical perspectives) can roughly be framed with reference to these two dichotomies:

Dichotomy #1: “Theory for design” versus “design for theory.” In other words, in exploring a relationship between semiology and design, is the primary interest to develop a theory that assists the understanding and/or making of design, or is it to use design as a means to support some theory—be it sociological, political, or what-have-you?

Dichotomy #2: “Semiology for the *analysis* of designed artifacts” versus “semiology for the *creation* of designed artifacts.” In other words, are we interested in the application of semiology to understand how design and designed artifacts function and the role they have in our lives, or are we interested semiology as a tool to help us make better design?

A large body of work from the field of material culture emphasizes the analysis of material artifacts in an effort to derive or support social theory. A specialty within

¹ This chapter is based on Konar (2006).

material culture deals with the role design plays in the manifestation of artifacts under scrutiny and the implications of those artifacts on social theory. Thus, there exists a range of work from the field of material culture that uses “design for theory,” some of it predicated on “semiology for the analysis of designed objects.” This can be contrasted against the primary interest in this paper, which is the relevance semiology has for design as an analytic and creativity tool.

Therefore, in terms of the first dichotomy mentioned above, the work presented here is primarily concerned with “theory for design” rather than material culture’s concern with “design for theory.” And in terms of the second of the two dichotomies, the work presented here is concerned with the application of semiology for both the analysis and the creation of designed artifacts.

5.1 Framing Semiology for Design

Semiology has a long history of use as an analytical tool. Metz (1974), Dick (1990), and Giannetti (2002), and others discuss semiology as a means to analyze films. Barthes (1970a; 1970b), Baudrillard (1981a; 1981b) and others have used semiology as analytic instruments in sociology and political theory. Efforts along similar lines are to be found in the design discipline. Vakeva (1990), Vihma (1990), and Jeudy (1993), have explored the use of semiological concepts in product design as analytic tools, and Lupton and Miller (1999) have done the same in graphic design. All of the preceding frame an approach to semiology that is appropriate to a particular analytic intent. This then begs the question: How ought semiology to be framed when the intent is to use it as an adjunct to the creative as well as analytic needs of design?

When applied as Saussure intended—as the science of signs—semiology requires a high degree of rigor. While the fundamental concepts of semiology can be easily grasped, their application is a complicated affair. The subtle complexity of relations between signifiers, signifieds, and the domains in which they operate mandates slow, careful, and considered contemplation. To appreciate the complexity of developing a semiology for use in design, be it for analysis or creativity, we need only ask the most fundamental of questions: What are the signifiers and the signified in design and designed artifacts?



Figure 5.1: Handheld electronic device (University of Texas, n.d.)

A major factor that impedes the formulation of a simple answer to the above question is signification's context-sensitivity. Consider for example the two views of the photograph in Figures 5.1 and 5.2. In the cropped version in Figure 5.1, the handheld electronic device signifies its own portability and handleability. However, in Figure 5.2, by way of the contrast generated between the device's "modern" self and the "traditional" monk, the device no longer signifies portability and handleability but rather something else entirely (e.g., modernity, technologic).



Figure 5.2: Handheld electronic device phone in use context (University of Texas, n.d.)

The context-sensitive nature of signification can be further appreciated upon consideration of the role a mobile telephone plays in the following scenarios:

- Jeremy has a mobile phone.
- Jeremy has a Nokia 8800 mobile phone.
- Jeremy's mobile phone is like new.
- Jeremy's mobile phone has a custom case and ringtones.

In each case, the "mobile phone" says something else about itself and about Jeremy's personality and personal traits—from something essentially denotative (Jeremy having ownership of an instrument of portable communication) to something that

connotes Jeremy's sensitivity to social status issues, his fussiness, and finally his desire to signify his own individuality.

Complicating things further is the fact that a designer rarely is in a position to fully control the context in which his or her design is used. Therefore a large part of the signification process can never be fully knowable to the designer.

Considering the above leads to several non-mutually-exclusive provisional answers to the initial question: What are the signifiers and signified in design and designed artifacts? These include:

- There is no appreciable first-order signification in objects. Appreciable signification in artifacts is all second and higher-order. Therefore all objects are in Barthes' sense mythic or cliché (Barthes, 1970a).
- An artifact's signifiers are its buttons, text, color contrasts, shapes, etc. This view perhaps leads to Product Semantics.
- Signification in artifacts is entirely context-sensitive. What functions as a signifier in one situation changes in another.

Additional questions that might be asked in developing a semiology for design include:

- What do denotation and connotation mean with respect to designed artifacts? A telephone is a tool for communication; it is also a sign of importance, membership in a social group, social awareness, etc.
- Do all designed artifacts denote and connote simultaneously?
- What is paradigmatic and syntagmatic in designed artifacts? Does paradigm equal style and syntagm equal form? Does paradigm equal motifs and syntagm equal structure?
- What do *langue* and *parole* mean with respect to designed artifacts? As is claimed to be the case in cinema, is there no *langue* in design? (attributed to Metz in Dick (1990:229)). Does every designed artifact represent both its own *langue* and *parole*? Does *langue* equal style, conventions, and design language—and *parole* the specific artifact? Or does *langue* equal the artifact and *parole* the artifact in use?

A century's worth of semiological development has left us with what is apparently an intractable problem for the application of semiology in design. We are left with more questions than seems possible to answer.

5.2 Toward an Integrated Framework

5.2.1 The Case for a Return to Fundamentals

Given the difficulty involved in developing a semiology for design that draws on the full range of literature on semiology, I propose instead to develop an approach that draws directly and exclusively on semiology's fundamental concepts. To that end, the contributions of Barthes, Baudrillard, Metz, etc. will be considered no further. This is done with the expectation that if one begins the construction of a methodology based only on conceptual fundamentals, the future development and application of the methodology will be allowed to develop organically and in line with the requirements of the field rather than having to answer to requirements that may be essentially irrelevant to the task at hand.

In what follows, I deliberately eschew all but the fundamental concepts presented by Saussure (1966). I have chosen Saussure as the source of fundamental concepts rather than Peirce (as presented in (Silverman, 1985)) because the former's use of dichotomies simplifies conceptual development in comparison with the latter's penchant for trichotomies.

It might be argued that the methodology presented below is "semiologicistic" rather than strictly semiological. It must be pointed out however that the motivation for this undertaking is not to be a player in the verbose intellectual game pointed out by Giannetti (2002:482). Nor is it to add yet another "-istic" approach to a growing list of "-isticisms" found in design. Rather, the motivation for taking this undertaking is to facilitate a means of creating useful design knowledge. Certainly, as the concepts outlined below become more familiar to the designer, the conceptual framework can be developed to incorporate more advanced semiological concepts, as needed.

5.2.1.1 Formal Methods: A General Perspective

In what follows, I present a framework with a semiological basis that can be used in both the analysis as well as the creation of designed artifacts. The creative methodology that emerges is formal in structure. Therefore, before describing the

framework itself, I would like to discuss two aspects of the integration of formal methods into the creative processes.

First, like much creative activity, design involves a large share of intuition. This has led some designers to be wary of or disregard entirely formal approaches to design and creativity. However, any formal knowledge can assist in the creative process by giving intuition additional resources on which to draw. Therefore, for example, if the way artifacts signify is sufficiently internalized, this knowledge can be used spontaneously to inform the intuitive creative processes.

Second, any means of analysis, including semiology, can be incorporated into an iterative model of idea development as illustrated Figure 5.3. Ideas are subjected to analysis and subsequently evaluated. As needed, additional analysis is used to inform evaluation, and the resulting evaluation produces a refinement of the initial idea. The refined idea is then subjected to the analysis and evaluation, etc. Consciously or not, this model of development is often employed in creativity. Typically, the analysis is performed using a variety of analytic methods—and certainly semiology can be one of them.

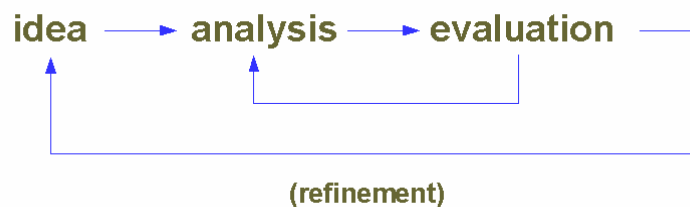


Figure 5.3: Model of iterative idea development

5.2.1.2 Semiology, convention, and culture

In evaluating what semiology has to offer design, it makes sense to begin with an understanding of what semiology's greatest strengths are. Semiosis requires the presence of conventions. Whether the conventions are historically rich and widespread throughout a population, as is the case in language, or particular to a specific work, for semiosis to happen there must be conscious or unconscious agreement concerning the essential meaning of a sign. Once meaning is thus conventionalized, it becomes cultural.

Exactly for this reason, semiology's greatest strength arguably is its ability to facilitate the exploration of artifacts in terms of their cultural meaning. This is especially true in situations where conventions are clear, that is, in situations where

genres or prototypical forms are particularly evident.¹ In contexts where such conventions are manifest, one can readily analyze what those conventions are (the signifieds) and their means of expression (their signifiers).

5.2.1.3 Design Analysis via Semiology

One approach to the analysis of designed artifacts is to regard a given artifact differentially; that is, to describe a particular artifact in terms of how it differentiates itself from the prototypical artifact of the class to which the particular artifact belongs. If the convention–expression (or signified–signifier) dichotomy discussed above is used as the basis for this differentiation, a cultural understanding of both the prototype artifact and the particular artifact under study will result.

To support such an analysis, I propose a taxonomy of relationships, or stances, a particular artifact can have with a prototype’s conventions and means of expression as follows:

- The generic stance. Accept a convention and express it through its traditional means. This approach does not produce novelty or creativity; it merely (re)produces the expected.
- The contra-cultural stance. Reject a convention and flaunt another in its place.
- The counter-cultural stance. A subset of the contra-cultural stance: reject a convention and flaunt its opposite in its place.
- The transformative stance. Accept a convention, but express it through novel or alternate means. This stance does not radically alter the meaning of an artifact; it merely transforms the means of its expression.
- The ironic stance. Use formal aspects of the conventional expression but in such a way as to express some other meaning.
- The a-cultural stance. Ignore a convention. Since the convention is not expressed, it doesn’t make sense to talk about the means of its (non)expression.

¹ It should be noted that here and throughout I am using “prototype” to mean “a standard or typical example” and not “a first full-scale and usually functional form of a new type or design of a construction” (Merriam-Webster, 2007).

The first five categories above can be represented in a four-quadrant space as illustrated in Figure 5.4.

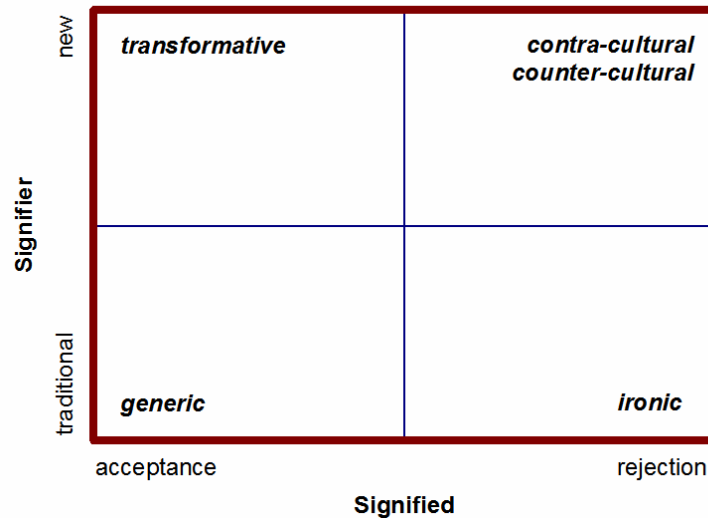


Figure 5.4: Taxonomy of relationships of artifact's significations with a prototypical form

5.2.1.4 Requirements for Creativity

Csikszentmihalyi (1996) points out that creativity ensues as a result of, among other things, the introduction of novelty vis-à-vis an existing convention. It is important to note that while novelty (in Csikszentmihalyi's sense) is a necessary condition for creativity, novelty in itself is not sufficient to produce creativity, or at least interesting or meaningful creativity. The making of meaningful creativity involves many factors and typically incorporates a large intuitive dimension. However, novelty is arguably the most important prerequisite.

Thus the first step in producing creativity is to have some understanding of prevailing conventions. Analyzing a genre or prototypical artifact to produce a laundry list of conventions and the way they are expressed, while possibly requiring creative thought, does not in itself produce creative results. But such a list can form the foundation for creative manipulation.

5.2.1.5 Reconstruction

Applying this concept of novelty to the convention/expression (or signified/signifier) dichotomy developed earlier, we can see that creativity will be seeded if either a convention or the way it is expressed is contrary to the genre or prototype. To put it another way, the (creative) value of explicitly understanding the conventions of an

artifact lies in the fact that it allows one to more readily discover opportunities to create novelty. Once an artifact's conventions and means of their expression have come to be understood, they can be reconstructed in new and creatively meaningful ways.

5.2.2 An Integrated Process Based on Semiological Concepts

Drawing on the preceding, it is now possible to propose a framework based on semiological concepts that can be used for both analytic and creative purposes in design. The framework rests on the creation of list of a genre's or prototype artifact's conventions coupled with the consideration of those conventions in terms of a taxonomy of semiological stances that can be used in the mutation of those conventions. The stances include generic, contra-cultural, counter-cultural, transformative, ironic, and a-cultural stances.

The methodology for using the above in an *analytic* context can be described as follows: By considering a paired list of a prototypical artifact's conventions and means of expression on the one hand, and a taxonomy of possible relationships that an artifact can have with those conventions in the other, describe a particular artifact in terms of the relationships it has with the prototype's conventional schema. Such analysis can be used to understand the cultural meaning of a particular artifact.

The methodology for using the above in an *creative* context can be described as follows: By considering a paired list of a prototypical artifact's conventions and means of expression on the one hand, and a taxonomy of possible relationships that an artifact can have with those conventions in the other, reconstruct the conventional schema of an artifact. The creative process is diagrammed in Figure 5.5. If this is done with insight, intelligence, and sensitivity, the novel expressions that result can be assembled into creatively meaningful wholes.

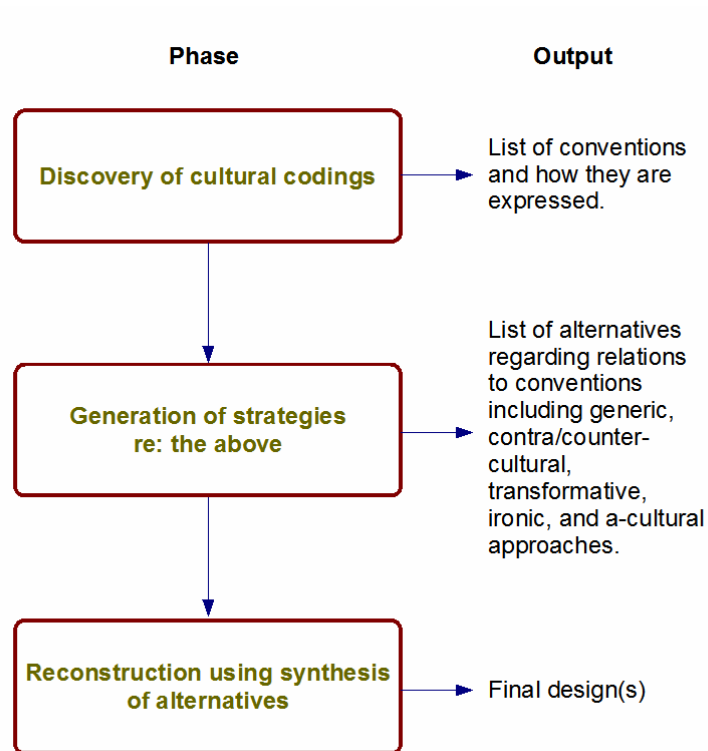


Figure 5.5: Creative process diagram

5.3 A Brief Example: The Folk Guitar as Semiological Artifact

The folk guitar will now be used as a means to demonstrate the concepts developed above. The folk guitar was selected for this demonstration because its strong prototypical form, illustrated in Figure 5.6, lends itself directly to the methodology's main strength. However, it must be emphasized that the focus of this chapter is not the analysis of the folk guitar. I am using the guitar only to demonstrate the concepts developed above. Furthermore, the reader ought not to feel compelled to agree with the particulars of the analysis that follows—it is sufficient for her or him only to see how the concepts can be applied.



Figure 5.6: Martin D-45 folk guitar (C. F. Martin & Co., 2006a)

In addition, I underscore the fact that I am not attempting to present a complete case study. Thus, while a brief history of the instrument is presented, it only suffices to permit the analysis that follows. Again, the purpose is to demonstrate the concepts developed above, not to present a complete design exercise or case study.

It should be noted that while the folk guitar has its roots in American craft, it is today a fully productized artifact. In the United States, CAD/CAM tools are actively being used in the manufacturing of instruments (Johnston, 2000); in Asia, large manufacturing interests such as Yamaha mass produce many versions of the instrument (Yamaha, 2006), and ISO9001:2000 compliant manufactures capable of 300,000 units per annum in China are not uncommon (Taixing Fengling, 2005).

5.3.1 Theme

The analysis that follows focuses on only two of the conventional aspects of the prototypical folk guitar: its “folksiness” and its gender qualities.

5.3.1.1 Folksiness

The folk guitar (a.k.a. steel-string, acoustic, or flat-top guitar) began its development in the middle of the 19th century when guitar builders in the U.S.A., notably C. F.

Martin, began experimenting with an alternate form of bracing the top of the classical guitar (a.k.a nylon string or Spanish guitar). This design evolution resulted in a stronger top that could support the high tension produced by steel strings (Dixon, n.d.), a development finally introduced in 1922 (C. F. Martin & Co., 2005). The net result was an instrument capable of producing greater sound volume than its predecessors, one that “could hold its own when played alongside much louder banjos, mandolins and fiddles at barn dances and the like” (Dixon, n.d.).

As its name and history suggest, the folk guitar is a populist instrument, developed as a tool for ordinary folk to strum out tunes for their own pleasure, as opposed to formally trained virtuosi plucking out carefully composed works for critical audiences. This essential “folksiness” is expressed in the instrument’s construction through the use of simple woods (e.g., spruce, plain mahogany and maple) rather than more exotic varieties used in other instruments (e.g., flamed and quilted maple, Mediterranean cypress, ribbon mahogany). Furthermore, these woods are finished plainly, without stain or other grain enhancing or concealing treatments. Even the rosette, the contrasting banding around the sound hole, is typically a simple affair in the folk guitar when compared to those found in classical guitars (Figure 5.7).



Figure 5.7: Typical folk (left) and classical guitar (right) rosettes (C. F. Martin & Co., 2006a; Zavaleta, n.d.)

5.3.1.2 Gender

In terms of the instrument's gender characteristics, the popularity of female folk singers who are also guitar players (e.g., Joni Mitchell, Joan Baez, Emmylou Harris) suggests that the instrument's use appeal is not limited to any one gender. However, regarding the gender of the instrument itself, a more complex situation exists. Given the terminology used to identify the primary features of the guitar (e.g., neck, body, waist) combined with the actual form of the instrument, it is clear that the instrument is highly anthropomorphized. Furthermore, based on the long-necked, narrow-waisted curviness of the instrument, it is not unreasonable to regard the prototypical instrument as female in nature. This view is reinforced by a single, large sound hole that in this context takes on vaginal significance. And as long as the instrument hangs on a wall as a decorative object, there is nothing to challenge this view. However, when the instrument is put into use, a transformation takes place. Once it is strapped on or placed in a player's lap, the neck of the instrument takes on a phallic quality—it is transformed from an otherly feature to be delicately caressed (as in a violin or bass viol) to a personal, physical extension to be handled for masturbatory delight.

Given the assertiveness of these gender qualities, it cannot be said that this male/female combination produces gender ambiguity or androgyny. Instead, the instrument exhibits something closer to a hermaphroditic quality—oscillating or shimmering between the two sexes: female when passive and male when active. Thus, the instrument, in addition to expressing a hermaphroditic quality, also reinforces conventional ideas of gender roles in its mapping of inactivity to femininity and activity (or functionalism) to masculinity.

5.3.2 Variations

I now present some variations of the prototypical form to exemplify how the significations noted above have been recoded through counter-cultural, transformative, and contra-cultural treatments.

5.3.2.1 Counter-cultural treatments

The most prominent counter-cultural treatment of the folk guitar's folksiness is in how it is finished. Two common variations are the so-called "tobacco sunburst" finish and solid black lacquer—the former recalling the patina of old violins, violas, etc. and the latter the solid black lacquer found on pianos (Figures 5.8 and 5.9). Use

of precious woods, flamed maple for example (Figure 5.10), is also common. Each of these serves to undermine the folksiness of the instrument; each adds a different flavor of “fanciness.”



Figure 5.8: Tobacco sunburst finish (Gruhn Guitars, n.d.)



Figure 5.9: Black lacquer finish (Ibanez Guitars, n.d.)



Figure 5.10: Back view of flamed maple (Mandolin Brothers, 2006a)

5.3.2.2 Transformative treatments

An example of a transformative treatment of folksiness can be found in the Adamas line of guitars from the Kaman Music Corporation (Figure 5.11). Adamas guitars are attempts to build folk guitars using modern design, technology, and materials. To this end, advanced plastics are used in the back, and tops are made from carbon fiber composites. In many models, the tops are finished with a layer of corduroy fabric. The use of any kind of fabric as a material in guitar construction or finishing is unprecedented. Thus the approach used in this instrument's top doubly breaks with convention, first by using carbon fiber structurally in place of wood and second by finishing it with a layer of fabric. However, the result is transformative rather than counter- or contra-cultural because the instrument, owing to the particular selection of fabric, still communicates a strong sense of folksiness—corduroy arguably being surpassed in its folksiness only by denim.



Figure 5.11: Adamas guitar (comprehensive and detail views) (Day Music, 2004)

Adamas guitars also employ a transformative approach to the expression of the instrument's gender. These instruments replace the large, centrally located sound hole found in the prototypical folk guitar with a number of smaller holes scattered around the edges of the top because "the multi-soundhole design required less bracing, allowing the top to vibrate more freely" (Kaman Music, 2005). This innovation has the additional effect of devaginalizing the instrument. A series of clustered holes runs the risk of taking on a highly functionalistic, geometric appearance—one that might be interpreted as masculine. However, in the Adamas the series of holes are unified through naturalistic and highly decorative wooden elements. The overall result is that defeminization of the instrument is averted and the instrument's hermaphroditic quality is retained.

5.3.2.3 Contra-cultural treatments

In contrast to the transformative effort described above, most gender-based developments in the design of the folk guitar are contra-cultural, with a focus on defeminizing or masculinizing the instrument. One of the more common features of the modern folk guitar is the “cutaway”—a chunk of negative space introduced into the upper part of the body where it meets the neck (Figure 5.12). The functional purpose of the cutaway is to allow the player easier access to the parts of the fretboard attached to the body rather than the neck. However, the introduction of the cutaway also breaks the symmetry of the instrument, and this symmetry is critical to the anthropomorphic illusion the instrument creates in its passive, female state. The cutaway also serves to extend the length of the phallus when the instrument is in its active, masculine state. Therefore, the cutaway simultaneously defeminizes and masculinizes the instrument.



Figure 5.12: Folk guitar with cutaway (C. F. Martin & Co, 2006b)

Another way that we can trace the defeminization and masculinization of the instrument is by following its evolution from folk guitar to archtop guitar (a.k.a. jazz or hollow body guitar) to solid body electric guitar. The archtop guitar gets its name from a top carved to have a convex surface reminiscent of a violin’s construction, as opposed to the flat surface used in the folk guitar (Figure 5.13). The archtop guitar is often made from precious woods, in contrast with the more common woods used in the folk guitar. Another distinguishing feature of the archtop guitar is the elimination of the single sound hole in favor of two f-holes, again reminiscent of features used in the violin. These features are contra-cultural in that they are contrary to the concept

of folksiness, in particular the top's construction and the form of the f-holes evoking images of strictly non-folksy classical instruments. Furthermore, the archtop's f-holes have an additional contra-cultural role in that they defeminize the instrument by eliminating its vaginal opening without offering features to offset this change, as was the case with the Adamas. The masculinization of the instrument is enhanced by cutaways, which are found even in the earliest versions of the instrument.



Figure 5.13: Zeidler archtop guitar (Mandolin Brothers, 2006b)

The archtop guitar is used most often in jazz music, a genre that places a high level of emphasis on performance skill, most typically in the form of competitive solo improvisations. Perhaps due to the competitive nature of the genre, women have traditionally been either discouraged from or have not been interested in actively participating in jazz music, as is evidenced by the scarcity of well-known female jazz musicians. (Notable exceptions include vocalists such as Ella Fitzgerald and Billie Holiday.) From this point of view, it is perhaps not surprising that the instrument's phallic dimension has been amplified and its feminine dimension attenuated.



Figure 5.14: Fender Stratocaster (Fender Musical Instruments, 2006)

The archtop guitar eventually evolved into a solid bodied electrified form, exemplified by the Fender Stratocaster (Figure 5.14). The solid body guitar is the most commonly used type in rock music, and like jazz music rock music is almost completely the domain of men. Perhaps it should not be surprising then that the tendency toward masculinization found in the archtop guitar is further developed in the solid body guitar. As can be seen in the case with the Fender Stratocaster, solid body electric guitars frequently employ two cutaways, one on either side of the body. The effect is to further increase the phallic nature (and length) of the instrument. In addition, asymmetric bodies and headstocks are typical in the solid body guitar, resulting in an almost complete elimination of the visually anthropomorphic character on which the feminine qualities of the folk instrument depend.

5.3.3 Creative Reconstruction

Having decoded some of the aspects of the artifact's folksy and gender qualities (and, in this case, also enhanced our understanding by analyzing how others have manipulated these qualities) it is now possible to reconstruct the artifact's conventional schema in a new design. Specifically, we can map out a number of different strategies based on whether we want the new design to have generic, contra-cultural, counter-cultural, transformative, ironic, or a-cultural relationships regarding the instrument's folksiness and gender qualities. Possible strategies for a hypothetical new guitar design are presented in Table 5.1.

Table 5.1: Strategies for reconstructing the guitar

Convention: Gender		
Stance	Position	Potential strategies
Generic	"The new guitar is hermaphroditic: feminine when passive and masculine when active."	Do nothing new (by definition).
Contra-cultural	"The new guitar is exclusively masculine."	Use cutaways. Eliminate the soundhole.
	"The new guitar is not anthropomorphic; it is 'a machine for making music.' Therefore it will make references modernist architecture."	Use highly geometric forms and concrete, metallic, and/or glass-like finishes.
Counter-cultural	"The new guitar is masculine when passive and feminine when active."	Decrease phallic quality of neck when the guitar is horizontal—possibly by employing a different headstock or transforming the phallus into an arm or leg. Emphasize body shape. Cant the neck so it appears more phallic when hanging on or resting against a wall.
Transformational	"The new guitar is hermaphroditic: feminine when passive and masculine when active."	Juxtapose forms: masculine body and feminine headstock; top is feminine, bottom is masculine; etc. Juxtapose materials and form: feminine form and masculine materials.
Ironic	"The new guitar is a conveyor of tastelessness."	Extend the use of conventional fretboard inlay techniques, aesthetics, and motifs to the body so that the entire body is encrusted with inlay work (perhaps resembling tattoos).
A-cultural	"I choose to ignore the gender qualities of the existing instrument and therefore not let it influence the design of the new guitar in any way."	N/A

It is ultimately up to the designer(s) to decide what the reconstruction should include, and which strategies should be perused. The greatest strength of the methodology presented here lies in its ability to create understanding of an artifact's cultural codings, to generate alternatives for manipulating those relationships, and to facilitate direct discussion of the same by bringing the codings and alternatives to the level of the explicit.

5.4 Discussion

The preceding example demonstrates the relationship between the culturally based conventions of a genre or prototypical artifact (their signifieds) and the way those conventions are expressed (through their signifiers). Furthermore, it illustrates how to understand artifacts with non-prototypical features in terms of their cultural meaning and how relationships in prototypical artifacts can be manipulated to facilitate alternatives in both what is signified as well as how they signify.

Whether the designers of the instruments discussed above were consciously aware of the semiological dimension of their work is not especially important. What is important is the analytic and creative methodology that emerges when we view cultural artifacts from the perspective outlined here. Bringing the cultural coding present in artifacts to the level of the explicit, rather than allowing them to remain at the level of the intuitive, creates new opportunities for the investigation of these codings. The formal approach presented here is equally well suited to analytic and creative tasks and may have particular utility when a creative or analytic task takes place in the context of a culture with which the practitioner is less than intimately familiar.

6 THE METHODOLOGY USED

The methodology used in this study is largely derived from the epistemology represented in grounded theory (Glaser and Strauss, 1967; Glaser, 1992; Glaser, 1996) and might best be called “emergent inductive triangulation.” I have already discussed why an emergent methodology is preferred for this study. I will now discuss the significance of the latter two terms used above, and I will then outline the methodology developed for this study in detail.

The inductive aspect of the methodology used is rooted in grounded theory. The attraction to grounded theory is a result of its having demonstrated itself as a rigorous emergent methodology. However, as I have discussed previously, grounded theory makes two assumptions that do not really apply in the case of this study. First, grounded theory assumes that the problem to which it will be applied is primarily a social one. The problem in this study is that while the problem doubtless has a social element to it, the focus is on the design aspect of the issue. Second, grounded theory assumes that the problem itself is yet to be discovered, or to use grounded theory’s terminology, has yet to emerge. In other words, grounded theory assumes that at the beginning of study, the problem area is at most only very loosely defined. In the case of this thesis, the problem already has an advanced degree of focus.

For these reasons, it’s not possible to apply grounded theory directly as conventionally formulated to the problem under study. However, it is possible to extract the aspects of the methodology that account for its robustness and rigor and transform them to a context that is not primarily social and is already somewhat focused. The specific properties of grounded theory that are the source of its attraction are: 1) it’s reliance on induction rather than deduction in theory formulation, 2) it’s reliance on collected data as the primary elements in the inductive process, and 3) it’s constant-comparative method, which encourages greater insight and integration with each sampling of data. These properties can be applied to any emergent method, and in the methodology outlined below, these three properties are retained.

Regarding the issue of focus, I begin by making the following observation. The primary intent of the first phase of grounded theory (i.e., the open-coding phase) is to allow the problem to be studied to attain focus. Once sufficient focus is attained and the core category emerges, the focused phase of data collection (i.e., selective-coding) begins. In the case of this thesis, the problem (i.e., the core category) is already identified, so in the grounded theory framework it can be seen that the need for open-coding is moot. In other words, in this case one can begin data collection directly within a selective-coding mindset, and bypass the open-coding phase.

The benefits in qualitative research of triangulation, the last of the triad of terms used to identify this thesis' methodology, are discussed by Tindall (1994a) and Maxwell (2005:ch. 5,6). In short, a diversity of data collection methods can help to call attention to central issues as well as work out skewing of data imposed by specific data collection mechanisms. I have already identified sketch analysis as one of the central data collection methods that offer promise for this study. Rather than rely solely on data collected from sketch analysis, I propose additional methods for collecting data and to use those data to facilitate triangulation.

The methodology that emerges at the integration of the above is not grounded theory, therefore I am not comfortable identifying it as such. However, it has its basis in grounded theory's spirit and epistemology; and furthermore, true to the emergent spirit of grounded theory, the methodology needed to solve the given problem has itself been allowed to emerge.

6.1 Methodology in detail

6.1.1 Overview

I will now discuss details concerning the methodology used in this study. The methodology is diagrammed in Figure 6.1.

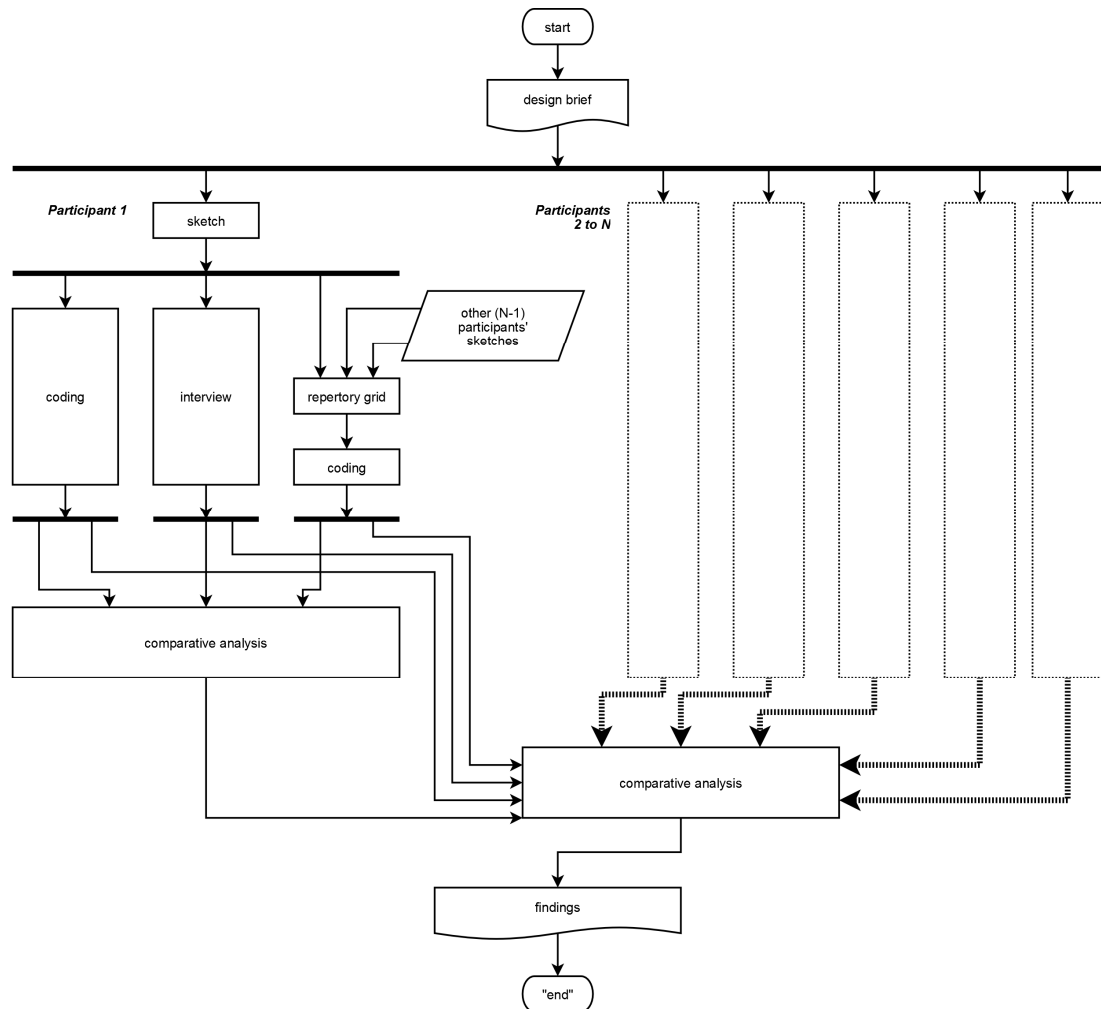


Figure 6.1: Methodology flowchart

The “emergent inductive triangulation” methodology used in this study assumes the participation of N persons, whom I refer to as participants. (A discussion regarding the selection process for participants appears below.) The process begins with a design brief. The brief is discussed in greater detail below; however, in short it directs the study participants to make sketches that are intended to elicit ideas that are of relevance to the study, that is, to permit relevant data collection and coding to ensue. The design brief is given to the N participants, after which a process of coding and comparative analysis for each participant begins. The coding and comparative analysis for each participant includes direct sketch coding (using semiological and unstructured approaches), the production of a repertory grid and its analysis, and an interview.

Following coding and comparative analysis for each participant, another phase of comparative analysis integrating the results from all participant data and analysis ensues. The output of this phase is the study’s findings.

The methodology is diagrammed as a directed graph primarily for clarity. In actuality, the activities were not performed strictly in parallel; for example, some sketch coding of Participant 1 may have started before Participant 3 started his or her sketch. Furthermore, results of one sub-process may have been used to inform other sub processes (both intra- and inter-participant), and paths that are indicated as one-way may actually have been traversed in both directions in an iterative fashion. These details were not included in the diagram so as to permit focus on the epistemological character of the process.

6.1.2 Details

Additional details regarding each sub-process in the overall process are discussed below.

6.1.2.1 Participant selection

One of the underlying principles in grounded theory data collection is that data should be sampled from the sources that will provide the needed information, when it is needed. Glaser and Strauss (1967) and Glaser (1992; 1996) refer to this as *theoretical sampling*. It is distinguished from *random sampling*, whose aim is to generate a statistically valid profile of a given population—something useful for verification but not so in theory generation.

With this in mind, a profile for the participants in this study was constructed. The participants chosen for this study should—apart from gender—reflect the demographics of consumers for non-portable music reproduction equipment (as I have defined it for this study). The expense of the products involved as well the fact that such equipment is essentially of a leisure-use nature suggests that the participants have access to a commensurate level of disposable income or perceive that such access will exist in their future. In addition, they should have some control of their disposable income, particularly with respect to decisions regarding major purchases—suggesting a certain level of maturity. This adds up to a profile of someone who is well employed, is married to someone who is well employed, is independently wealthy, or is a student in a professional program. The criterion of “well-employed” differs from country to country. It is assumed that participants in this study will come from Turkey and possibly the United States of America, and for this study “well employed” is defined as a monthly income of \$2500 for the U.S.A

and for Turkey the YTL equivalent of \$1000. In this context, income expectations are as valid as actual incomes (i.e., if the participant expects to be “well-employed” in the not-too-distant future, they will have satisfied the income requirement).

In addition, to facilitate comparison, a roughly equal number of men and women should be included in the pool of participants.

Finally, the fantasy sketching aspect of the study places additional and significant limitations on the participant profile. First, the participant must be capable of creative conceptualizing (i.e., fantasizing, if you will)—a skill known to most children but absent in most adults. Second, the participant must be able to express those concepts in the form of sketches or other visual manifestations.

Two groups emerge as satisfying the above requirements: design professionals and advanced-degree design students and academics. From these groups, five advanced-degree design students and one academic were enlisted as participants; three of the students were male and two of the students and the academic were female. It was felt that three participants from each gender was a reasonable minimum number that would provide useful insight.

The profiles of the six participants are discussed in brief in the Findings section, and more comprehensive information appears in the appendices.

6.1.2.2 The design brief

Sketches to be made by study participants were specified by a task given in a design brief. The brief directed participants to draw what was for them their ideal fantasy non-portable music reproduction system for use in their home or office. The design was further constrained by the following requirements:

- The system must deliver services to at least one fixed location. In other words, it cannot be a “portable” system.
- The system must support at least one of the following media:
 - CD
 - MP3 and similar files stored on internal hard disc
 - Phonograph recordings
 - Cassette tape
- The system may support any other media as well (including media not in the list above).

- The system can be as large or as small as you wish.
- The system may consist of as few or as many individual components as you wish.
- There is no cost constraint. The system can be as expensive to manufacture and install as you wish.
- You may integrate into the system any other features as you wish, but additional features should be directly or indirectly related to music listening. (For example, you are discouraged to design a music system that doubles as a cigarette lighter.)

The complete brief is reproduced in the appendices.

6.1.2.3 The sketch and its coding

Each participant's sketch was analyzed and coded using the semiological approach discussed in a previous chapter. The analysis began with the construction of a semiology for prototypical non-portable music reproduction systems. Following this, each participant's sketch was coded with reference to that semiology in terms of its stances against the prototype's. Any interesting aspects or insights not falling within the construct of the semiology were also noted.

6.1.2.4 The repertory grid

Each participant constructed a repertory grid, and these grids were analyzed for relevant patterns. (Due to scheduling conflicts, one repertory grid was not performed.) The use of repertory grids in qualitative psychology is discussed by Tindall (1994b) and has its roots in the personal construct psychology of George Kelly. It is a technique by which a research participant is able to evaluate elements under study in terms of criteria that the participant himself or herself has identified. Thus it produces two bodies of knowledge: insight into the way the participant evaluates the class of the elements under study, and specific attitudes toward each of the elements under study. Normally, the elements under study in the construction of the repertory grid are persons of significance to the participant (e.g., office partners, relatives, etc.). In this study the elements under study are the fantasy sketches made by all participants rather than persons. Having not found any reference to such use in the literature, I believe the use of a repertory grid in this way is original.

The construction of a repertory grid begins with a set of elements that the researcher and/or participant wishes to learn something about. Most of the work is done by the participant; however, the researcher guides the participant through the process. The process can be divided into two phases: the construction of criteria and the evaluation of elements.

To construct the criteria, the researcher presents the participant with a more-or-less random selection of three elements from the set of *N* under study. (*N* is typically about five to ten.) Two of the three are paired together, and the participant is asked, “How are these two elements similar in a way that is different from the third?” The answer to this question must be a pair of characteristics (e.g., the two are risk-takers while the third one is conservative). These two characteristics then become two poles on an evaluative scale. The process is repeated until a desired number of criteria have been generated—typically about seven.

Once the desired number of criteria have been generated, evaluation can begin. The participant is shown each of the *N* elements in turn and for each of them is asked to rate it according to the criteria he or she identified earlier. The rating can be performed in a binary fashion (e.g., A is a risk taker; B is conservative, etc.) or a numeric scale can be used (e.g., “On a scale of one to five, where one is ‘risk taker’ and five is ‘conservative’, how would you rate A?”). For this study, elements (participant sketches) were rated on a 1 to 5 scale.

After the grid is constructed, the results can be analyzed qualitatively as well as quantitatively. Both were used in this study, and the details are discussed in the Findings.

6.1.2.5 The interview

To obtain additional insight into the participant’s values and expectations, an unstructured interview was performed with each participant. (Due to scheduling conflicts, one interview was not performed.) Explicit coding was not performed on interviews; rather interviews were used as support and clarification for findings suggested by sketch and repertory grid analysis. As an extension of the interview, a brief email questionnaire was set out to all participants whose intent was to uncover basic attitudes help by participants regarding prototypical non-portable music reproduction systems. The questionnaire presented the participant with an image of a

prototypical non-portable music reproduction system and asked him or her three questions:

- 1) What do you find appealing in this system?
- 2) What do you find unappealing in this system?
- 3) How would you feel about placing this system in your home?

The participants were free to comment as they wished in response to these questions.

6.2 The Designer as Social Informant

One aspect of the methodology outlined above is that it approaches the designer as a social informant. Many studies involving designers focus on the designer as a *designer*, not as an insightful member of a larger society. Often the focus of work on designers has been on making the tacit aspects of the designer's process explicit (Schon, 1983; Schon, 1986; Dorst, 1997; Valkenburg, 2000).

In contrast to this, the methodology of this study attempts to make the designer's tacit *social knowledge* explicit. Many designers value the intuitive aspect of their work, and therefore much of their social knowledge manifests itself as part of an intuitive process. The critical thing to appreciate here is that it is assumed (e.g., by the client) that the designer's social knowledge is of value. Therefore, a methodology that helps to make explicit the tacit social knowledge held by the designer could be of significant value, especially for team-oriented design practice and for design presentation.

7 FINDINGS

In this chapter I will summarize the profiles of the participants, discuss their sketches and the data collected through sketches and repertory grids, and mention interesting ideas pointed to by the data. In the following chapter I will integrate the findings presented here into a theoretical framework.

7.1 Participant profiles

Profiles of the six participants are summarized below, in alphabetic order according to first first-name, last-name initials. More complete data for each participant as provided by the participants themselves can be found in the appendices.

AI is a 26 year old male in the process of completing a master's degree in Industrial Product Design at İstanbul Technical University and is employed as a research assistant at the same university. He plays guitar. The only music reproduction equipment purchases he has made in the last five years are an Apple iPod and his computer; however he estimates that he has collected approximately 200 mp3-like files in the month preceding his participation in this study. He spends approximately 30 to 35 hours per week listening to music—much of it as a backdrop for his design and other activities.

AT is a 30 year old male in the process of completing a doctorate in Industrial Product Design at İstanbul Technical University, is employed as a research assistant at the same university, and is married to GT. He formerly played drums. In the last five years he has spent about 450 YTL on music reproduction equipment in addition to a laptop which he uses for music listening; however, he had not acquired any new CDs or mp3-like files in the month preceding his participation. He spends approximately four hours per week listening to music.

CA is a 35 year old male in the process of completing a doctorate in Industrial Product Design at İstanbul Technical University and is employed as a research assistant at the same university. He considers himself an enthusiast and has spent 1500 YTL on music reproduction equipment in the last five years as well as having

acquired about 5 CDs and 10 GB worth of mp3-like files in the month preceding his participation. He spends about 15 hours per week listening to music and indicates that “sound quality and durability is [sic] the most important factor in the choice of music playing equipment.”

DA is a 30 year old female in the process of completing a doctorate in Industrial Product Design at İstanbul Technical University and is employed as a research assistant in the department of Industrial Product Design at Doğuş University in İstanbul. In the last five years, she has spent about 500YTL on a portable music player, and in the month preceding her participation she acquired only about four mp3-like files. She spends about one or two hours per week listening to music.

GT is a 29 year old female in the process of completing a doctorate in Industrial Product Design at İstanbul Technical University, is employed as a research assistant at the same university, and is married to AT. She plays no musical instruments and in the last five years has purchased a laptop computer and mobile phone with mp3 player functionality (at a cost of 750 YTL) that are used for music listening. She acquired about 40 mp3-like files in the month preceding her participation and spends about eight to ten hours per week listening to music.

HB is a 33 year old female working as an instructor (*oğretim görevlisi*) in the department of Industrial Product Design at İstanbul Technical University and holds a PhD in the same field. She sings alto in a *cappella* choirs and once tried to learn how to play the *ney* (traditional Anatolian reed flute). While she has not made any expenditure for music reproduction equipment in the last five years, she nonetheless spends about 12 hours per week listening to music and had acquired one or two mp3 compilations from a friend in the month prior to her participation.

7.2 Overview of Participant Sketches

Brief descriptions of each participant’s sketches for this study are provided below, in alphabetic order according to first first-name, last-name initials. The descriptions reflect data taken directly from the sketches as well as from interviews performed with the participants. Complete sketches produced by the participants are reproduced in the appendices.

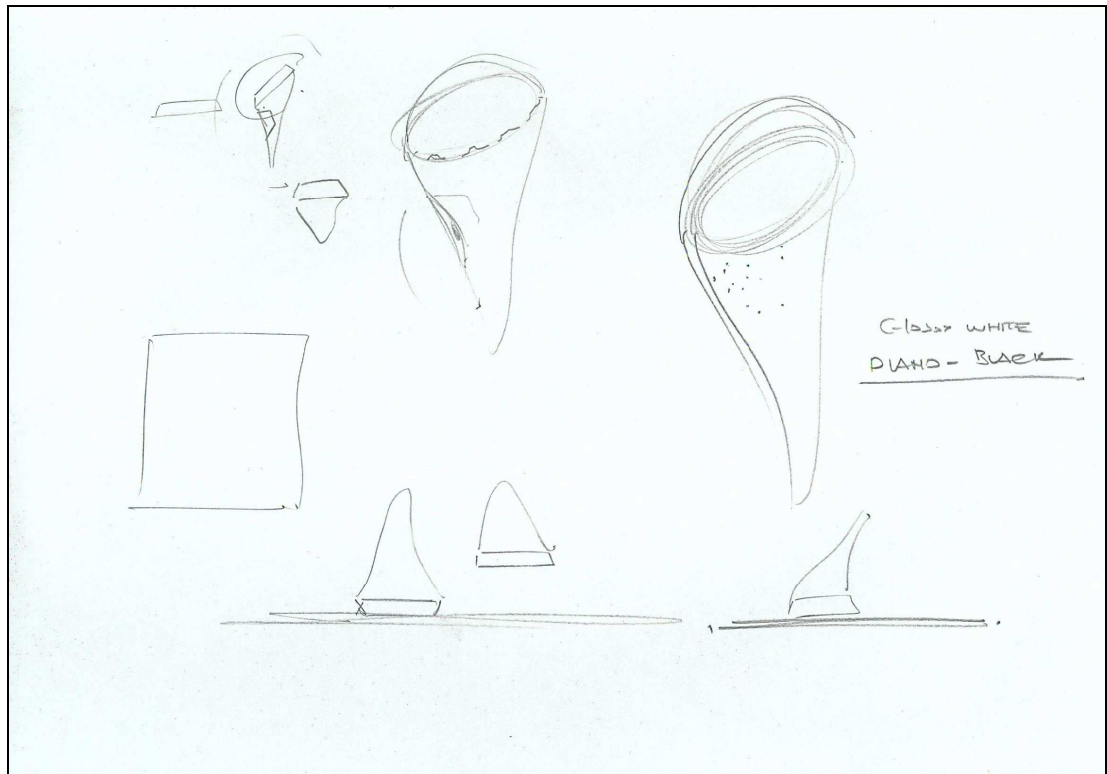


Figure 7.1: AI's fantasy system

AI's fantasy system (Figure 7.1) is based on a central fixed unit that interfaces to a computer containing a library of mp3 and similar music files. The form of the central unit is a modified cone that is meant to suggest something having been ripped out of the ground. It is finished in gloss white or piano black. The system also includes 5 satellite units that match the form and finish of the central unit and are about 30 cm in height—about a quarter the size of the central unit. The satellite units provide loudspeaker functionality and are free-floating elements that locate and align themselves dynamically so as to provide the best soundscape for the listener (AI himself) no matter where he is in his home. AI uses recorded music mostly as background to his diverse activities at home, including designing, studying, and preparing meals.

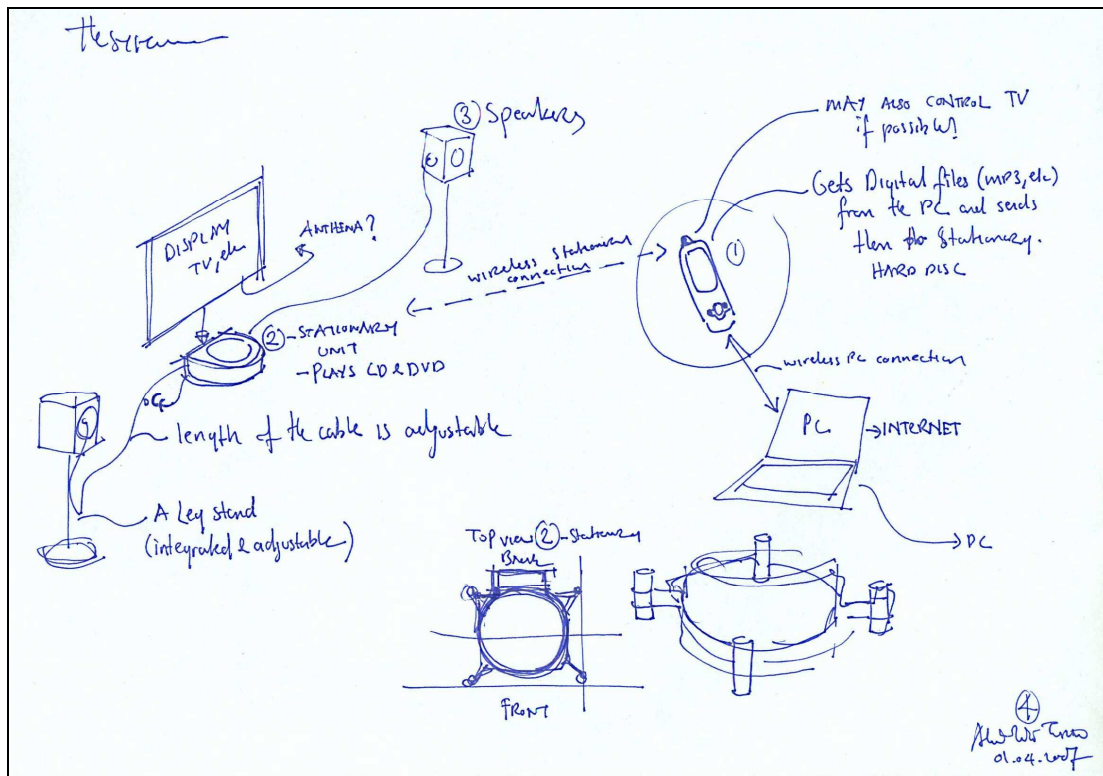


Figure 7.2: AT's fantasy system

AT's system (Figure 7.2) is comprised of a central unit, a remote control, and loudspeakers. The central unit houses a transport for CDs and can be placed horizontally or vertically as the installation requires—it can also be completely hidden from view, in a closet for example, if desired. The remote control delivers most of the interface functionality and fits into and is controlled with one hand. Integrated functionality is emphasized in AI's solution in that the system incorporates video and computing tasks as well as music reproduction.

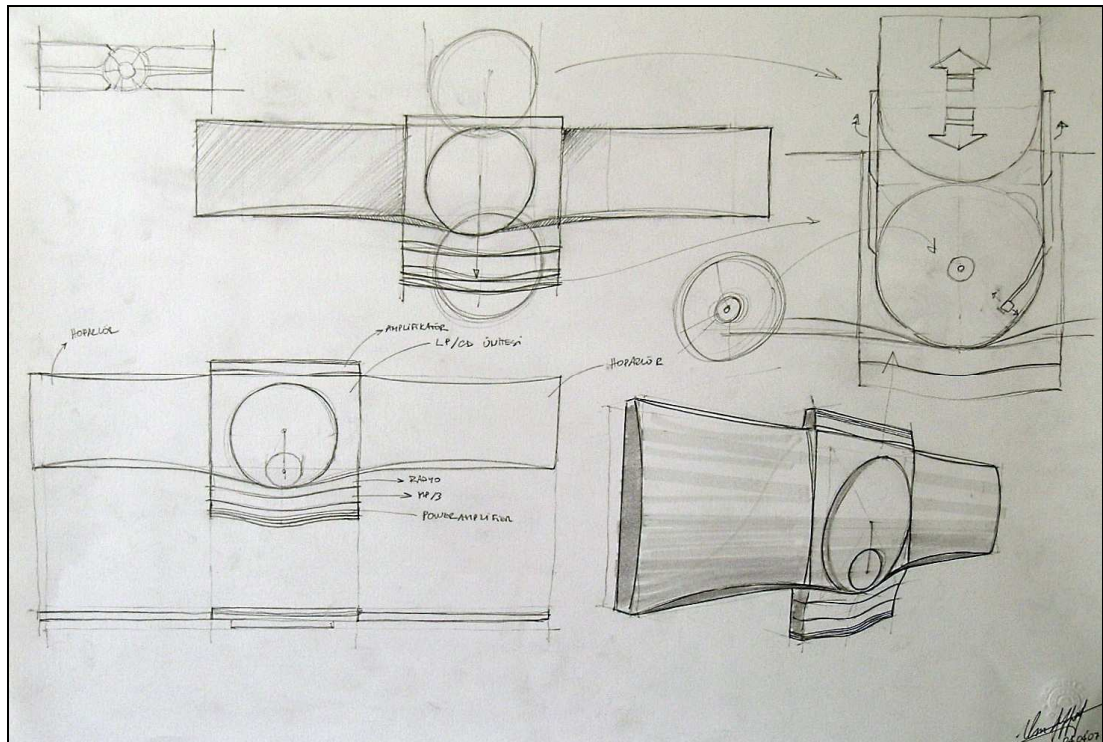


Figure 7.3: CA's fantasy system

CA is a self-admitted enthusiast and places great emphasis on performance. His solution (Figure 7.3) is a wall-mounted unit where two loudspeaker systems flank a central control area. (It's not clear in the sketches, but the loudspeakers can be detached from the central unit if so desired). The central unit provides for playback of long-play records along with CDs because of the belief held by CA and many other enthusiasts that long-play records provide better performance than digital sources (e.g., CDs). The other controls on the unit are intended to reflect the minimum set of useful functions: volume, bass, and treble adjustments, along with input source selection. A certain amount of modularity is incorporated into the design in the form of mountable blocks that extend functionality (e.g., for adding radio tuner functionality). CA notes that the forms used in the unit were suggested by the shapes of sound waves.



Figure 7.4: DA's fantasy system

DA takes a flexible, modular approach to her system, where cylindrical units that embody different functions are clustered together to form a functioning whole (Figure 7.4). As more functionality is needed, additional units can be added to the cluster. The cluster itself is relatively compact—about the size of a table lamp or medium-sized vase. The modules are available in a range of sizes and colors. The user interface is controllable with a minimum number of knobs in conjunction with a display—all designed for ease of use. Functionally, it allows for the playback of several CDs as well as conversion of CDs to mp3 files. Ultimately, DA wants a system that is both aesthetic and functional.

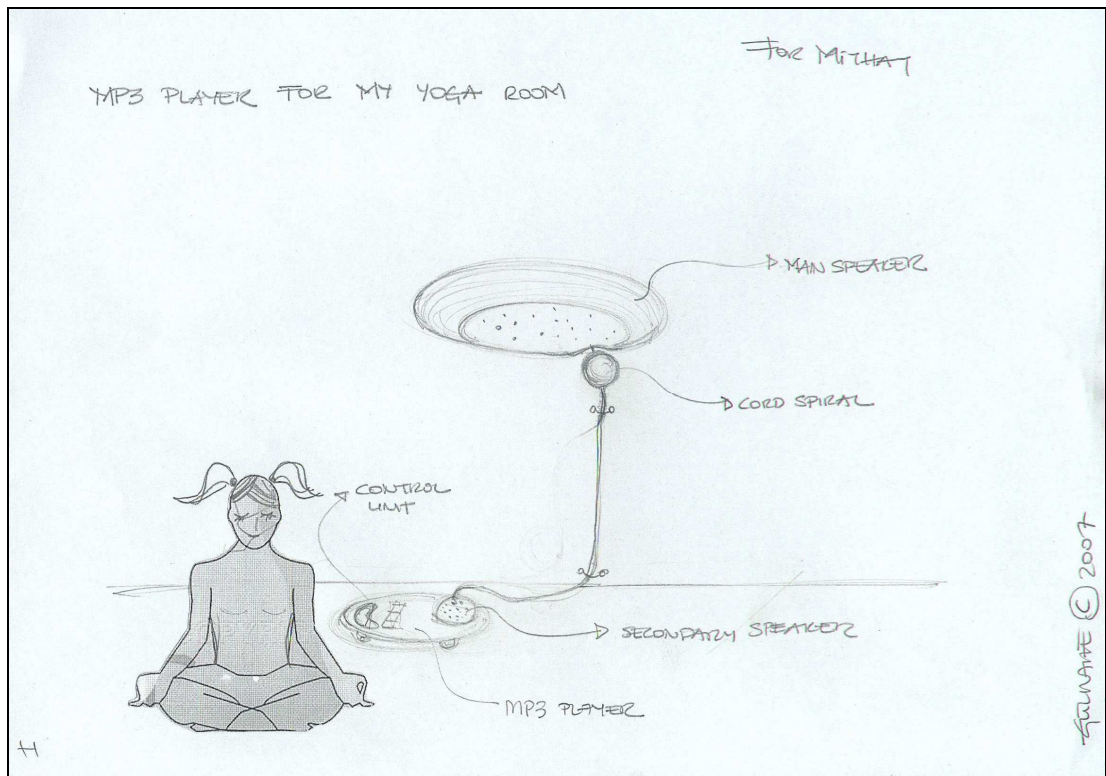


Figure 7.5: GT's fantasy system

GT's ideal system (Figure 7.5) is designed to be placed in her yoga room to enhance her yoga practice. It is the only thing in the room aside from herself (and ostensibly any mats, etc. required for proper yoga). The system is comprised of two units: one hangs on the wall and contains the main speaker, the other is mounted on wheels and is located on the floor. Reflecting the yoga principle of direct action, there is no remote control associated with the system; all interaction with the system is done through the mobile unit located on the floor—which is to be drawn in close to the yoga-practitioner when interaction with the system is desired. Connections between the floor-unit and the wall-unit are established using cables rather than through wireless means. A cable pickup mechanism similar to those found in vacuum cleaners is used to manage extra cable lengths, and the power feed for the system is hidden behind the unit. When needed, the floor unit can be mounted on the wall. Materials used in the system include unfinished plywood and perforated aluminum.

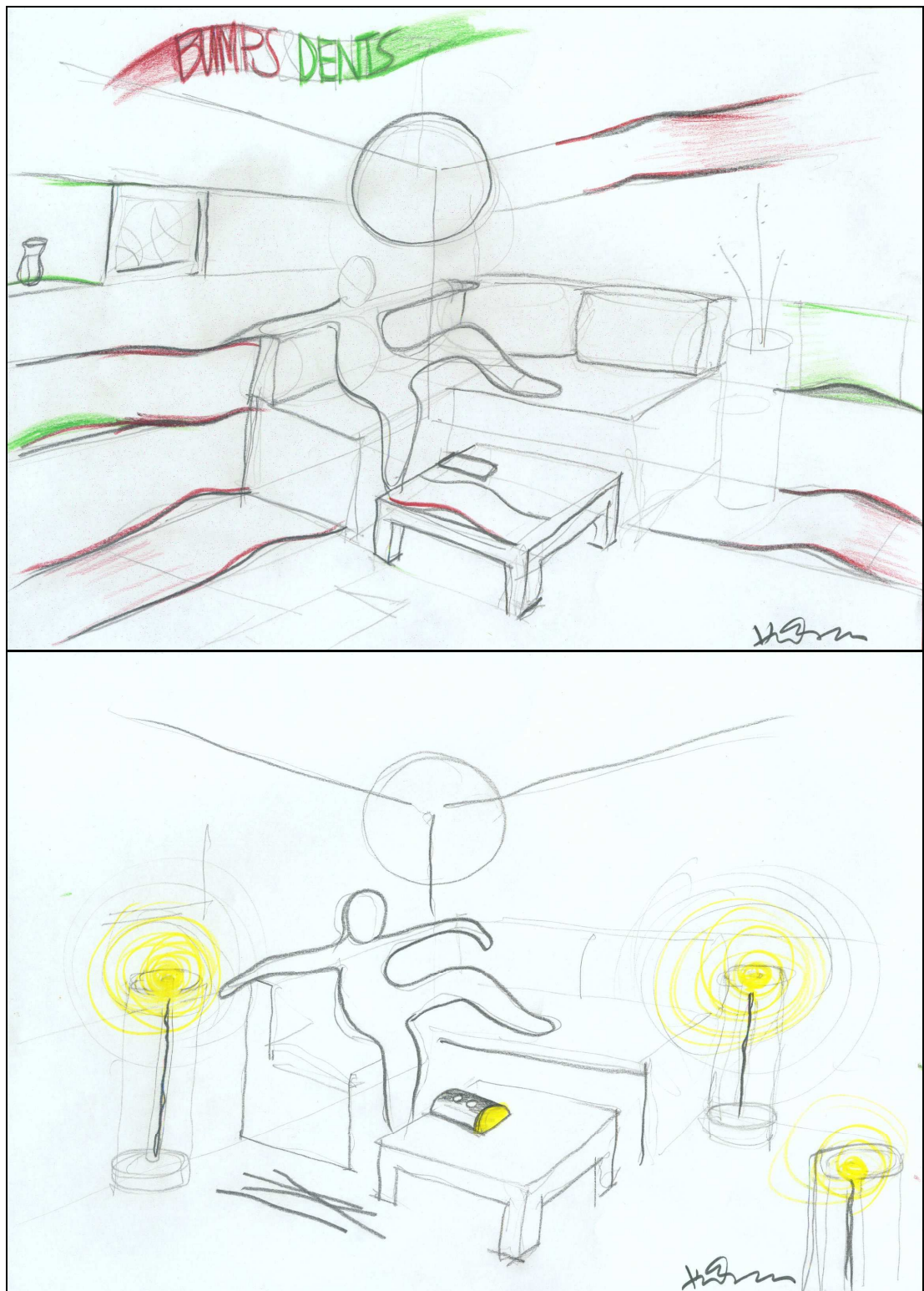


Figure 7.6: HA's fantasy systems

HB submitted two design concepts (Figure 7.6). Both solutions draw on the concept of visualizing the listening experience. The first concept is titled, "Bumps and Dents." In this concept, various indentations and protrusions in the surfaces of the room containing the system provide visual manifestations of the sound-making

apparatus. Formally, they draw on the shape of sound waves. A mobile control unit delivers interface functions to the system and uses the same formal vocabulary. The second concept employs incense-like sticks that burn whenever the system is used as means of visually articulating the passage of time spent engaging in activities facilitated by the system. HB prefers the solution sketched in “Bumps and Dents,” and so that is the sketch used in all subsequent analyses.

7.3 Semiological Findings

The results of a semiological analysis per the framework discussed in previous chapters are discussed below. First presented is a baseline analysis of prototypical non-portable music reproduction systems; this is followed by an analysis of participants’ systems in relation to the semiology of the prototypical system.

7.3.1 Analysis of prototypical non-portable music reproduction systems

To facilitate the semiological analysis of participant sketches, a semiological analysis of prototypical music systems has been performed, and that analysis is detailed herein. I will begin by enumerating several formal conventions (signifiers) and then discuss how those signifiers are used in the expression of several characteristics (signifieds) embodied in prototypical systems.

7.3.1.1 Formal conventions

Several prototypical music reproduction systems appear in Figures 7.7 through 7.11. These systems are representative of those offered for by a specialty retailer in İstanbul, Turkey (Timpani, 2007b). The retailer is somewhat unique in that it offers several pre-configured systems for sale in addition to individual components. The systems are claimed to be composed in such a way as to maximize synergy amongst the individual components (Timpani, 2007a). The cost of each system in euros, computed on 2 May 2007, is also given (Arduman, 2007b).



Figure 7.7: Prototypical system 1, € 2743 (Timpani, 2007b)



Figure 7.8: Prototypical system 2, € 3053 (Timpani, 2007b)



Figure 7.9: Prototypical system 3, € 6210 (Timpani, 2007b)



Figure 7.10: Prototypical system 4, € 6389 (Timpani, 2007b)



Figure 7.11: Prototypical system 5, € 61645 (Timpani, 2007b)

From even this brief gallery of systems, it is possible to enumerate the following conventions:

Component heterogeneity. A system is composed of several individual components, connected together using interconnection cables. The individual components may come from the same or different manufacturers and be from different series of the same manufacturer's production.

Size equates with quality. The systems in Figures 7.7 through 7.11 are arranged in order of ascending cost. From this serialization, it can be appreciated that the size of prototypical systems is roughly correlated with its cost.

Symmetry. Systems are configured with the electronic components in the center and the stereo loudspeakers equidistant from the electronic components. The result is

strong visual symmetry. In extreme cases, with appropriately chosen equipment stands and loudspeakers, an altar-like appearance can result.

Component forms are bulky rather than svelte; rectilinear rather than curvilinear.

Finishes for electronic components are brushed aluminum with natural or black anodization. Controls of electronic components are made of machined aluminum. Loudspeakers and some stands are finished in wood veneer.

System components often exhibit their working parts. Loudspeakers in particular are typically used without grilles or other means of concealing the individual driver units. Components using vacuum tubes (i.e., valves) often leave the tubes exposed. CD and DVD players sometimes leave their transport mechanisms, or some portion thereof exposed.

System installations do not try to conceal the system. System stands typically are open on all sides and limit the number of components per shelf to one or two, allowing clear exposure of the individual components. System installations rarely employ measures to conceal interconnection cables, with the connection between the power amplifier and loudspeaker even taking on a feature characteristic (i.e., there is no effort made to hide, and possibly an effort to highlight, interconnections).

7.3.1.2 Significations

I will now discuss some characteristics coded into prototypical systems that rely on the formal conventions above for their signification.

“Expertise.” Signified: A system is an expression of expertise. A prototypical system is composed of many parts, each sold and marketed separately. This means that in any system the parts were selected and that this selection requires a level of expertise. The more expert the selection of components, the better is the resulting system.

“Power and ability.” Signified: A system demonstrates its owner’s power and ability. This is directly implied by the “system is an expression of expertise” signified. The fact that the assembly of a successful system requires expertise means that the user either has the power and means to purchase the selection expertise or is an expert himself. Therefore, a prototypical system is an embodiment of the user’s power and ability.

“Domination.” Signified: The system is the most important thing in the room. Prototypical systems tend to dominate the spaces into which they are placed by virtue of their size and (sometimes altar-like) symmetry. And owing to the correlation between size and quality, the higher the quality of the system, the greater is the domination. In addition, the heterogeneous nature of system composition makes it almost impossible for prototypical systems to integrate visually into a space, as the system is typically not visually integrated itself. The result is an expression of domination and egocentricity: the system assumes it is the most important thing in the room.

This raises an interesting question as to what the system says about its users, namely, is the system a slave to its dominator (i.e., user), thereby underscoring the mastery of the user; or does the user wish himself (or herself) to be dominated by the system, to be carried away to emotional spaces that no other vehicle can deliver. Expressing these two mutually exclusive relationships in terms of significations gives 1) The system is an extension of the user's power, and 2) The system is an expression of the user's desire to be subordinated.

While the former perspective is more consistent with the system-as-demonstrator-of-power aspect discussed above, a more certain conclusion will require additional research. What can be said with certainty is that either case underscores the importance of power-relationships embodied in prototypical systems.

“Toolishness/Machine-ness.” Signified: A system is a machine. The conventional choices in finish (e.g., brushed aluminum in natural or black anodization), use of machined metal parts (knobs, etc.), and robust and rectilinear forms give components of a prototypical system a machine or tool-like appearance.

“Performance first.” Signified: A system stops at nothing to deliver the highest performance possible. The formal conventions behind the system-as-machine metaphor when combined with the exposed parts convention (including grille-less speakers), equipment stands that expose rather than conceal equipment, and exposed/highlighted cables strongly suggest that a system places primary importance on performance rather than decoration. This interest in performance is underscored by enthusiast participant CA when he states, “sound quality and durability is [sic] the most important factor in the choice of music playing equipment.”

7.3.2 Semiological analysis of participant sketches

I will now summarize some interesting aspects regarding formal conventions and overall significations and stances taken by the participants' systems toward those found in a prototypical system. The basis for this analysis is the sketches themselves elaborated upon by the participants, and the analysis of prototypical systems above. More complete notes regarding the participants' sketches per the formal conventions enumerated above as well as the stances their designs take regarding the significations appear in the appendices.

Regarding formal conventions, perhaps the most notable feature is that all males incorporated symmetry into their designs while none of the females did. This is significant insofar as symmetry is one of the formal characteristics that the prototypical system uses to establish its dominance in the listening room. Another area where males did not stray far off the prototypical path is in the finish and materials used in the systems: males consistently used classic metal or similar "high-tech" materials while the females were generally less conventional with their material selections, with one female using unfinished plywood as a major material (GT) and another some unspecified material intended to visually disappear in the space (HB). All forms used by females incorporated either curvilinearity, svelteness, or both; while the forms used by the males were all bulky, rectilinear, or both—once again showing a willingness among the females to express solutions beyond the conventional. Systems tended to follow the convention of having multiple parts, but the level of aesthetic and spatial integration varied considerably, and arguably there is a tendency toward greater integration with the female solutions than the males (e.g., compare AT and GT). In spite of the convention of size corresponding with quality in prototypical systems, many of the participant's systems were not large. Whether this is because ultimate quality is not a significant criterion for the user (as AI states) or whether this convention is net held by the participant (as might be the case with CA) is up for speculation. Participant systems typically went to greater lengths to conceal the "working bits" of the systems as compared to prototypical systems, with AT's possibly being the most conventional and HB's the least conventional in this regard. GT's system exposes its "working bits" to a significant extent, but it must be pointed out that the decision to do so was based on

philosophical principles from yoga that do not apply in the conventional system's case.

Regarding significations and stances taken by the participants' systems, the stance for female and male users for each signification is shown in Table 7.1, along with their respective totals. For some significations, the participant's solution can be viewed as satisfying more than once stance simultaneously. Such situations are indicated with parenthesis for each user in Table 7.1. For calculating totals, each normal appearance in the table is given a value of one, and each appearance in parenthesis is given the value of one-half.

Table 7.1: Stances taken by male and female participants toward significations

females					
	generic	transformative	contra-cultural	ironic	a-cultural
<i>Expertise</i>			DA GT HB		
<i>Power and Ability</i>			(GT)		DA (GT) HD
<i>Domination</i>			DA	GT HB	
<i>Toolishness</i>	(DA)		(DA) GT HB		
<i>Performance-first</i>		(HB)	DA GT (HB)		
TOTAL	0.5	0.5	8.5	2	2.5
males					
	generic	transformative	contra-cultural	ironic	a-cultural
<i>Expertise</i>	(CA)	AT	(AI) (CA)		(AI)
<i>Power and Ability</i>	(AT)	AI (AT)			CA
<i>Domination</i>			AI AT CA		
<i>Toolishness</i>	AT CA		AI		
<i>Performance-first</i>	AT (CA)	(CA)	AI		
TOTAL	4.5	3	6	0	1.5

Overall, counter-cultural stances dominate, as might be expected from a group of designers. However, similar to the females' increased divergence from convention in purely formal matters, they also employ divergent significations (contra-cultural, ironic, and a-cultural stances) to a much greater extent than the male participants.

The situation regarding "Power and Ability" is especially polarized. The solutions offered by the female participants are all a-cultural—meaning they do not address power and ability issues at all—or are a combination of a-cultural and counter-cultural—meaning they react against this convention. On the other hand, the solutions offered by the male participants tend toward generic or transformative

expressions of power and ability. The closely-related “Expertise” signification follows a similar trend.

Similar, though not as extreme, polarization can be seen with respect to “Toolishness/Machine-ness.” The males appear to be more comfortable with the idea of the system-as-machine idea than the females.

There seems to be agreement on one level regarding the issue of “Domination”; none of the designers used generic or transformative stances here—suggesting that the dominating aspect of prototypical systems may be overvalued even in conventional contexts. It may be worth noting that the only use of ironic stances anywhere was with regard to “Domination” and was used only by females.

7.4 Repertory Grid Findings

The results of the repertory grids for five of the participants appear in Tables 7.2 to 7.6. (Due to scheduling issues, DA was unable to participate in the construction of a repertory grid.) The grids are presented in alphabetic order according to first first-name, last-name initials; an (m) following initials indicates a male participant, and an (f) indicates a female participant, and it should be noted that AI’s sketches were not available when AT and GT constructed their grids.

Table 7.2: AI’s repertory grid data

AI (m)							
similarity (1)	difference (5)	DA (f)	GT (f)	HB (f)	AI (m)	AT (m)	CA (m)
multi-piece	B&O style	1	1	1	3	1	5
flexible	architecture-dependent	1	2	5	1	1	2
contemporary	retro	5	3	2	2	2	2
integrated	separate	5	5	1	5	5	2
conventional	innovative	1	2	4	4	3	3
contoured	flat	2	5	1	1	5	5

Table 7.3: AT's repertory grid data

AT (m)						
similarity (1)	difference (5)	DA (f)	GT (f)	HB (f)	AT (m)	CA (m)
original	conventional	2	1	3	2	5
conceivable	ambiguous	2	3	5	2	1
mounted	self-standing	5	3	3	4	2
unstable/fuzzy	stable	4	3	2	4	4
levels/layers/3D	planar/orthogonal	2	2	2	3	4
visible	invisible	2	2	4	3	2
instinctual	intentional	2	3	2	5	3

Table 7.4: CA's repertory grid data

CA (m)							
similarity (1)	difference (5)	DA (f)	GT (f)	HB (f)	AI (m)	AT (m)	CA (m)
conventional	abstract/ fictional	1	3	4	5	3	2
off-putting/ repelling	hi-fi oriented	2	4	2	3	4	5
decorative	impractical	3	2	4	2	3	2
fictional	light/soft	3	5	2	3	4	2
light	impractical	3	1	4	2	2	2
technical	fictional	2	3	4	4	2	3
personal	soft	3	4	3	2	2	3

Table 7.5: GT's repertory grid data

GT (f)						
similarity (1)	difference (5)	DA (f)	GT (f)	HB (f)	CA (m)	AT (m)
crystallized	compact	5	2	5	4	1
defined	modified	2	2	5	4	2
positivist	uncanny	2	3	4	1	1
wavy	cubic	2	1	1	2	5
hobbyist	professional	3	2	5	3	4
outsider	insider	2	1	5	3	4
feminine	masculine	2	3	4	1	1

Table 7.6: HB's repertory grid data

HB (f)							
similarity (1)	difference (5)	DA (f)	GT (f)	HB (f)	AI (m)	AT (m)	CA (m)
robust	light	1	4	5	5	3	1
rough	elegant	1	3	4	3	3	5
light	bulky	5	2	3	2	2	1
<i>kendinden menkul</i> (self-appointed)	space and technology dependent	4	2	1	2	5	4
fantasy	realistic	5	3	2	1	4	4
formal consistency	collage	2	5	1	2	1	1
masculine	kitchen-like	5	3	2	2	2	2

7.4.1 Perceived similarity and gender

To determine whether there were characteristics that were correlated with gender (clustering, etc.), self-difference grids were constructed for each of the participants. The self-difference grids were generated by computing for each cell in each repertory grid the absolute value of the difference between the rating given by the participant for that cell and the participant's rating given to himself or herself for the same criteria. (The self-difference for the participant himself or herself will therefore always be zero.) The results of self-difference computations appear in Tables 7.7 to 7.11 below and are arranged according to gender.

Table 7.7: GT's self-difference data

GT (f) self-difference							
similarity	difference	DA (f)	GT (f)	HB (f)	CA (m)	AT (m)	
crystallized	compact	3	0	3	2	1	
defined	modified	0	0	3	2	0	
positivist	uncanny	1	0	1	2	2	
wavy	cubic	1	0	0	1	4	
hobbyist	professional	1	0	3	1	2	
outsider	insider	1	0	4	2	3	
feminine	masculine	1	0	1	2	2	
	average	1.14	0.00	2.14	1.71	2.00	

Table 7.8: HB's self-difference data

HB (f) self-difference							
similarity	difference	DA (f)	GT (f)	HB (f)	AI (m)	AT (m)	CA (m)
robust	light	4	1	0	0	2	4
rough	elegant	3	1	0	1	1	1
light	bulky	2	1	0	1	1	2
<i>kendinden menkul</i> (self- appointed)	space and technology dependent	3	1	0	1	4	3
fantasy	realistic	3	1	0	1	2	2
formal consistency	collage	1	4	0	1	0	0
masculine	kitchen-like	3	1	0	0	0	0
	average	2.71	1.43	0.00	0.71	1.43	1.71

Table 7.9: AI's self-difference data

AI (m) self-difference							
similarity	difference	DA (f)	GT (f)	HB (f)	AI (m)	AT (m)	CA (m)
multi-piece	B&O style	2	2	2	0	2	2
flexible	architecture- dependent	0	1	4	0	0	1
contemporary	retro	3	1	0	0	0	0
integrated	separate	0	0	4	0	0	3
conventional	innovative	3	2	0	0	1	1
contoured	flat	1	4	0	0	4	4
	average	1.50	1.67	1.67	0.00	1.17	1.83

Table 7.10: AT's self-difference data

AT (m) self-difference							
similarity	difference	DA (f)	GT (f)	HB (f)	AT (m)	CA (m)	
original	conventional	0	1	1	0	3	
conceivable	ambiguous	0	1	3	0	1	
mounted	self-standing	1	1	1	0	2	
unstable/fuzzy	stable	0	1	2	0	0	
levels/layers/3D	planar/orthogonal	1	1	1	0	1	
visible	invisible	1	1	1	0	1	
instinctual	intentional	3	2	3	0	2	
	average	0.86	1.14	1.71	0.00	1.43	

Table 7.11: CA's self-difference data

CA (m) self-difference							
similarity	difference	DA (f)	GT (f)	HB (f)	AI (m)	AT (m)	CA (m)
conventional	abstract/ fictional	1	1	2	3	1	0
off-putting/ repelling	hi-fi oriented	3	1	3	2	1	0
decorative	impractical	1	0	2	0	1	0
fictional	light/soft	1	3	0	1	2	0
light	impractical	1	1	2	0	0	0
technical	fictional	1	0	1	1	1	0
personal	soft	0	1	0	1	1	0
	average	1.14	1.00	1.43	1.14	1.00	0.00

The self-difference data above are a measure of how different a participant feels his or her product idea is from another participant's with respect to individual criteria, and the average is an average measure of the perceived difference. It was expected that female participants would see other female participants' products as more similar (lower self-difference) and male users would see other male participants'

products are more similar to their own. However, there is at best only the very weakest of correlation for any user between similarity and gender for any criteria.

Average perceived differences for each participant are shown in Figure 12, with participants placed within each graph in order of increasing difference. It can be seen that for all participants there is about equal likelihood that the most similar product idea is from a male as it is a female participant and that the orders of males and females is almost perfectly random.

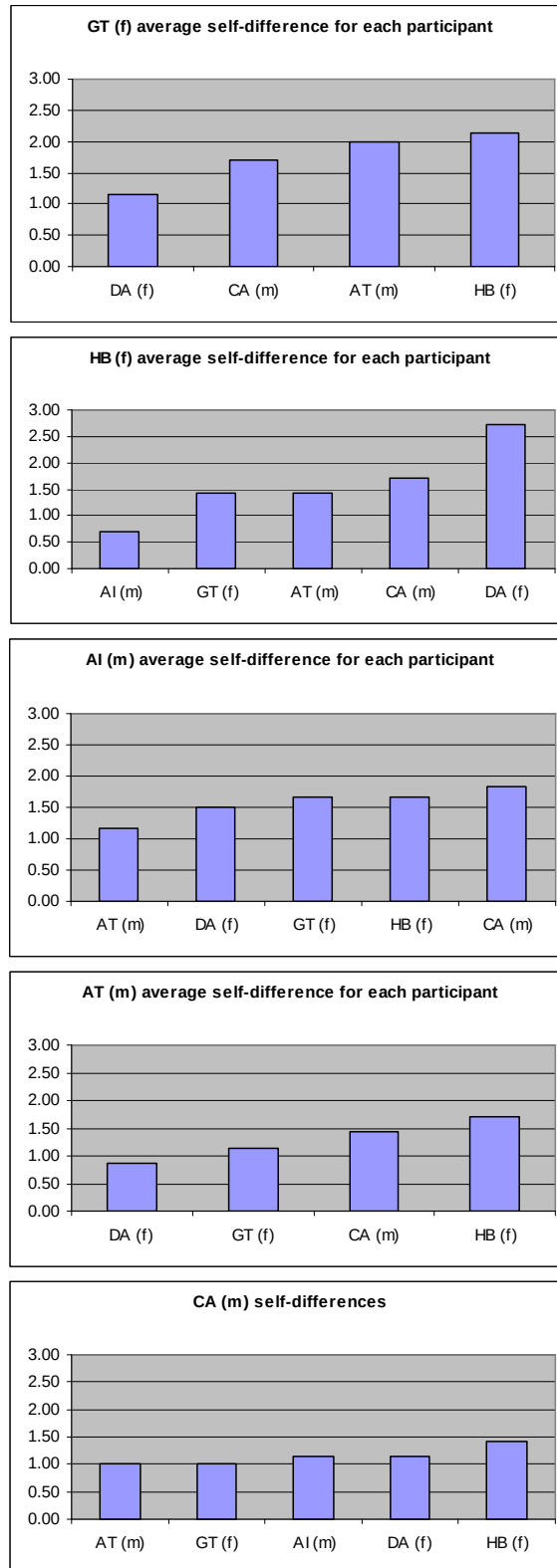


Figure 7.12: Average self-differences for each participant

Based on the above, a correlation between product similarity and gender was not observed. However, it should be noted that the females in the group used a wider range of values in their expression of differences than the males. (Compare, for

example, the range expressed in CA's data to HB's.) Therefore, while there may not have been a correlation between a participant's gender and which products the participant felt to be most similar to her or his own, the intensity with which differences were felt or expressed appears to be consistently higher with the females.

7.4.2 Criteria terminology and gender

The repertory grid provides an additional source of data for analysis: the actual terms used by the constructor of the grid themselves (i.e., independent of the ratings for which those terms are used). To see whether there was any gender-based clustering with respect to the terms used to identify evaluation criteria, a taxonomy for the terms was developed, and that taxonomy was used to tabulate frequency of use for each category according to gender. The taxonomy was developed by examining a complete list of paired similarity-difference criteria terms and abstracting out the nature of criteria the paired terms identified. That process produced the following categories: abstract, formal, functional, personality, and style (i.e., requiring knowledge of stylistic conventions).

These categories were then assigned to each pair of terms used by the participants, with some pairs belonging to more than one category. A list of the terms used by participants and the categories to which they were assigned appears in the appendices. When these data are tabulated for frequency of use and gender (Table 7.12), differences based on gender can readily be seen. Personality terms dominate in both females' and males' descriptive terms; however they were used much more often by females than males. The second most often used class of descriptor for males, functional descriptors, was the least used class among the females; and factual and style descriptors, both about as common as abstract descriptors in the case of the males, were not used by the females at all.

Table 7.12: Frequency of use of criteria categories

Frequency of Use			
females		males	
personality	9	personality	6
formal	6	functional	5
abstract	4	formal	5
functional	1	style	4
		factual	3
		abstract	3

It is also noted that the personality descriptors used by males were often used in functional or performance-oriented contexts; for example: “off-putting/repelling” vs. “hi-fi oriented.” One personality pair, “technical” vs. “fictional”, offered by the sole enthusiast in the group of participants seems to support the semiological finding that prototypical systems are seen to be machines or tools.

It may also be worth noting that the terms “masculine” and/or “feminine” were used by both female participants; however, no males used either of these terms in their grids. This suggests that perhaps in general women are more sensitive to gender issues in products than males and/or that they perceive this product class to be masculine by default and find it notable when a sample does not match this expectation.

Finally, I note that style-oriented criteria were used by some males but not by any females.

8 DISCUSSION

8.1 The Need for New Forms

The data collected in this study indicate that some of the issues surrounding the use of non-portable music reproduction equipment by can be addressed by giving such equipment new forms. Some of the indications are discussed below.

8.1.1 Universal dissatisfaction

Results from the email questionnaire indicate that general users of both genders are not satisfied with prototypical systems. Only one of the five respondents to the email questionnaire welcomed the prospect of having the system in their home—CA, the sole enthusiast in the group of participants. However, this dissatisfaction does not extend from a lack of understanding of the semiology of prototypical systems. Participants commented on the “excellent sound quality” (AI), “professional, high quality of sound” (AT), “good sound quality” (HB) promised by the system, and well as a “professional” aura it projects (GT and HB). These comments indicate the general user is aware of the semiology of these systems.

Rather, the source of dissatisfaction stems mostly from ease-of-integration and aesthetic issues. AT comments that the system is inconveniently large and would suggest that “music reproduction is a central ... activity in my life, which is actually wrong,” and HB observes that the installation requires support elements that are not part of the system, but are nonetheless needed by the system as well as the difficulty in making the system visually integrate into a space. Aesthetically, the exposed cables, something of a feature with prototypical systems, fared quite poorly, with AI, AT, DA, HB and even CA commenting negatively on the prominence of the cables. Negative comments were also made regarding the lack of visual integration between the system components and general bulky appearance—again features typical of conventional systems.

8.1.2 Gender differences

This trend toward dissatisfaction with prototypical systems by general users should not be taken to mean that there is a single set of shortcomings applicable to all general users. When all the data are considered, a number of differences based on gender appear, and from this it can be seen that adapting systems to better serve general female users will require formal solutions that diverge even farther from the prototypical than for male users.

8.1.2.1 Form

At the basest level, there are a number of formal aspects of prototypical systems that have little appeal for female users and may possibly repel. One such feature is symmetry. Symmetry in music reproduction systems may have its roots in the acoustical engineering principle of symmetrically placed stereo sound sources, but it need not be applied to the system as a whole to implement the principle. In a similar vein, rectilinearity in forms—having its roots in the cost-effective manufacturing technologies available when the music reproduction field established itself decades ago—is a convention that holds little interest for the female users participating in this study, all of whom employed curvilinear forms exclusively in their systems. And “machine-ness”, an aesthetic employed in prototypical systems as well as by the male designers, was significantly less used by the females in the group.

While formal attributes of the sort discussed above can form a crude basis for understanding the gender divide in music reproduction equipment and point the way toward crude solutions, it is possible to abstract other concepts from this study that point the way to more enlightened and (one hopes) more interesting solutions.

8.1.2.2 Integration

The female participants all showed a greater sensitivity to issues of integration—physical, visual, and otherwise—than did the male participants. This was initially appreciated in the content of the sketches themselves: all the sketches from the female designers show their systems as part of an extended whole, whereas the sketches from the male designers show the system as an isolated object. The sensitivity to physical integration is further highlighted by comments made by HB and DA in their follow-up email questionnaires, and DA in particular underscores a desire to see aesthetically integrated solutions. GA’s system underscores a need for

her music system to integrate with an activity she considers important, which is similar to though much more extreme than some of the ideas incorporated into AI's system. These suggest that females tend to take a more holistic view of music reproduction equipment than males.

8.1.2.3 Power relations

Prototypical non-portable music reproduction systems have a strong power relationship dimension; however, female users show no interest in using non-portable music systems for these purposes. While many of the systems designed by the male participants removed the signifiers that are used for this purpose in prototypical systems, they tended to maintain the signification in alternate ways. In comparison, the systems submitted by the female participants tended to ignore the power dimension; they did not use systems to express power relationships or related concepts. To this extent, the female systems were seen more as power-neutral objects than was the case for the males.

8.1.2.4 Personality

Given the devaluation of power relationships shown by females in music reproduction systems, it is perhaps slightly ironic that they place greater importance on the personality exhibited by their systems than is the case for males, who while also valuing personality show greater interest in functional and performance aspects. A system's personality can be "robust", "self-appointed", "personal", "professional", "outsider", "kitchen-like", and a number of other things including, not surprisingly, "masculine" and "feminine". It should be noted here that "style"—a value popularly thought to be dearer to women than to men—was not expressed directly or indirectly by any of the female participants, but it was expressed indirectly as a criterion by some of the males. This opens the way to the conjecture that what is sometimes seen as a focus on style by women may actually be a focus on expressing personality.

8.2 Comparison with Logico-Deductive Theories

Gill and Grint (2000) discuss a number of theories regarding gender and technology, which they place into a taxonomy consisting of Eco-feminism, Liberal Feminism, and Technology as Masculine Center. The characteristic that all these theories share

is that they are based on a logically deductive methodology. This is in contrast with the empiric and inductive approach to theory generation taken in this study.

Each of the perspectives discussed by Gill and Grint begin from different assumptions and, not surprisingly, reach different conclusions. The theory developed in this study, which places a high value on conceptual and operational implementability, can be incorporated into any of the perspectives discussed by Gill and Grint. In fact, it is the nature of logico-deductive theories that any observation can be made to fit the theory by simply adding extra “deduction” to the theory.

The underlying concept in Eco-feminism is that technology is used as a tool for the domination of women. This perspective may be seen to be supported by the power significations in prototypical non-portable music systems discussed in this study. However, it must be kept in mind that the power significations discussed here seem not to be aimed at any particular gender; that is, the power signified in prototypical non-portable music systems is a power toward all things, not just women.

A Liberal Feminist—who views technology as neutral but the relations taken toward it characterized by gender—may note the fact that none of the females in this study outwardly rejected the use of music reproduction technologies in their lives, but they did need to adapt them to their own requirements. The same may be noted by those working from a Technology as Masculine Center perspective, which proposes that female alienation from technology is due to the social construction of technology as masculine. They may also call attention to the use of gendered terms in the criteria used by females in their repertory grids as indicating the females were aware of the socially constructed gender aspect of the technology with which they were dealing.

The adaptability of the inductive findings of this study to logico-deductive theories may be interpreted as evidence of the encompassing power and extensibility of logico-deductive theories in general. However, it may just as easily be seen as evidence of the major weakness of logico-deductive theories in situations involving human activities—that of making effective operational predictions. When any empiric data can be accounted for in a theory by means of exception clauses, then any prediction is also possible by use of similar exception clauses. However, there will always be an acute difficulty in predicting which exception clauses are most relevant to a given situation.

8.3 A Case for Gender-Neutral Solutions

The results of this study are not meant to suggest that the best way to bridge the gender gap in non-portable music reproduction equipment is by designing separate systems for male and female users. Rather, the challenge suggested here is to develop designs that integrate all users' interests. This study should serve to highlight some of the needs of a subset of users whose needs might not be intuitively obvious to the individual designer—be the designer male or female.

It is further hoped that designs that simultaneously appeal to both genders will result in systems that are more satisfying to a large group of mixed-gender users. Such designs hold the promise of possessing greater depth, and Desmet (2003) points out that “it may be profitable to design products that elicit ‘paradoxical emotions,’ [which] may result in products that are unique, innovative, rich, challenging—and, therefore, desirable.” Furthermore, gender is neither a binary nor a static phenomenon. It is a complicated construct, likely drawing as much on social influences as biological ones; with different individuals being located at different points on the multi-dimensional continua that makes up the construct of gender. From this point of view, a solution that accounts for as much breadth as possible in this regard would seem like a good thing.

8.4 The Enthusiast vs. the General User

This study was focused on the impact of gender on the design requirements of non-portable music reproduction equipment. However, it might be argued that there is another dichotomy that should be addressed before the dichotomy of gender can be addressed. Users of non-portable music reproduction equipment can be of two types: the enthusiast or the general user. Prototypical non-portable music reproduction systems are designed with the enthusiast in mind, and it is likely that the requirements for enthusiast users and general users differ.

Of the six participants in this study, only one (CA) considered himself an enthusiast. The information provided by both he and AI, as well by Van Alstine (2005) and Arduman (2007a), indicates that finding female enthusiasts for the purposes of data collection would be a very special undertaking indeed. Therefore, this study did not attempt to construct theory for the context of the female enthusiast (while perhaps this might be an interesting area for further work). Instead, this study attempted to

construct theory from the point of view of the general user, and to see male and female users as special cases in that context.

I do not feel that constructing theory for the context of the general user rather than the enthusiast is in any way a disadvantage. The enthusiast represents a fairly narrow mode of usage, one that has its own value systems and expectations. If the goal is to support the delivery of improved music reproduction services to the general population, then constructing theory from the context of the general user is the logical place to start. In this context, it can be seen that the needs of all non-enthusiasts (i.e., both male and female) are not being adequately addressed by prototypical systems. It can also be seen that non-enthusiast female users require greater divergence from prototypical solutions than do non-enthusiast male users.

9 CONCLUSION

No work of theory generation can ever be complete, especially when any kind of human activity is concerned. Not only are the phenomena that the theory is trying to encompass dynamic, but the data which the theorist collects can never be guaranteed to deliver complete coverage, even in a context that fixes time and space. While the researcher makes every attempt to make sure her or his data have become saturated, he or she can never be absolutely sure if some next piece of data he or she might collect will generate an insight that will change the direction of or add significant depth or breadth to a theory. And even if one has somehow managed to ensure that no more data will change the theory, the integrative limits of a theory can be expanded indefinitely. However, the construction of knowledge begins with theory, and one must stop at some point in that process to assess the results and decide what to do next.

In this thesis, I have scratched the surface of what is a complex issue: the relationship between gender and leisure consumer electronics and the role that design can play in that relationship. I have limited myself only to theory generation—a limitation imposed on this study by consequence of the dearth of available pre-existing work relevant to the field. To facilitate theory generation, I used an original emergent methodology based on the inductive epistemology of grounded theory and employing triangulation in an effort to make the findings robust. I relied on the idea of designers as social informants and used an original semiological approach in the analysis and coding of participant fantasy sketches.

The basic findings show that the appeal of prototypical non-portable music reproduction systems can be increased for all general users by addressing design issues. Even though both males and females have issues with the conventions embodied in prototypical systems, male general users are more comfortable with the situation than females. To put it another way, to make systems equally appealing to both genders will require more work than to increase their appeal for only male users.

Non-portable music reproduction systems can be made more appealing for both male and female general users by increasing the ease of system integration, by increasing visual integration of the system components, and by decreasing the visual clutter associated with conventional systems (e.g., exposed interconnection cables). The need for integration, both physical and visual, is more acute for women, who tend to see systems as elements in a larger context—both physically as well as in activities and lifestyle—than men, who are more likely to view a system as an isolated object. Perhaps owing to this more holistic view, female users do not find the machine-like aesthetic of conventional systems appealing.

The signification of power relations in prototypical systems is seen of value for male users; however it is largely irrelevant for female users. Perhaps in lieu of power relations, female users are more sensitive to issues of personality. Identification of what kinds of personalities are preferred has not been performed in this study, however a preference for personality in general has.

Additional work suggested by this study can be divided into three categories. The first is that of theory testing. One must not forget that (in spite of the tautology inherent within the statement) theory generation is about the generation of theory. Or to put it another way, theory generation is the first part of a process that is typically complemented by verificational work. Verification of emergent theory is not a prerequisite to using the theory; theories that result from emergent process often are used without verification if the researcher feels the quality of the work is sufficiently high. However, in general there is no good reason not to verify the results of an emergent process. To assist in the verification of the theories put forth here, the multilayered model of product emotions developed by Desmet (2003) seems especially promising. By constructing a model of emotions toward music reproduction equipment, it becomes possible to test the validity of attitudes toward music reproduction technologies predicted by this study's results. Other verificational studies employing other methods are also possible—such as preference testing of systems developed according to the insights expressed in this study.

The second category of further work suggested here is theory extension. The work presented here is very narrowly focused on a very narrow area of consumer electronics—itself a subset of general technology products. Similar emergent work in related fields can be done, and the results from those different areas fed back into the

constant comparative processes used here. The expected result of such work is an increase of the breadth of theory (that is, increasing scope). Increasing depth is also possible, recommended, and, one hopes, will result in greater parsimony. The scratching of the surface represented by this study demonstrates the existence of an epistemological surface, yet the depth beyond that surface remains unclear. There is work that can be done to determine how deep it goes and to explore and integrate findings at the various depths into which a researcher may choose to descend.

Finally, the implications for research and for design practice of the methodologies and concepts developed for this study may prove fruitful ground for additional work. In particular, the semiological approach described here can be used in different analytical contexts—perhaps even outside design—and directly applied to creative practice. The fantasy sketch and repertory grid methods used here can be used in different research contexts. Furthermore, the concept of “designer as social informant” used here suggests a broad vista of additional work—both in exploring different methodologies for tapping designers’ social knowledge and also in characterizing that knowledge in terms of how “designer views” relate to generally held views and, more importantly, what kind of social knowledge designers are especially gifted at acquiring and integrating.

It is hoped the theoretical insights developed in this study will be used to support the design of music reproduction products that are more inclusive than what is currently available. Equally, it is hoped that the methodological approaches developed here will find use in future research and design endeavors.

REFERENCES

- Ackoff, R. L., Gupta, S. & Minas, J. S.**, 1962. *Scientific Method: Optimizing Applied Research Decisions*, John Wiley & Sons, Inc., New York.
- Arduman, A.**, 2007a. Telephone conversation, Trans. Konar, M., 1 May.
- Arduman, A.**, 2007b. Telephone conversation, Trans. Konar, M., 2 May.
- Banister, P., Burman, E., Parker, I., Taylor, M. & Tindall, C.** (Eds.), 1994. *Qualitative Methods in Psychology: A Research Guide*, Open University Press, Maidenhead.
- Baron, N. S.**, 2005. Instant messaging by American college students: a case study in computer-mediated communication, *American Association for the Advancement of Science Annual Meeting*, American Association for the Advancement of Science Annual Meeting, Washington, DC, 17-21 February, <<http://www.american.edu/tesol/Baron-SeeYouOnlineCorrected64.pdf>> (25 May 2005).
- Baron, N. S.**, 2004. See you online: gender issues in college student use of instant messaging, *Journal of Language and Social Psychology*, **23**(4), n.a., <<http://jls.sagepub.com/cgi/content/abstract/23/4/397>> (25 May 2006).
- Barthes, R.**, 1970a. Myth today, in *Mythologies*, pp. 109-159, Trans. Lavers, A., Hill and Wang, New York (original work published 1957).
- Barthes, R.**, 1970b. The Romans in films, in *Mythologies*, pp. 26-28, Trans. Lavers, A., Hill and Wang, New York (original work published 1957).
- Baudrillard, J.**, 1981a. Design environment or how political economy escalates into cyberblitz, in *For a Critique of the Political Economy of the Sign*, pp. 185-203, Trans. Levin, C., Telos Press, Limited, New York.
- Baudrillard, J.**, 1981b. The ideological genesis of needs, in *For a Critique of the Political Economy of the Sign*, pp. 63-87, Trans. Levin, C., Telos Press, Limited, New York.
- Bierut, M.**, 2005. On (Design) Bullshit, *Design Observer: Writings About Design and Culture*, online, <<http://www.designobserver.com/archives/002559.html>> (4 January 2007).

- Bombardieri, M.**, 2005. In Computer Science, a Growing Gender Gap, *Boston Globe*, 18 December,
<http://www.boston.com/news/local/articles/2005/12/18/in_computer_science_a_growing_gender_gap/> (24 May 2006).
- Borgatti, S.**, ND. Introduction to Grounded Theory, *online*,
<<http://www.analytictech.com/mb870/introtoGT.htm>> (30 April 2006).
- Brizendine, L.**, 2006. *The Female Brain*, Morgan Road Books, New York.
- Bruce, M. & Lewis, J.**, 1990. Women designers: is there a gender gap?, *Design Studies*, **11**(2), 114-120.
- Brunner, C., Bennett, D. T. & Honey, M.**, 2000. Girl games and technological desire, in *The Jossey-Bass Reader on Technology and Learning*, pp. 168-183, Jossey-Bass Inc., San Francisco.
- C. F. Martin & Co.**, 2005. Martin & Company > history, *C. F. Martin & Co. website*, <<http://www.martinguitar.com/history/>> (16 January 2006).
- C. F. Martin & Co.**, 2006a. Standard series: D-45, *C. F. Martin & Co. website*, <<http://www.martinguitar.com/guitars/choosing/guitars.php?p=z&g=h&m=D-45>> (16 January 2006).
- C. F. Martin & Co.**, 2006b. Limited editions: DC Trey Anastasio, *C. F. Martin & Co. website*, <<http://www.martinguitar.com/guitars/choosing/guitars.php?p=z&g=h&m=DC%20Trey%20Anastasio>> (16 January 2006).
- Carey, B.**, 2005. Men and Women Really Do Think Differently, *LiveScience*, January 20,
<http://www.livescience.com/humanbiology/050120_brain_sex.html> (May 25, 2006).
- Clegg, S. & Mayfield, W.**, 1999. Gendered by design: how women's place in design is still defined by gender, *Design Studies*, **15**(3), 3-16.
- Cornford, T. & Habib, L.**, 2002. Computers in the home: domestication and gender, *Information Technology & People*, **15**(2), 159-174.
- Crupi, A.**, 2005. Lifetime Study: Women Rule DVR Domain, *Mediaweek*, 14 July,
<http://www.mediaweek.com/mw/news/recent_display.jsp?vnu_content_id=1000979387> (24 May 2006).
- Csikszentmihalyi, M.**, 1996. Where is creativity?, in *Creativity: Flow and the Psychology of Discovery and Invention*, 1st ed., pp. 23-50, HaperCollins, New York.
- Darlington, C.**, 2002. *The Female Brain*, Taylor & Francis, London.

- Day Music Company**, 2004. 1984 Ovation Adamas model 1689, *Day Music Company website*,
<<http://www.daysguitars.com/images/acoustics/flattops/1984%20Ovation%20Adamas%20Model%201689.htm>> (16 January 2006).
- Desmet, P.**, 2003. A multilayered model of product emotions, *The Design Journal*, 6(2), 4-13,
<<http://static.studiolab.io.tudelft.nl/gems/desmet/papermultilayered.pdf>> (30 April 2006).
- Dick, B.**, 2005. Grounded Theory: A Thumbnail Sketch, *Action Research Resources website*, <<http://www.scu.edu.au/schools/gcm/ar/arp/grounded.html>> (30 April 2006).
- Dick, B.**, 2000. A Beginner's Guide to Action Research, *Action Research Resources website*, <<http://www.scu.edu.au/schools/gcm/ar/arp/guide.html>> (30 April 2006).
- Dick, B. F.**, 1990. The semioticians, in *Anatomy of Film*, 2nd ed., pp. 227-232, St. Martins, New York.
- Dixon, A.**, n.d. A Brief History of the Steel-String Guitar, <<http://www.guitar-maker.com/Pages/histSSG.html>> (16 January 2006).
- Dolliver, M.**, 2004. Who Says Women Are Averse to Technology?, *Adweek*, 19 April.
- Dorst, K.**, 1997. Describing Design: A Comparison of Paradigms, Proefschrift Technische Universiteit Delft, Delft.
- Fallows, D.**, 2005. How women and men use the internet, Pew Internet & American Life Project, Washington, DC,
<http://www.pewinternet.org/PPF/r/171/report_display.asp> (25 May 2006).
- Fender Musical Instruments Corporation**, 2006. *Fender Musical Instruments Corporation website*,
<<http://www.fender.com/products/search.php?partno=0117400725>> (16 January 2006).
- Flick, U.**, 1998. An Introduction to Qualitative Research, Sage Publications, London (originally published as "Qualitative Forschung", 1995, Rowohlt Taschenbuch Verlag, Hamburg).
- Fountain, J. E.**, 1999. Constructing the information society: women, information technology, and design, *Technology and Society*, **forthcoming**,
<<http://www.ksg.harvard.edu/prg/fountain/infosociety.pdf>> (25 May 2006).
- Friedman, K.**, 2003. Theory construction in design research: criteria approaches and methods, *Design Studies*, 24(6), 507-522,
<<http://w3.msi.vxu.se/~per/DVM752/Friedman.pdf>> (20 April 2006).

- Gallivan, M.**, 2004. Examining IT professionals' adaptation to technological change: the influence of gender and personal attributes, *Database for Advances in Information Systems*, **35**(3), 28-49.
- “Gender Wars”: High-tech for Men and Women**, 2004. *MSNBC.com*, <<http://www.msnbc.msn.com/id/5281872>> (25 May 2005).
- Giannetti, L.**, 2002. Structuralism and semiology, in *Understanding Movies*, 9th ed., pp. 480-487, Prentice Hall, Upper Saddle River.
- Gilbert, D., Lee-Kelley, L. & Barton, M.**, 2003. Technophobia, gender influences and consumer decision-making for technology-related products, *European Journal of Innovation Management*, **6**(4), 253-263.
- Gill, R. & Grint, K.**, 2000. Introduction, in *The Gender-Technology Relation: Contemporary Theory and Research*, pp. 1-28, Eds. Gill, R. & Grint, K., Josey-Bass Inc., San Francisco.
- Glaser, B. & Strauss, A.**, 1967. The Discovery of Grounded Theory: Strategies for Qualitative Research, Aldine Publishing, Chicago.
- Glaser, B. G.**, 1992. Basics of Grounded Theory Analysis, Sociology Press, Mill Valley.
- Glaser, B. G. (Ed.)**, 1996. Grounded Theory: The Basic Social Process Dissertation, Sociology Press, Mill Valley.
- Goodwin, B.**, 2004. Computer Clubs for Girls Attempt to Address Gender Imbalance in IT, *Computer Weekly*, 23 March.
- Gorman, C. R.**, 2001. Reshaping and rethinking: recent feminist scholarship on design and designers, *Design Issues*, **17**(4), 72-88.
- Gray, C. & Malins, J.**, 2004. Visualizing Research: A Guide to the Research Process in Art and Design, Ashgate Publishing Limited, Aldershot.
- Gray, J.**, 2004. Men Are from Mars, Women Are from Venus: A Practical Guide for Improving Communication and Getting What You Want in Your Relationships, Quill, New York. (Originally published by in 1992 by HarperCollins, New York.)
- Gruhn Guitars**, n.d. *Gruhn Guitars website*, <<http://www.gruhn.com/photo/AG5203.jpg>> (16 January 2006).
- Haig, B. D.**, 1995. Grounded theory as scientific method, in *Philosophy of Education* 1995, Ed. Neiman, A., Philosophy of Education Society, address unknown, <http://www.ed.uiuc.edu/EPs/PES-yearbook/95_docs/haig.html> (30 April 2006).

- Hesse-Biber, S. N. & Leavy, P. (Eds.),** 2006. Emergent Methods in Social Research, Sage Publications, Inc., Thousand Oaks.
- Ibanez Guitars,** n.d. *Ibanez Guitars website*,
<<http://www.ibanez.com/guitars/guitar.asp?model=AW12BK>> (16 January 2006).
- Ireland, C.,** 2003. Qualitative methods: from boring to brilliant, in *Design Research: Methods and Perspectives*, pp. 23-29, Ed. Laurel, B., MIT Press, Cambridge.
- Jeudy, H.,** 1993. Beyond a semiology of objects, in *Industrial Design: Reflection of a Century*, pp. 355-360, Ed. de Noblet, J., Flammarion/APCI, Paris.
- Johnston, R.,** 2000. The New, Affordable American Guitar, *Acoustic Guitar*, July,
<<http://www.acousticguitar.com/issues/ag91/AmericanGuitars.shtml>> (17 September 2006).
- Kaman Music Corp.,** 2005. Adamas guitars: history, *Kaman Music Corp. website*,
<<http://www.adamasguitars.com/?fa=history>> (16 January 2006).
- Kinach, B. M.,** 1995. Grounded theory as scientific method: Haig-inspired reflections on educational research methodology, in *Philosophy of Education 1995*, Ed. Neiman, A., Philosophy of Education Society, location unknown,
<http://www.ed.uiuc.edu/EPS/PES-yearbook/95_docs/kinach.html> (30 April 2006).
- Kirkpatrick, H. & Cuban, L.,** 2000. Should we be worried?, in *The Jossey-Bass Reader on Technology and Learning*, pp. 155-167, Jossey-Bass Inc., San Francisco.
- Konar, M.,** 2006. Toward a creative implementation of semiology in design, *WonderGround: Design Research Society International Conference*, Design Research Society, Lisbon, 1-4 November, Eds. Friedman, K., Love, T. & Corte-Real, E .
- Lach, J.,** 2000. Tech brands face a gender divide, *American Demographics*, **22**(2), 16-18.
- Language, technology, gender, and power,** 1992. *Equal Opportunities International*, **11**(6), 26 (review).
- Liff, S.,** 2003. Virtual gender: technology, consumption and identity, *Information Technology & People*, **16**(4), 484-486 (review).
- Lloyd, R.,** 2006. Emotional Wiring Different in Men and Women, *LiveScience*, April 19, <http://www.livescience.com/humanbiology/060419_brain_wiring.html> (25 May 2006).
- Lupton, E. & Miller, A.,** 1999. Laws of the letter, in *Design Writing Research: Writing in Graphic Design*, pp. 52-61, Phaidon, London.

- Mandolin Brothers, Ltd.**, 2006a. Vintage news - acoustic guitars, *Mandolin Brothers, Ltd. website*, <<http://www.mandoweb.com/48-3477.jpg>> (16 January 2006).
- Mandolin Brothers, Ltd.**, 2006b. Vintage news - acoustic guitars, *Mandolin Brothers, Ltd. website*, <<http://www.mandoweb.com/88-2508.JPG>> (16 January 2006).
- Margolis, E.**, 1998. Visual Ethnography Paradigms, *Arizona State University "Visual Ethnography" course website*, <<http://courses.ed.asu.edu/margolis/va.html>> (30 April 2006).
- Maxwell, J. A.**, 2005. Qualitative Research Design: An Interactive Approach, 2nd ed., Sage Publications, Thousand Oaks.
- Mayring, P.**, 2000. Qualitative content analysis, *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 1(2), online only, <<http://www.qualitative-research.net/fqs-texte/2-00/2-00mayring-e.pdf>> (30 April 2006).
- Merriam-Webster Online Dictionary**, 2007. Definition of prototype, *Merriam-Webster Online Dictionary*, <<http://www.m-w.com>> (14 April 2007).
- Metz, C.**, 1974. Film Language: A Semiotics of the Cinema, Trans. Taylor, M., Oxford University Press, New York.
- Morris, M. & Venkatesh, V.**, 2000. Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior, *MIS Quarterly*, 24(1), 115-139 (ABI/INFORM Global).
- Pink, S.**, 2001. Visual Ethnography: Images, Media and Representation in Research, Sage Publications, London.
- Plowman, T.**, 2003. Ethnography and critical design practice, in *Design Research: Methods and Perspectives*, pp. 23-29, Ed. Laurel, B., MIT Press, Cambridge.
- Primedia**, 2005. Standard corporate correspondence describing demographics of Stereophile readers, March.
- Prosser, J. (Ed.)**, 1998. Image-based Research: A Sourcebook for Qualitative Researchers, RoutledgeFalmer, London.
- Rawlings, B.**, n.d. Research Seminar Series, Institute of Advanced Studies: Manchester Polytechnic, Manchester.
- Remington, R. R.**, 2006. The gendered world of the Bauhaus: politics of power at the weimar republic's premier art institute, 1919-1932 (book review), *Design Issues*, 22(1), 78-79.

- Ritchey, T.**, 2005. General morphological analysis: a general method for non-quantified modelling, *online*, <<http://www.swemorph.com/pdf/gma.pdf>> (2 May 2006).
- Ritchey, T.**, 2003. Modelling complex socio-technical systems using morphological analysis, *online*, <<http://www.swemorph.com/pdf/it-webart.pdf>> (2 May 2006).
- Russell, J.**, 2004. Unlocking the clubhouse: women in computing, *Personnel Psychology*, 57(2), 498-501 (review).
- Sardone, S. B.**, 2006. Top 10 Valentine Gifts for Women, *About.com*, <<http://honeymoons.about.com/cs/toppicks/tp/valentinewoman.htm>> (25 May 2006).
- de Saussure, F.**, 1966. Part one: general principles, in *Course in General Linguistics*, pp. 65-70, Eds. Bally, C. & Sechehaye, A., Trans. Baskin, W., McGraw-Hill Book Company, New York. (Original work published 1916).
- Schon, D. A.**, 1986. *The Design Studio: An Exploration of its Traditions and Potentials*, Riba Publications, London.
- Schon, D. A.**, 1983. *The Reflective Practitioner: How Professionals Think in Action*, Basic Books, New York.
- Silverman, K.**, 1985. From sign to subject: a short history, in *The Subject of Semiotics*, pp. 3-53, Oxford University Press, Oxford.
- Strauss, A. L. & Corbin, J.**, 1990. *Basics of Qualitative Research. Grounded Theory Procedures and Techniques*, Sage, Newbury Park.
- Taixing Fengling Musical Instruments Co, Ltd.**, 2005. Introduction, *Taixing Fengling Musical Instruments Co., Ltd. website*, <http://fengling.com.cn/fengling/web/fengling/eweb.php?article_title=%B9%AB%CB%BE%BC%F2%BD%E9> (17 September 2006).
- Timpani Ses ve Görüntü Sistemleri Sanayi ve Ticaret Limited Şirketi**, 2006a. Felsefemiz, *Timpani Ses ve Görüntü Sistemleri Sanayi ve Ticaret Limited Şirketi*, <<http://www.timpani.com.tr/felsefemiz.htm>> (28 April 2007).
- Timpani Ses ve Görüntü Sistemleri Sanayi ve Ticaret Limited Şirketi**, 2006b. Sistemler, *Timpani Ses ve Görüntü Sistemleri Sanayi ve Ticaret Limited Şirketi*, <<http://www.timpani.com.tr/systems/systems.htm>> (28 April 2007).
- Tindall, C.**, 1994. Personal construct approaches, in *Qualitative Methods in Psychology: A Research Guide*, pp. 72-90, Eds. Banister, P., Burman, E., Parker, I., Taylor, M. & Tindall, C., Open University Press, Maidenhead.

- Tindall, C.**, 1994. Issues of evaluation, in *Qualitative Methods in Psychology: A Research Guide*, pp. 72-90, Eds. Banister, P., Burman, E., Parker, I., Taylor, M. & Tindall, C., Open University Press, Maidenhead.
- Turner, J.**, 1993. Research Methods, Institute of Advanced Studies, Manchester Metropolitan University, Manchester.
- University of Texas**, n.d. Tsunami & technology, *Science, Technology & Society (online)*,
<<http://tlcserv.la.utexas.edu/projects/tsunami/Images/StarOnlineA011905.Mobile%20phone.jpg>> (11 October 2005).
- Vakeva, S.**, 1990. What do we need semiology for?, *Semantic Visions in Design: Proceedings From the Symposium on Design Research and Semiology 17-18. 5. 1989 at University of Industrial Arts Helsinki UIAH.*, University of Industrial Arts Helsinki UIAH, Helsinki, 17-18 May, pp. n.a., Ed. Vihma, S .
- Valkenburg, R.**, 2000. The Reflective Practice in Product Design Teams, Proefschrift Technische Universiteit Delft, Delft.
- VanAlstine, F.**, 2005. Online collaborative conference, *MSN Messenger*, 5 January.
- Vihma, S.**, 1990. Product form: a semiological approach, *Semantic Visions in Design: Proceedings From the Symposium on Design Research and Semiology 17-18. 5. 1989 at University of Industrial Arts Helsinki UIAH.*, University of Industrial Arts Helsinki UIAH, Helsinki, 17-18 May, pp. n.a., Ed. Vihma, S .
- Vincent, N.**, 2006. Self Made Man: One Woman's Journey into Manhood and Back Again, Viking Penguin, New York.
- Wetton, N. M. & McWhirter, J.**, 1998. Images and curriculum development in health education, in *Image-based Research: A Sourcebook for Qualitative Researchers*, pp. 263-283, Ed. Prosser, J., RoutledgeFalmer, London.
- Whiteley, S. (Ed.)**, 1997. Sexing the Groove: Popular Music and Gender, Routledge, London, previewed using Google Book Search,
<<http://books.google.com/books?id=-KiJuU30xhEC&pg=PP1&lpg=PP1&printsec=8&sig=mKM0NYvBqthgTzWoa6M5XEoD9BM.>> (25 May 2006).
- Wilska, T.**, 2003. Mobile phone use as part of young people's consumption styles, *Journal of Consumer Policy*, **26**(4), 441-463 (ABI/INFORM Global. ProQuest. Istanbul Technical University, Istanbul, Turkey).
- Wilson, M.**, 2002. Making nursing visible? Gender, technology and the care plan as script, *Information Technology & People*, **15**(2), 139-158.

Yamaha Corporation of America, 2006. Yamaha Corporation of America - Acoustics, *Yamaha Corporation of America*, <<http://yamaha.com/guitars/acoustics/0,,CTID%253D600013%2526CNTYP%253DPRODUCT,00.html>> (17 September 2006).

Zavaleta's La Casa De Guitarras, n.d. *Zavaleta's La Casa De Guitarras website*, <<http://www.zavaletas-guitarras.com/files/Maldonado-rosette.jpg>> (16 January 2006).

APPENDICES

Appendix A: Special Terms and Concepts

Appendix B: Online Communication with Frank Van Alstine

Appendix C: Participant Data Forms

Appendix D: Design Brief

Appendix E: Participant Sketches

Appendix F: Participant Interview Transcripts

Appendix G: Semiological Analysis of Participant Systems

Appendix H: Criteria Identification Terms

Appendix I: Participant Responses to Prototypical System

Appendix J: Participant Permission Forms

Appendix A: Special Terms and Concepts

Definitions for several term used in this study are given below.

audiophile

An enthusiast who believes he or she has the ability to discern the subtlest performance differences in music reproduction systems and who places great value in these differences.

enthusiast

A person with an active interest in music reproduction equipment and who spends appreciable amounts of time and money pursuing that interest in equipment purchases, magazine subscriptions, etc.

non-portable music reproduction systems

In this study, this term is used to identify systems comprised of the kind of products that one would find in a specialist retailer of music reproduction products (i.e., “hi-fi” or “home stereo” products), where a full system is typically composed of a number of independent components and where the typical cost of each component exceeds approximately US\$300. Thus, the typical cost of a non-portable music reproduction system starts around US\$1000 and has no practical upper limit. Excluded from the concept of non-portable music reproduction systems are inexpensive all-in-one solutions that are typically sold in hypermarkets and the like—including systems commonly referred to as “boom boxes” as well as many “executive systems.” Also excluded from the concept of non-portable music reproduction systems is automotive sound equipment, which while having the potential to be just as expensive, represents a completely different kind of product with a very different context. The above definition should not be construed to limit the scope of interest to systems composed of numerous separate parts. Systems that are highly integrated, perhaps limited to one or two pieces, should not necessarily be excluded. The differentiating factor here is essentially cost.

Appendix B: Online Communication with Frank Van Alstine

Excerpt of MSN Messenger IM session between Frank Van Alstine, President of Audio by Van Alstine, Inc., and Mithat Konar; 05 Jan 2005, 6:42 PM in İstanbul. (The text of the complete IM session has been lost. The record below is an excerpt from the complete session.)

Mithat is in İstanbul, Turkey

Frank is Woodbury, MN, USA

Mithat says: question: Over the last 40 years that you've been doing this professionally, about what percentage of your clients have been female, and have you noticed any change in the proportion of men to women?

Frank says: Lisa says "women talk better than they listen"

Frank says: Less than one tenth of one percent of my customer base is women, and then many only because they were the ones with the family credit card in their name. Skim the postcard mailing list!

Frank says: And this percentage has not changed over the years, if anything it has gotten worse. Years ago, when high fidelity was pushed by the major manufacturers, I did have some women audio system customers, in recent years, essentially none.

Frank says: and even in the old days, I suspect that almost all of my single women customers were gay.

Note: Lisa referred to above is a female employee of Audio by Van Alstine, Inc. and works there as an assembler.

Appendix C: Participant Data Forms

Participant data forms in alphabetic order according to first names.

Participant Information

Name and Surname: AHMET ZEKİ TURAN

Birth date: 10.06.1976

Country and city of residence: TURKEY

Country and city of birth: TURKEY - ISTANBUL

Occupation: RESEARCHER

Monthly income: 1.000 YTL

Gender: ☐ female
☒ male

Marital status: ☐ single
☒ married/life-partner
☐ divorced

Education	yes	no	continuing	If yes or continuing, in what field?
High school	☒	☐	☐	--
B.A./B.S	☒	☐	☐	INDUSTRIAL DESIGN
M.A./M.S	☒	☐	☐	INDUSTRIAL DESIGN
PhD.	☒	☐	☒	

Do you play any musical instruments? If so, what?

I USED TO PLAY DRUMS

Amount spent on music reproduction equipment in last 5 years? (Portable and non-portable. If you use your computer for listening to music, please indicate so.)

A SET = 450 YTL & A LAP TOP.

Number of new CDs acquired in last month? Number of MP3 and similar music files acquired in last month?

NO CD —
NO MP3 OR ANY FILE —

Number of hours per week spent listening to music (actively or as background music)?

NOWHERE ABOUT 4 HOURS

Favorite type(s) of music?

HARD ROCK — from my teenage times & anything else that I find interesting.
MYSTIC MUSIC especially Sufi

Anything else?

—

Date: 03.04.2007

Participant Information

Name and Surname: AYD. TUNAN

Birth date: 25.12.1970

Country and city of residence: TR / TC

Country and city of birth: TR / TC

Occupation: Industrial designer

Monthly income: 2.5 milyon

Gender: ☐ female
☒ male

Marital status: ☐ single
☒ married/life-partner
☐ divorced

Education	yes	no	continuing	If yes or continuing, in what field?
High school	☒	☐	☐	--
B.A./B.S	☒	☐	☐	
M.A./M.S	☐	☐	☒	ID.
PhD.	☐	☐	☐	

Do you play any musical instruments? If so, what?

Guitar

Amount spent on music reproduction equipment in last 5 years? (Portable and non-portable. If you use your computer for listening to music, please indicate so.)

Portable (I-Pod)

Computer

Number of new CDs acquired in last month? Number of MP3 and similar music files acquired in last month?

CD - 1

MP3 - Çok / I don't remember over 200

Number of hours per week spent listening to music (actively or as background music)?

30-35

Favorite type(s) of music? Trl-pop, acidjazz, weta, electronic ...

Anything else?

NO! :)

Date:

Participant Information

Name and Surname: CEM ALPAMY

Birth date: 13 / 12 / 1971

Country and city of residence: ISTANBUL, TÜRKİYE

Country and city of birth: ISTANBUL, TÜRKİYE

Occupation: INDUSTRIAL DESIGNER ; ACADEMIC

Monthly income: 2000 YTL

Gender: ☐ female
☒ male

Marital status: ☒ single
☐ married/life-partner
☐ divorced

Education	yes	no	continuing	If yes or continuing, in what field?
High school	☐	☐	☐	--
B.A./B.S	☒	☐	☐	MİHAT SINAN ÜNİVERSİTESİ ENDÜSTRİ ÜRÜNLERİ TASARIMI
M.A./M.S	☒	☐	☐	İSTANBUL TECHNICAL UNIVERSITY DEPT. OF INDUSTRIAL PRODUCT DESIGN
PhD.	☐	☐	☒	

Do you play any musical instruments? If so, what?

NO

Amount spent on music reproduction equipment in last 5 years? (Portable and non-portable. If you use your computer for listening to music, please indicate so.)

1500 YTL ~ 1100 USD

Number of new CDs acquired in last month? Number of MP3 and similar music files acquired in last month?

5 CD

10 GB MP3

Number of hours per week spent listening to music (actively or as background music)?

15 HOURS

Favorite type(s) of music?

HEAVY METAL, ROCK, TECHNO, ETHNIC MUSICS, ACID JAZZ, SOFT, PROGRESSIVE ROCK

Anything else?

SOUND QUALITY AND DURABILITY IS THE MOST IMPORTANT FACTOR IN THE CHOICE OF A MUSIC REPRODUCING EQUIPMENT

Date: 05.04.2007

Participant Information

Name and Surname: Dilek Ayyıldız

Birth date: 23.10.1977

Country and city of residence: İstanbul

Country and city of birth: Isparta

Occupation: Research Assistant

Monthly income: -

Gender: ☒ female
☐ male

Marital status: ☒ single
☐ married/life-partner
☐ divorced

Education	yes	no	continuing	If yes or continuing, in what field?
High school	☒	☐	☐	Ankara Çankaya M. P. Anadolu Lisesi
B.A./B.S	☒	☐	☐	Istanbul Technical University Department of Industrial Product Design
M.A./M.S	☒	☐	☐	Istanbul Technical University Institute of Science and Technology, Department of Industrial Product Design
PhD.	☐	☐	☒	Istanbul Technical University Institute of Science and Technology, Department of Industrial Product Design

Do you play any musical instruments? If so, what?

No.

Amount spent on music reproduction equipment in last 5 years? (Portable *and* non-portable. If you use your computer for listening to music, please indicate so.)

500YTL for Creative Zen Micro Mp3 Player

Number of new CDs acquired in last month? Number of MP3 and similar music files acquired in last month?

3 or 5 Mp3

Number of hours per week spent listening to music (actively or as background music)?

1 or 2 hours

Favorite type(s) of music?

Slow music

Anything else?

Date:

Participant Information

Name and Surname: ~~GÜLNAME~~ TURAN

Birth date: 20.06.1977

Country and city of residence: TURKEY/ISTANBUL

Country and city of birth: TURKEY/ISTANBUL

Occupation: Researcher / Phd Candidate

Monthly income: 1.000 YTL.

Gender: ☒ female
☐ male

Marital status: ☐ single
☒ married/life-partner
☐ divorced

Education	yes	no	continuing	If yes or continuing, in what field?
High school	☒	☐	☐	--
B.A./B.S	☒	☐	☐	
M.A./M.S	☒	☐	☐	
PhD.	☒	☐	☐	CONTINUING — DESIGN HISTORY

Do you play any musical instruments? If so, what?

NO

Amount spent on music reproduction equipment in last 5 years? (Portable and non-portable. If you use your computer for listening to music, please indicate so.)

LAPTOP COMPUTER + Cellular Phone with MP3 player (750 YTL)

Number of new CDs acquired in last month? Number of MP3 and similar music files acquired in last month?

NO CD — 40 MP3 files

Number of hours per week spent listening to music (actively or as background music)?

ABOUT 8-10 hours a week

Favorite type(s) of music?

ROCK, CLASSICAL AND NEW AGE

Anything else?

Thanks :)

Date: 03 04 2007

Participant Information

Name and Surname: HÜMANUR BAĞLI

Birth date: 01.06.1973

Country and city of residence: TURKEY / ISTANBUL

Country and city of birth: TURKEY / ANKARA

Occupation: ACADEMICIAN / DESIGNER

Monthly income: ~1.000 YTL

Gender: ☒ female
☐ male

Marital status: ☒ single
☐ married/life-partner
☐ divorced

Education	yes	no	continuing	If yes or continuing, in what field?
High school	☒	☐	☐	--
B.A./B.S	☒	☐	☐	INDUSTRIAL DESIGN
M.A./M.S	☒	☐	☐	GRAPHIC DESIGN
PhD.	☒	☐	☐	INDUSTRIAL DESIGN

Do you play any musical instruments? If so, what?

I TRIED TO PLAY 'HEY' BUT I GAVE IT UP.
BUT I AM SINGING AS ALT IN A CAPELLA CHOIRS

Amount spent on music reproduction equipment in last 5 years? (Portable and non-portable. &

If you use your computer for listening to music, please indicate so.) TURKISH CLASSICAL
MUSIC.
NO

Number of new CDs acquired in last month? Number of MP3 and similar music files
acquired in last month?

~~NO NEW CD~~ SOME 1 OR 2 MP3 COMPILATION
GIVEN BY A FRIEND.

Number of hours per week spent listening to music (actively or as background music)?

~12 HOURS

Favorite type(s) of music?

LOUNGE 102. (RADIO), SUFI, TURKISH FOLK MUSIC
(AUTHENTIC),

Anything else?

KARDES TÜRKÜLER, BABA ZULA

Date: 3.4.2007

Appendix D: Design Brief

The design brief given to all participants is shown below.

Design Brief: Fantasy Non-Portable Music Reproduction System

Submitter's Profile

This Design Brief has been prepared in connection with thesis research for Mithat Konar's Master of Science in Industrial Product Design at Istanbul Technical University, Istanbul, Turkey.

Context

Music is an important part of many people's lives. In connection with this, many different devices and systems have been devised to allow users to access the music of their choosing. The subject of this Brief is the design of a music reproduction system for use in non-portable, domestic situations (i.e., in a fixed locations in the home).

Objective

You will design a system for listening to prerecorded music. By prerecorded music, I mean any user-chosen isolated recording (for example, a CD) or collection of recordings (for example, a CD collection or collection of MP3s on a hard disk, etc.).

The system shall be designed as your *ideal fantasy system*. It is critical to the success of the design that the system reflects what is, for you, an ideal system. It should represent the system you would want in your own home or office, for your own use.

However, the design is subject to the following additional constraints:

- The system must deliver services to at least *one fixed location*. In other words, it cannot be a "portable" system.
- The system must support *at least one* of the following media:
 - CD
 - MP3 and similar files stored on internal hard disc
 - Phonograph recordings
 - Cassette tape
- The system may support any other media as well (including media not in the list above).
- The system can be as large or as small as you wish.
- The system may consist of as few or as many individual components as you wish.
- There is no cost constraint. The system can be as expensive to manufacture and install as you wish.
- You may integrate into the system any other features as you wish, but additional features should be directly or indirectly related to music listening. (For example, you are discouraged to design a music system that doubles as a cigarette lighter.)

Presentation

Deliverables shall take the form of design sketches. The sketches can be as simple or as complicated as you wish, but should have enough detail so as to communicate what you feel to be the most important features or aspects of your design. Descriptive text to support the sketches is also acceptable if it is easier to describe a feature than to sketch it.

Appendix E: Participant Sketches

Sketches submitted by participants in alphabetic order according to first first-name, last-name initials.

AI: Ali İlhan (male)

AT: Ahmet Turan (male)

CA: Cem Alppay (male)

DA: Dilek Ayyıldız (female)

GT: Gülname Turan (female)

HB: Hümanur Bağlı (female)

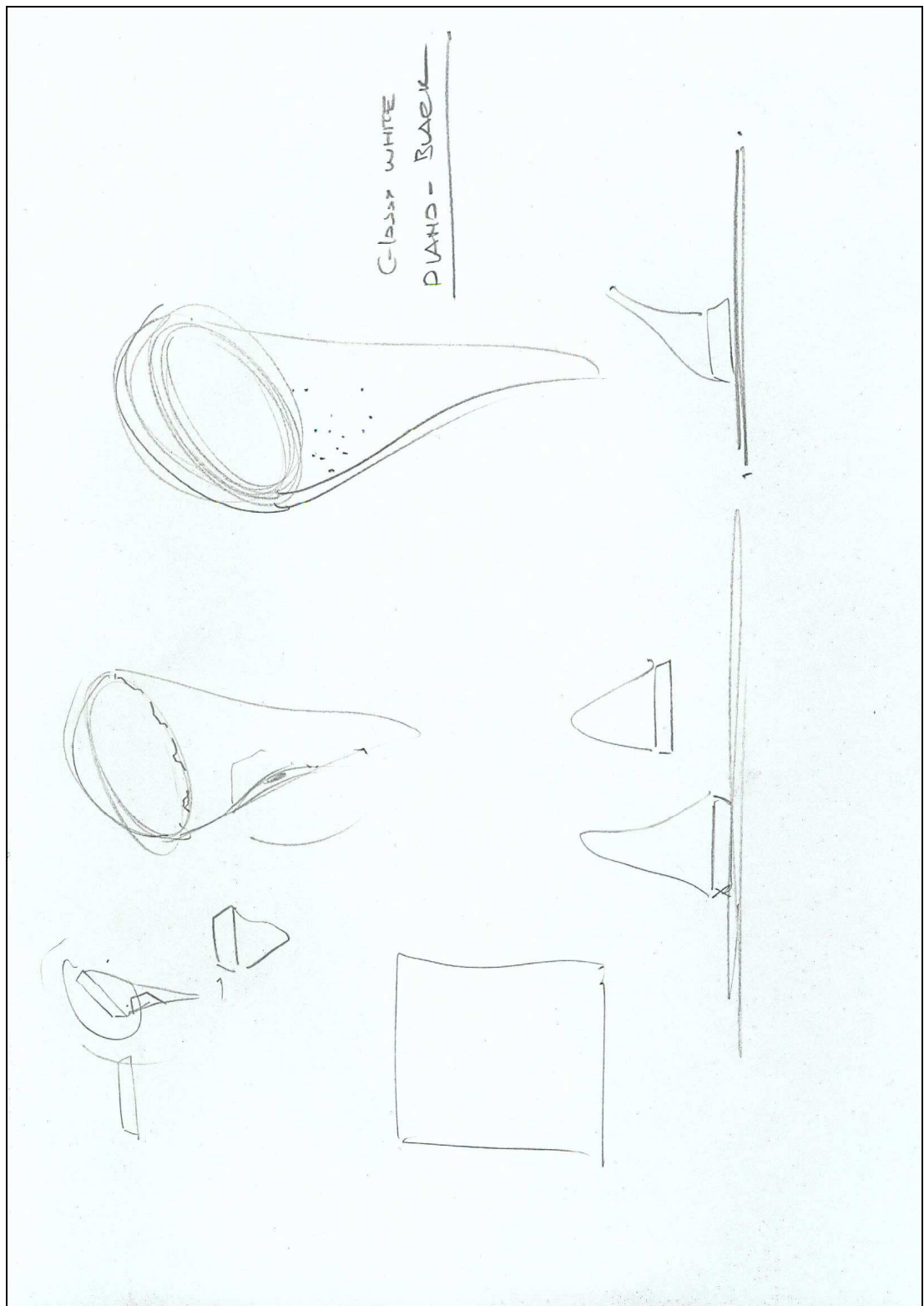


Figure E.1: AI fantasy system (a)

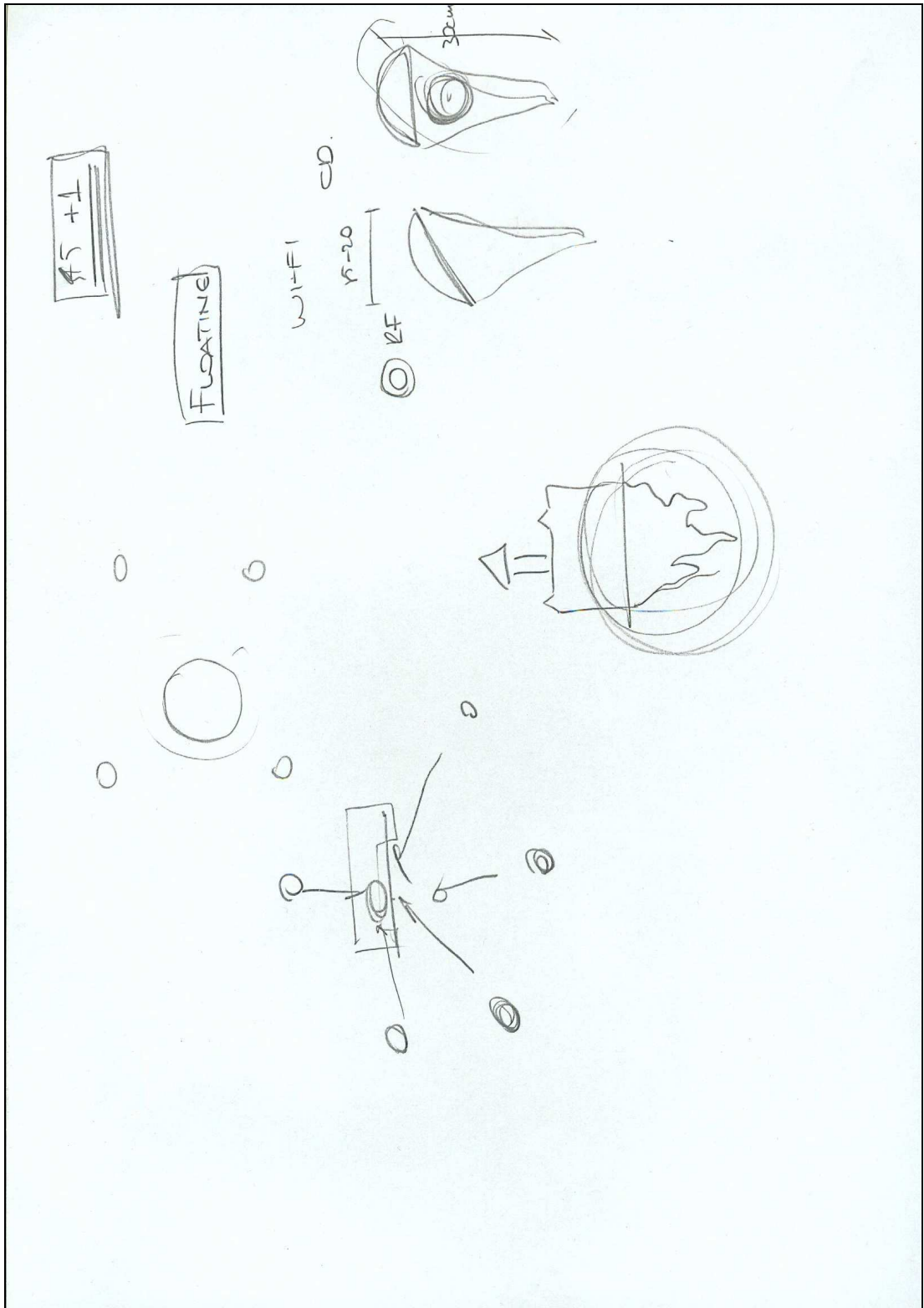


Figure E.2: AI fantasy system (b)

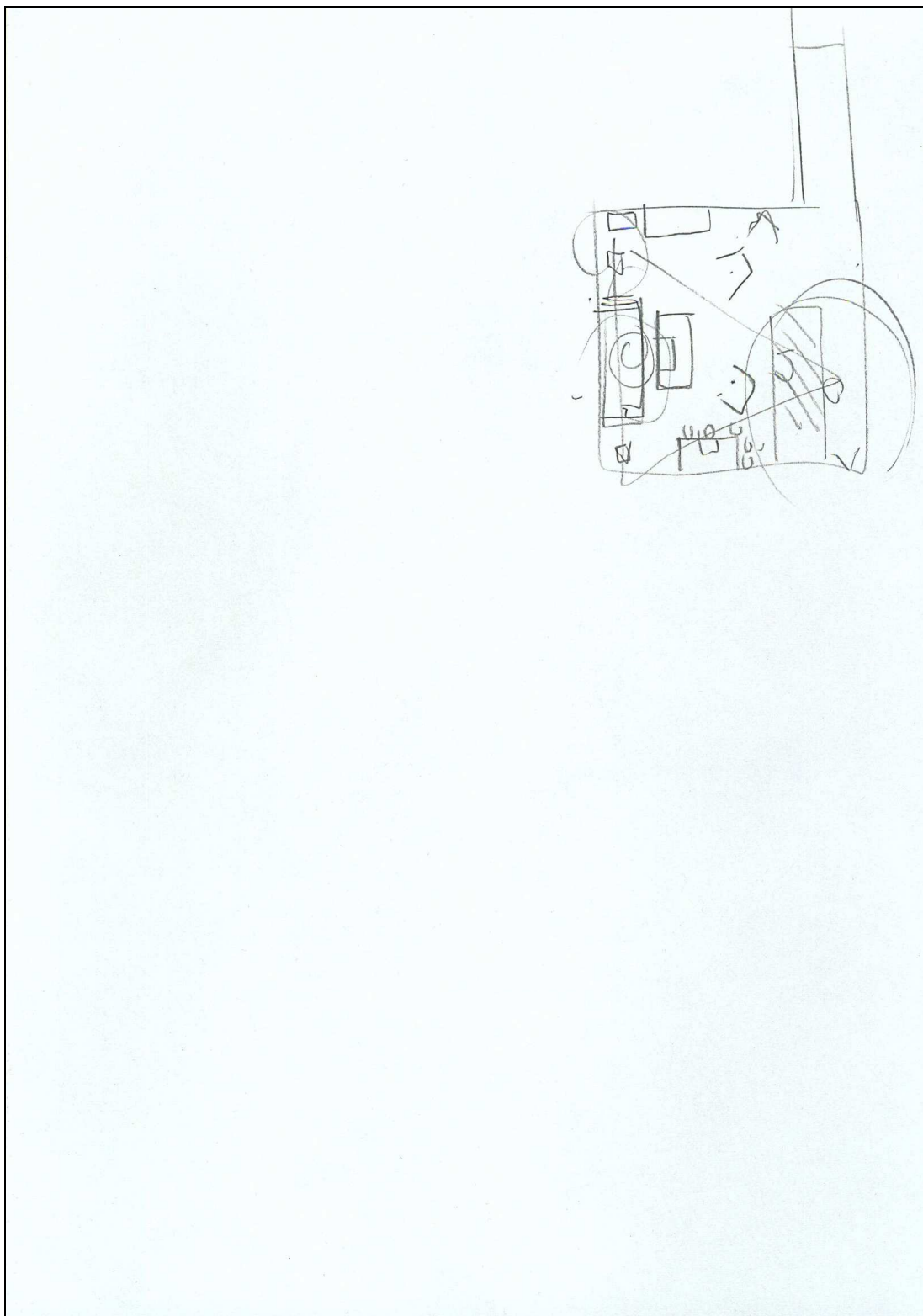


Figure E.3: AI fantasy system (c)

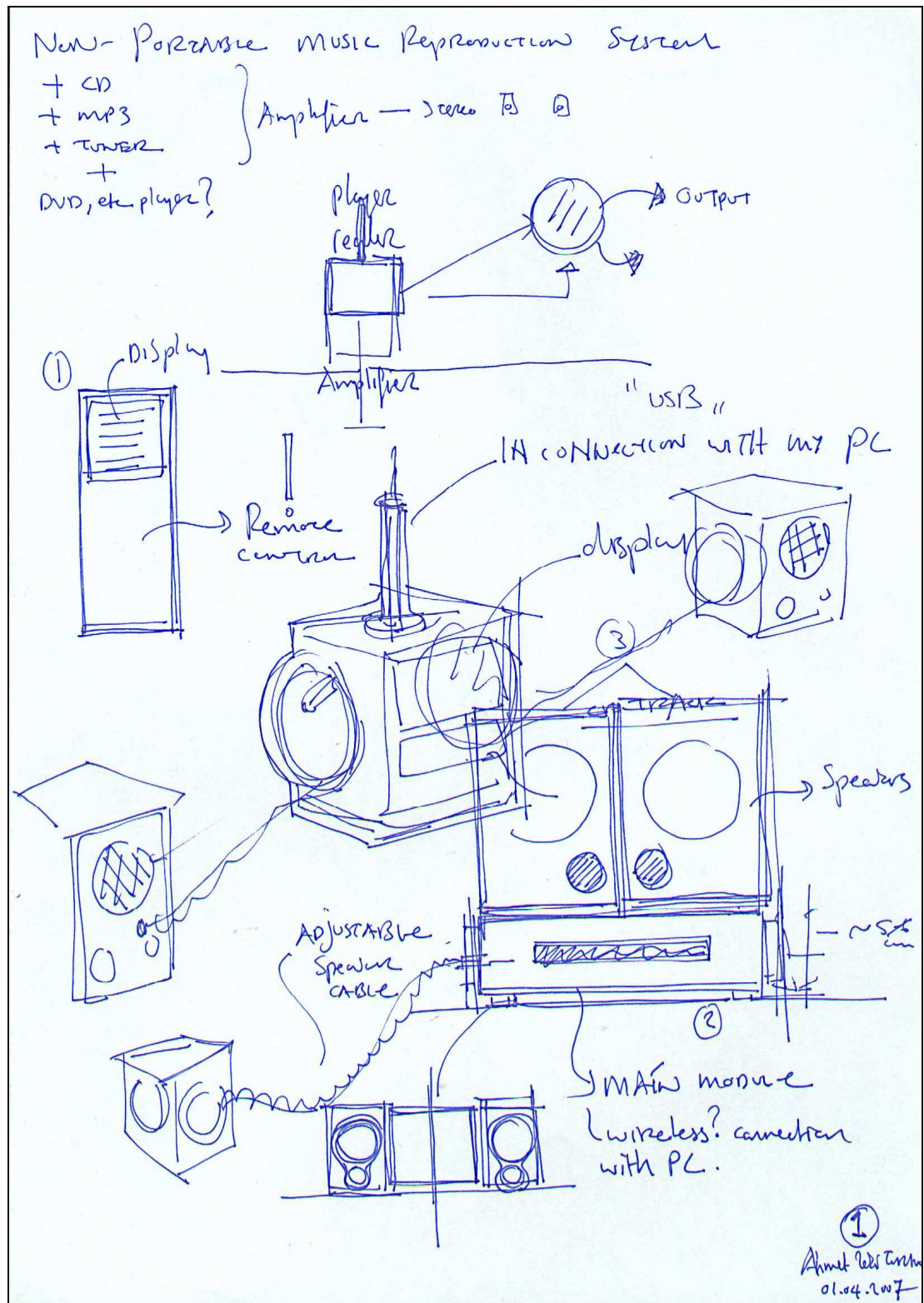


Figure E.4: AT fantasy system (a)

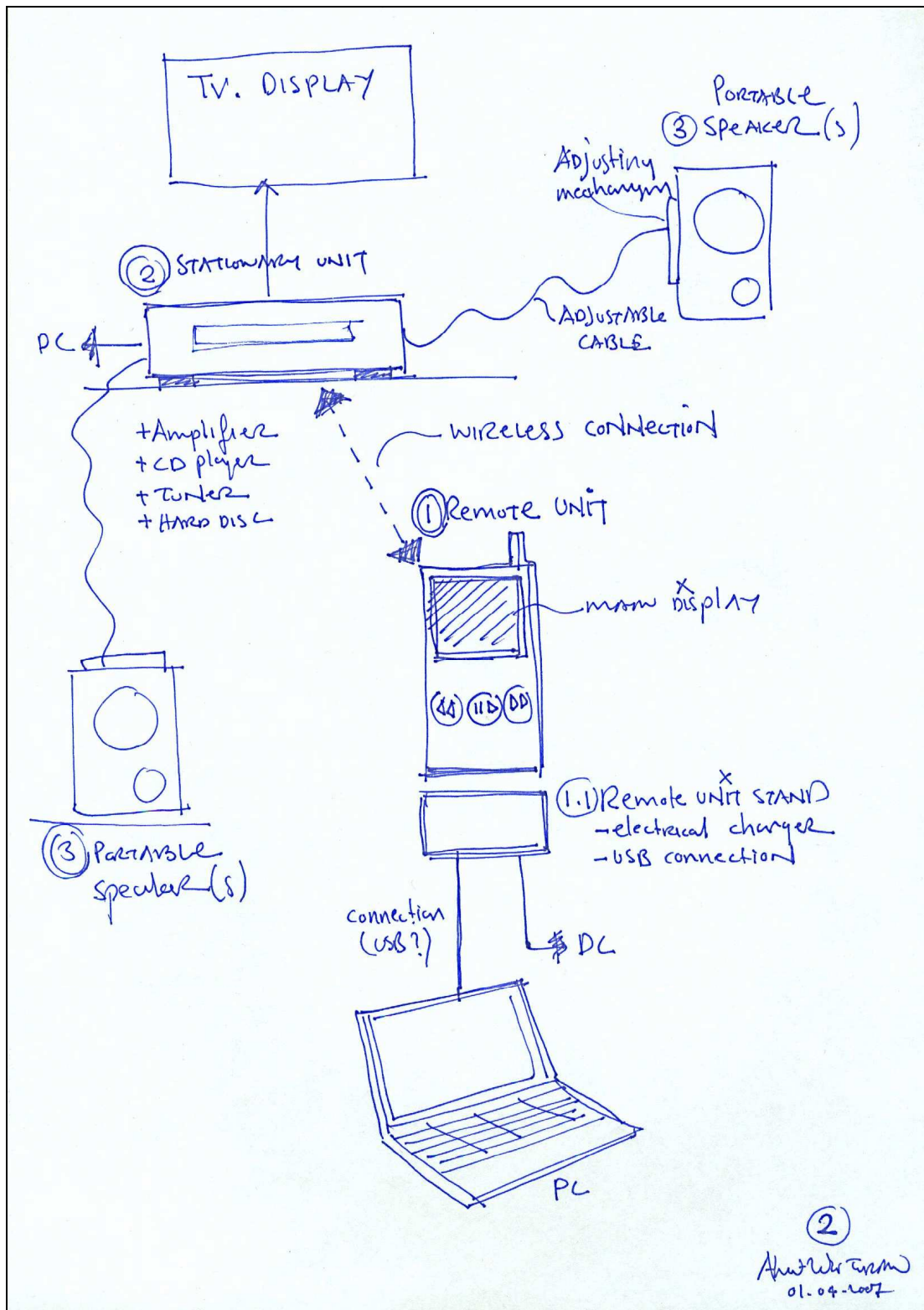


Figure E.5: AT fantasy system (b)

A 3 UNIT SYSTEM!

① Remote UNIT (MAIN INTERFACE)

- IN connection with DC amp PC with A stereo 1-1
- HAS A display interface where the music to be played is organized - (with a touch-screen per?)
- HAS NO HARD DISC BUT ^{Receives &} Sends information to the

Stationary UNIT ②

- Works with chargeable batteries.
- Suitable for "one hand" use  - top view

② Stationary unit

- In connection with Speakers and display unit (TV) (wired connection), and with the Remote unit (wireless connection).
- IT HAS Amplifier, CD player (DVD?), Tuner, AND A HARD DISC for MP3's, etc.
- Receives and sends information to the Remote unit
- Works with DC.



③ Speakers - Adjustable cable length _____



③

Amulet
01.04.2007

Figure E.6: AT fantasy system (c)

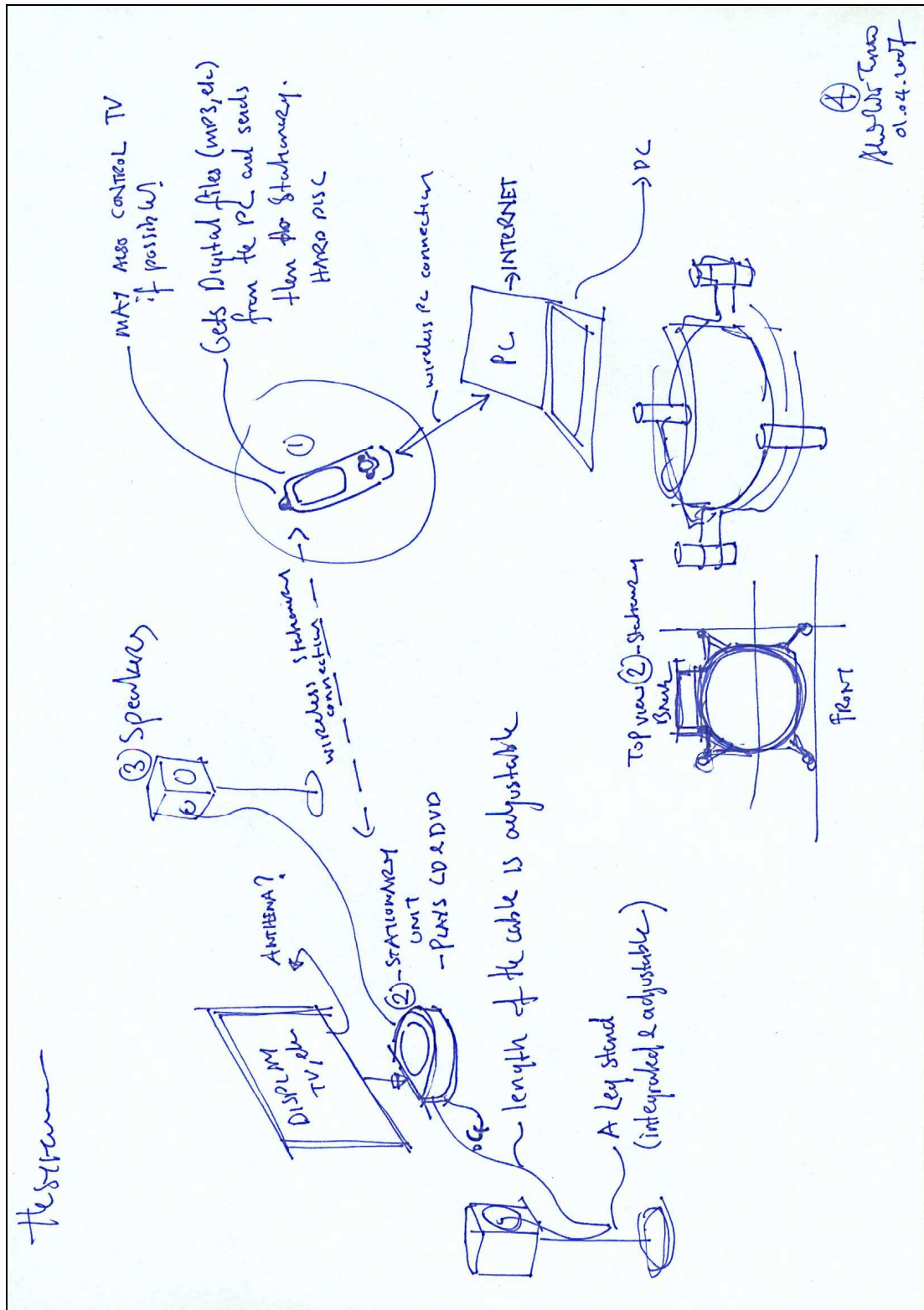


Figure E.7: AT fantasy system (d)

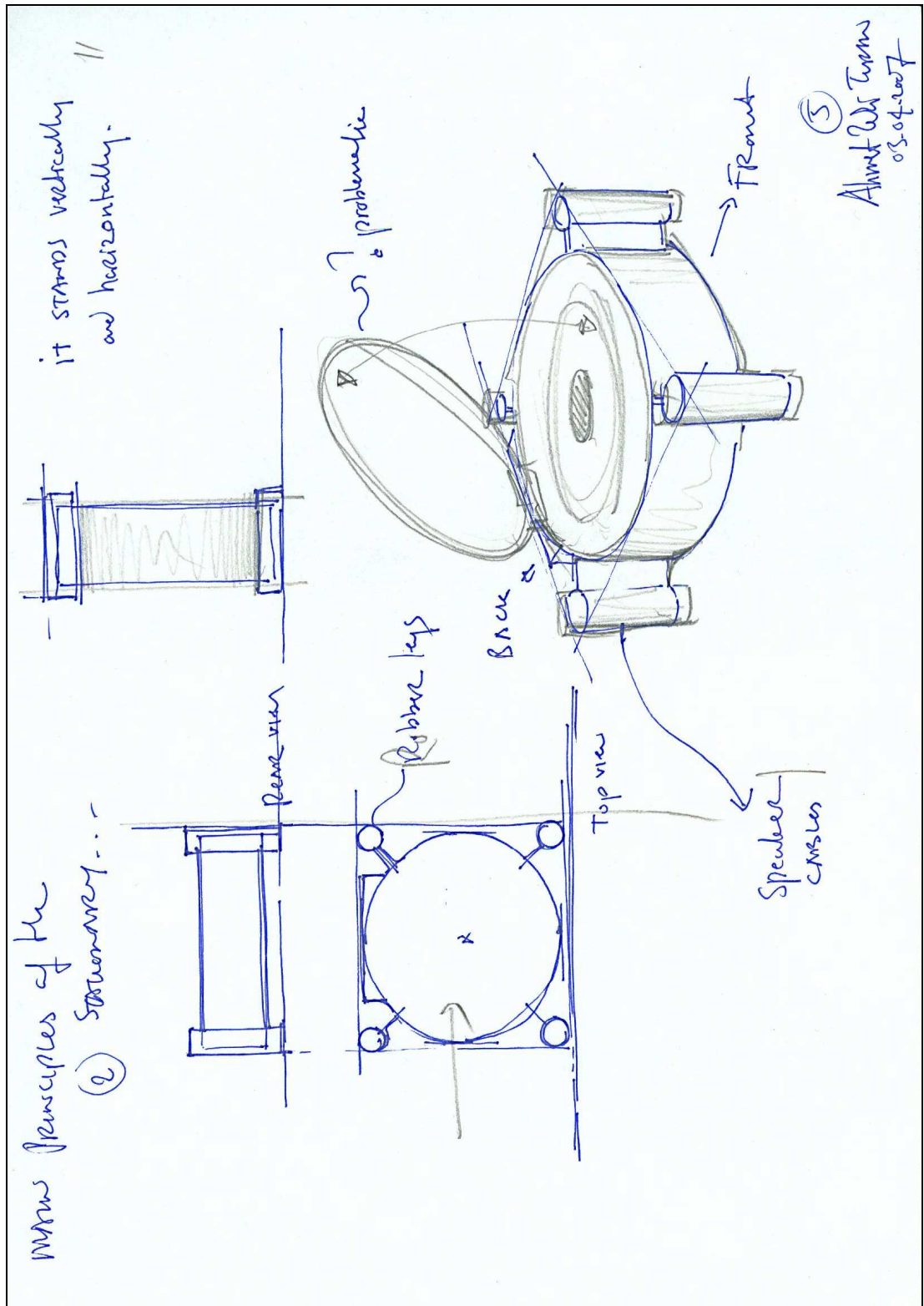


Figure E.8: AT fantasy system (e)

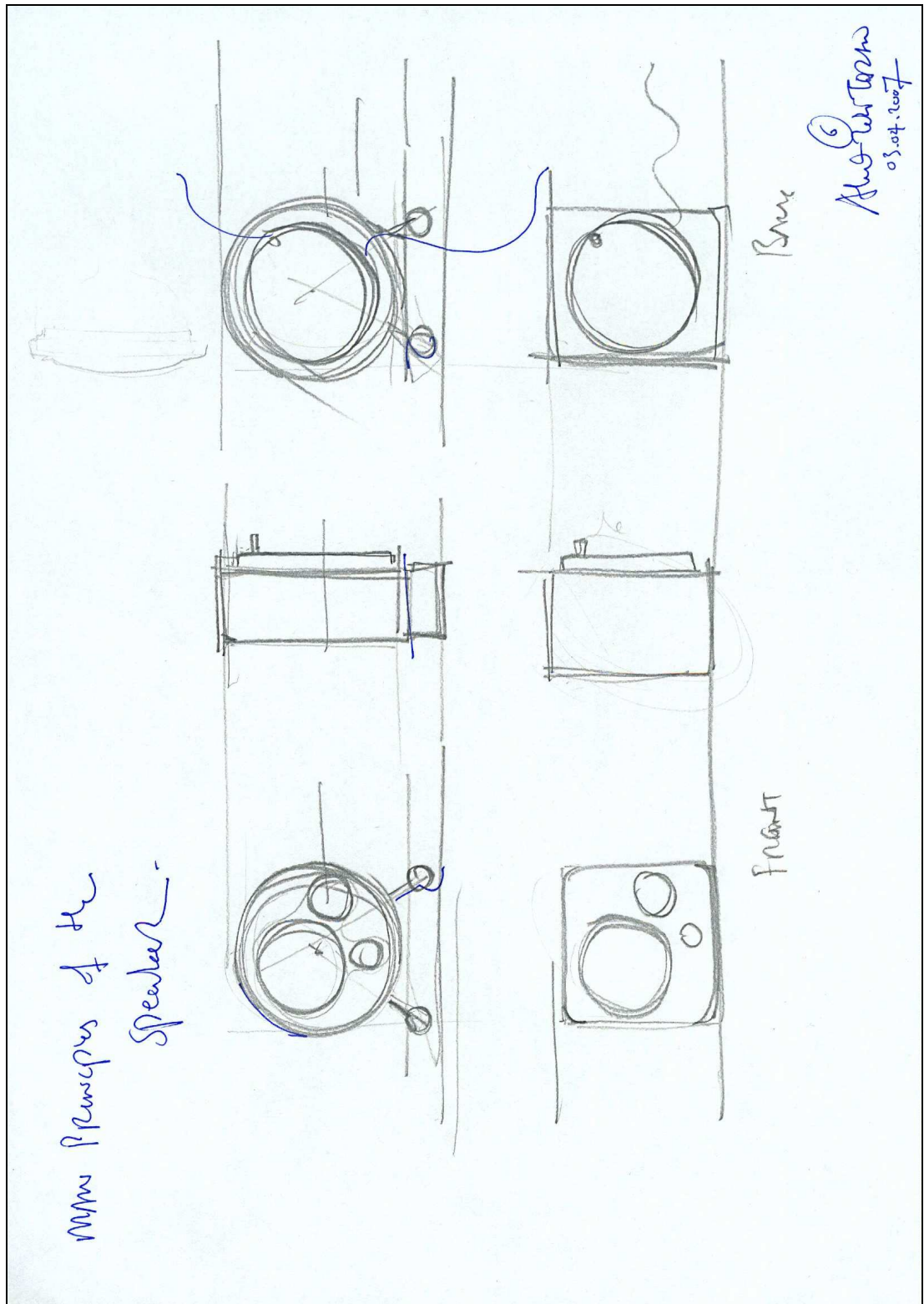


Figure E.9: AT fantasy system (f)

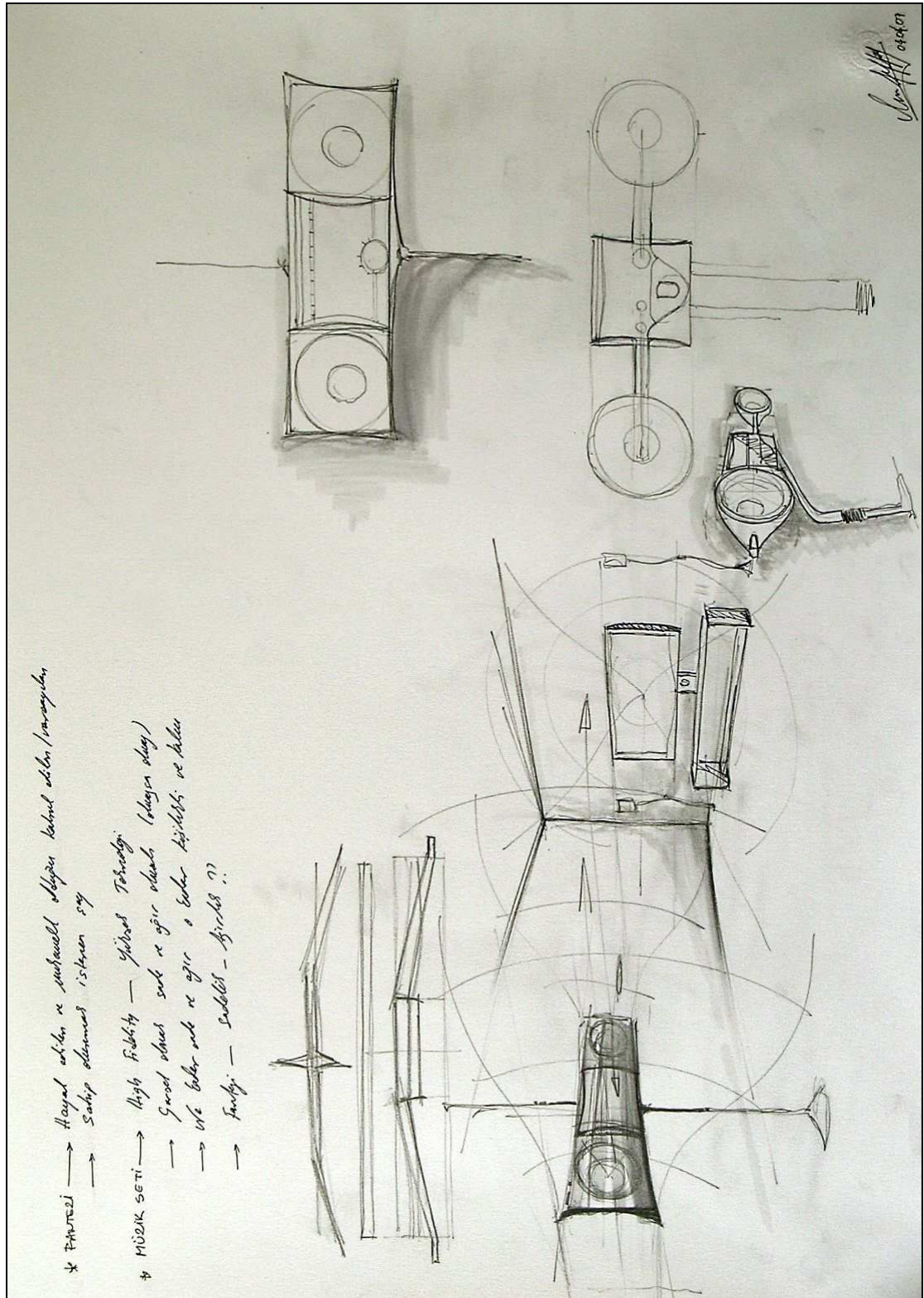


Figure E.10: CA fantasy system (a)

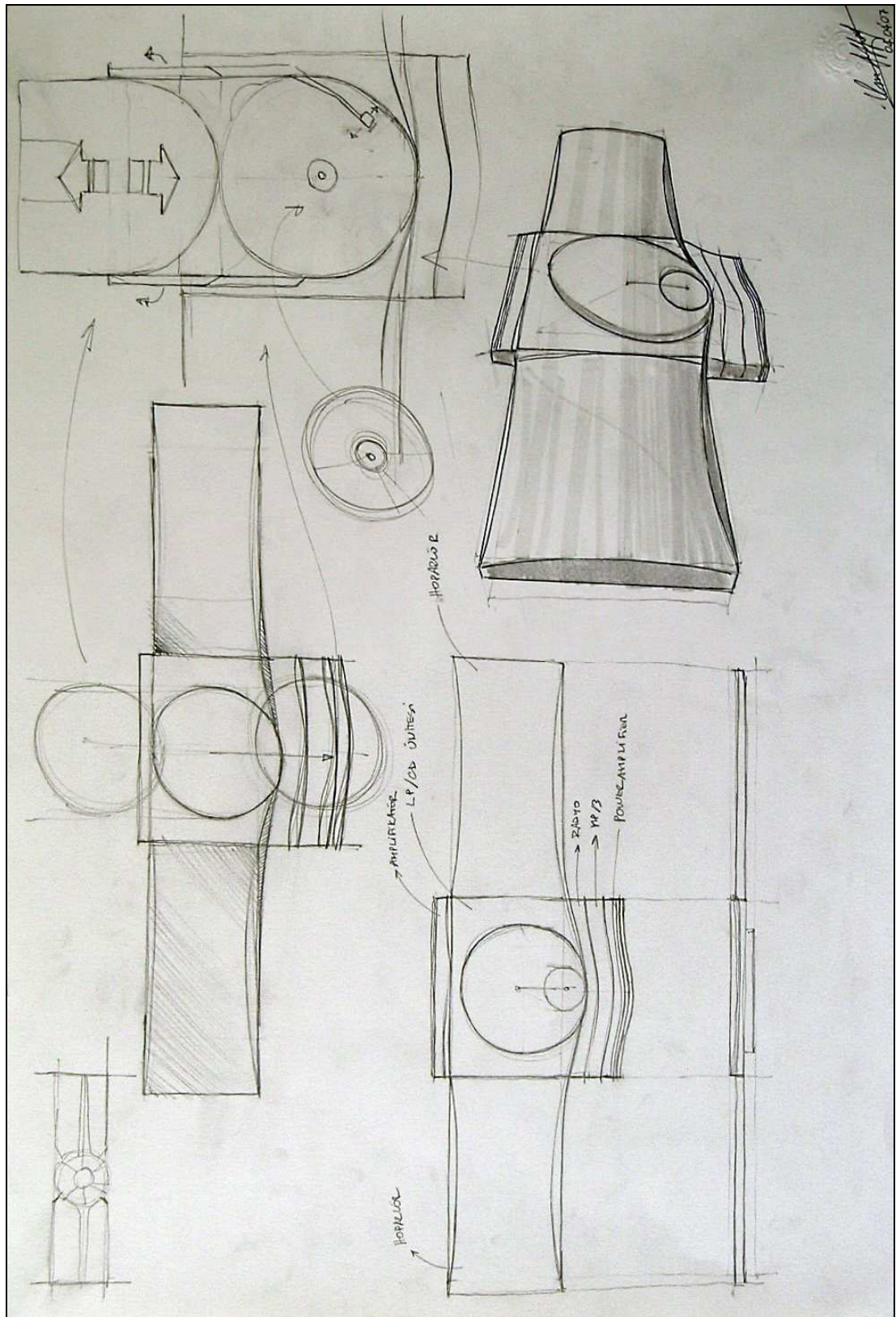


Figure E.11: CA fantasy system (b)

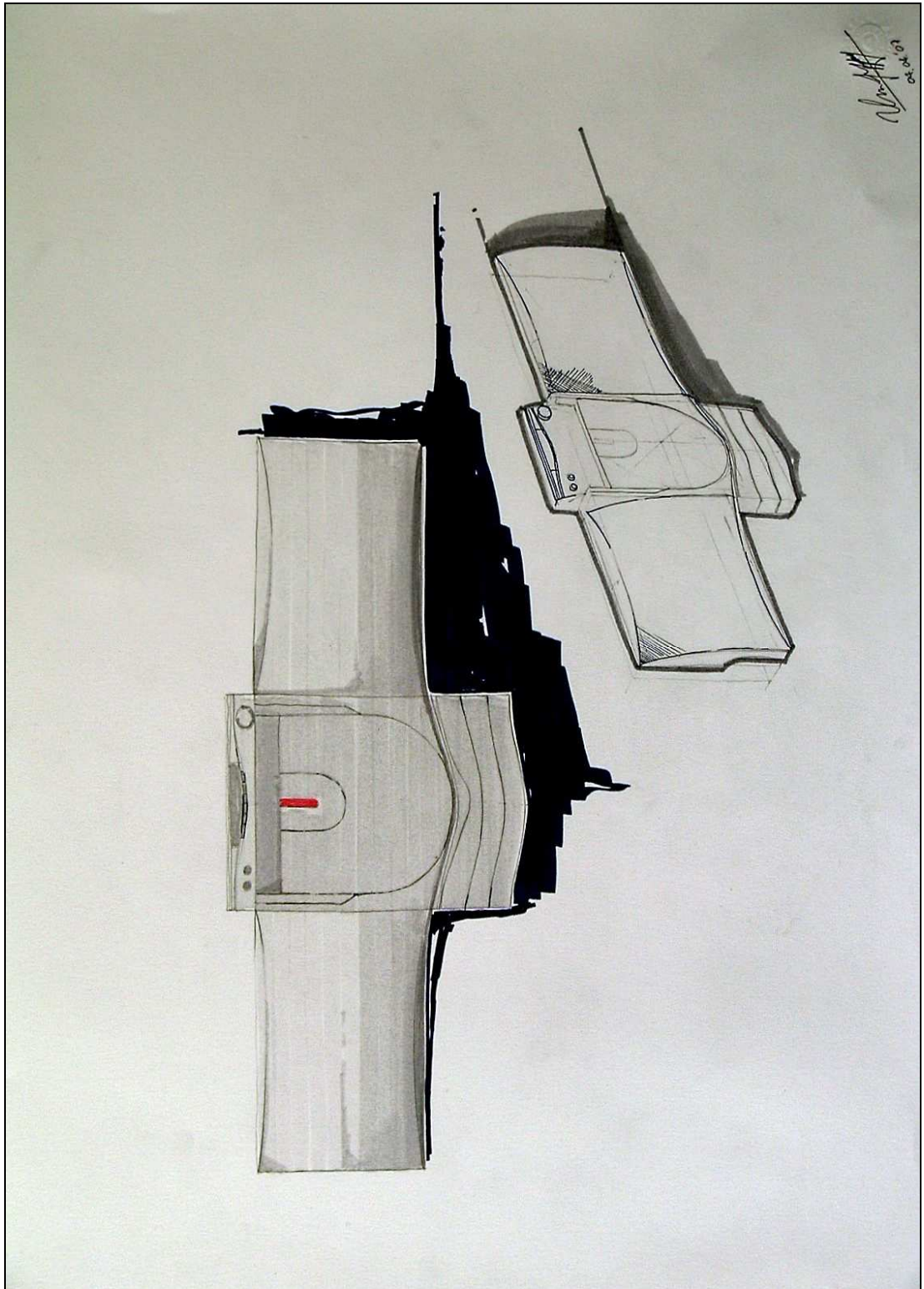


Figure E.12: CA fantasy system (c)



Figure E.13: DA fantasy system (a)

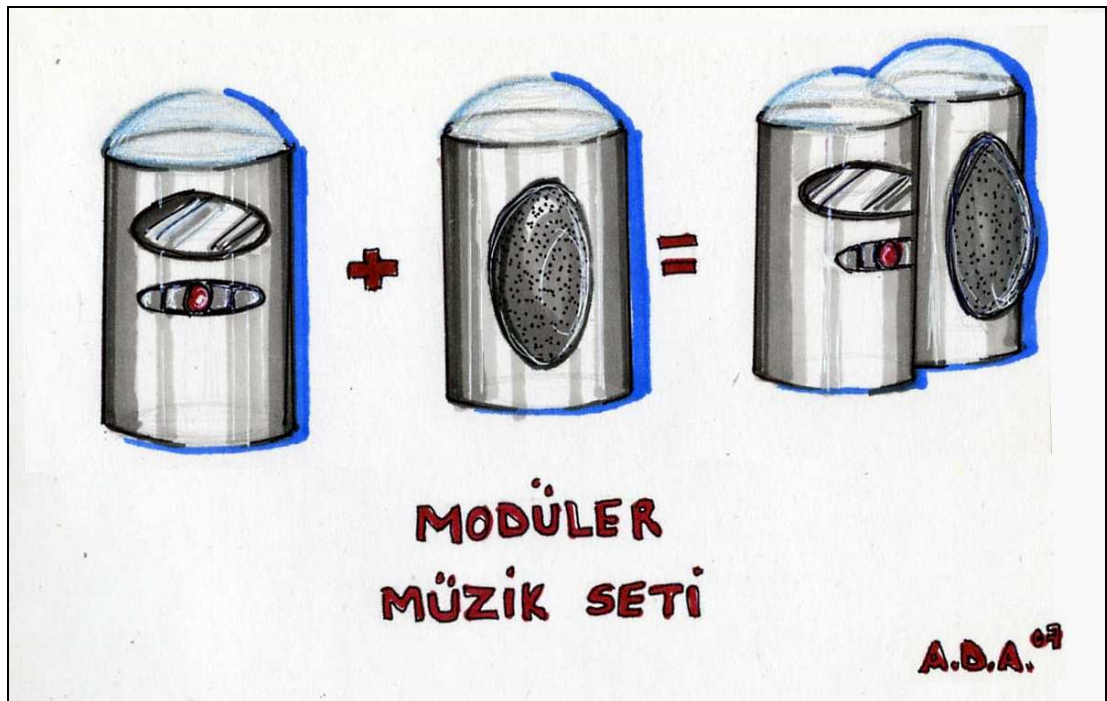


Figure E.14: DA fantasy system (b)

DA - comments from the designer and translation by the author

Comments from the designer (in Turkish):

- MODÜLER OLMALI, ZAMANLA YENİ ÜNİTELER EKLEMeye OLANAK SAĞLAMALI.
- RENK ALTERNATİFLERİ OLMALI
- çeşitli boyları olabilir
- BİRKAÇ CD'Yİ DİNLEME OLANAĞI SAĞLAMALI,
- CD'LERİ MP3'E ÇEVİREBİLMELİ
- menüleri karışık olmamalı
- üzerinde çok fazla düğme olmamalı, oldukça yalın olmalı
- gerekirse MENÜLERE TEK bir menü tuşuyla girilmeli dijital ekranda seçim yapılmalı
- hem estetik hem fonksiyonel olmalı

Translation by the author:

- It should be modular and permit the addition of new units over time.
- There should be color alternatives
- Maybe a range of sizes
- It should permit listening to several CDs,
- It should allow conversion of CDs to MP3s
- Menus should not be complicated
- There should not be a lot of buttons on it—it should be as simple as possible
- If needed, menus should be accessed by a single menu button and selections made on a digital screen
- It should be both aesthetic and functional

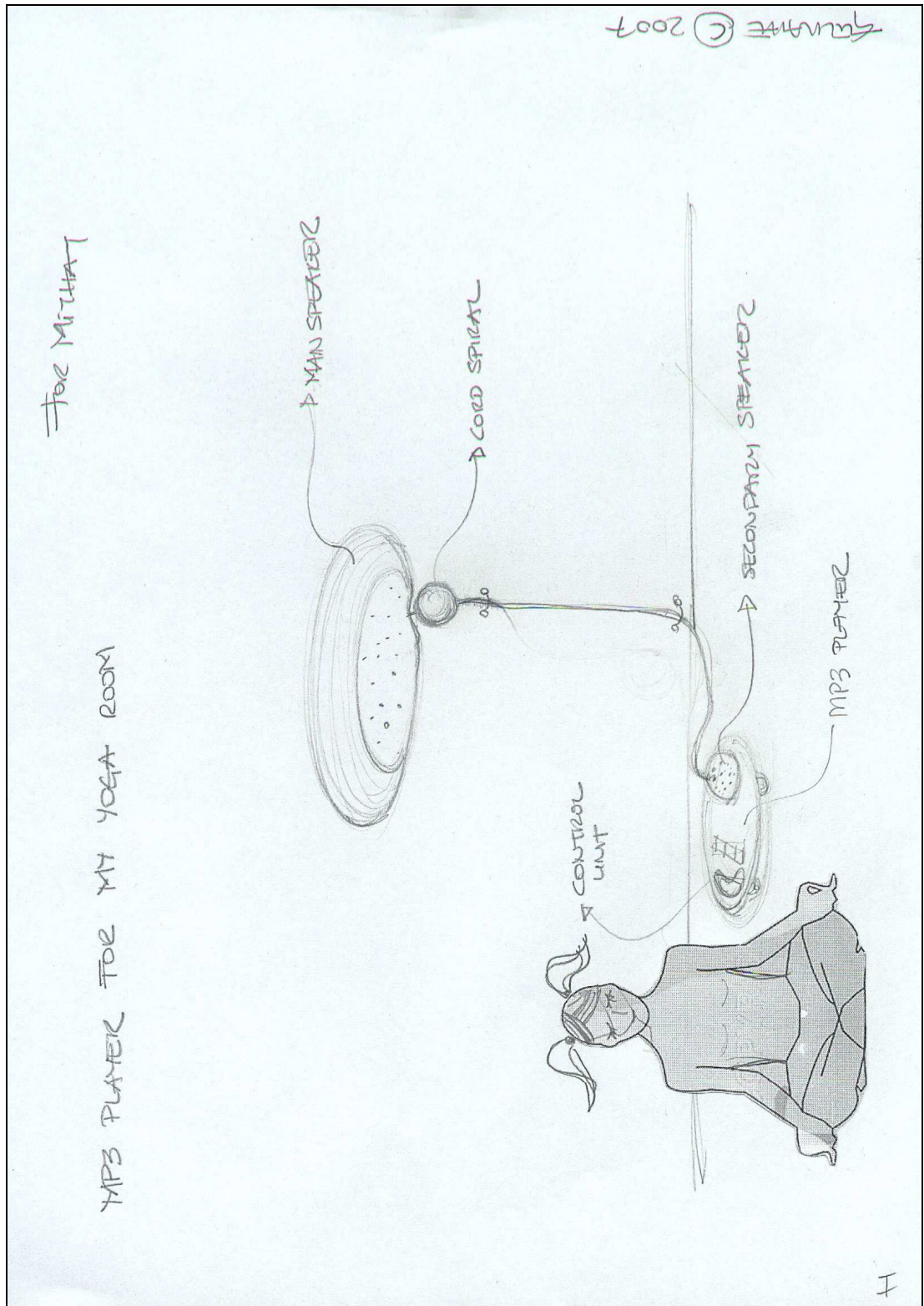


Figure E.15: GT fantasy system (a)

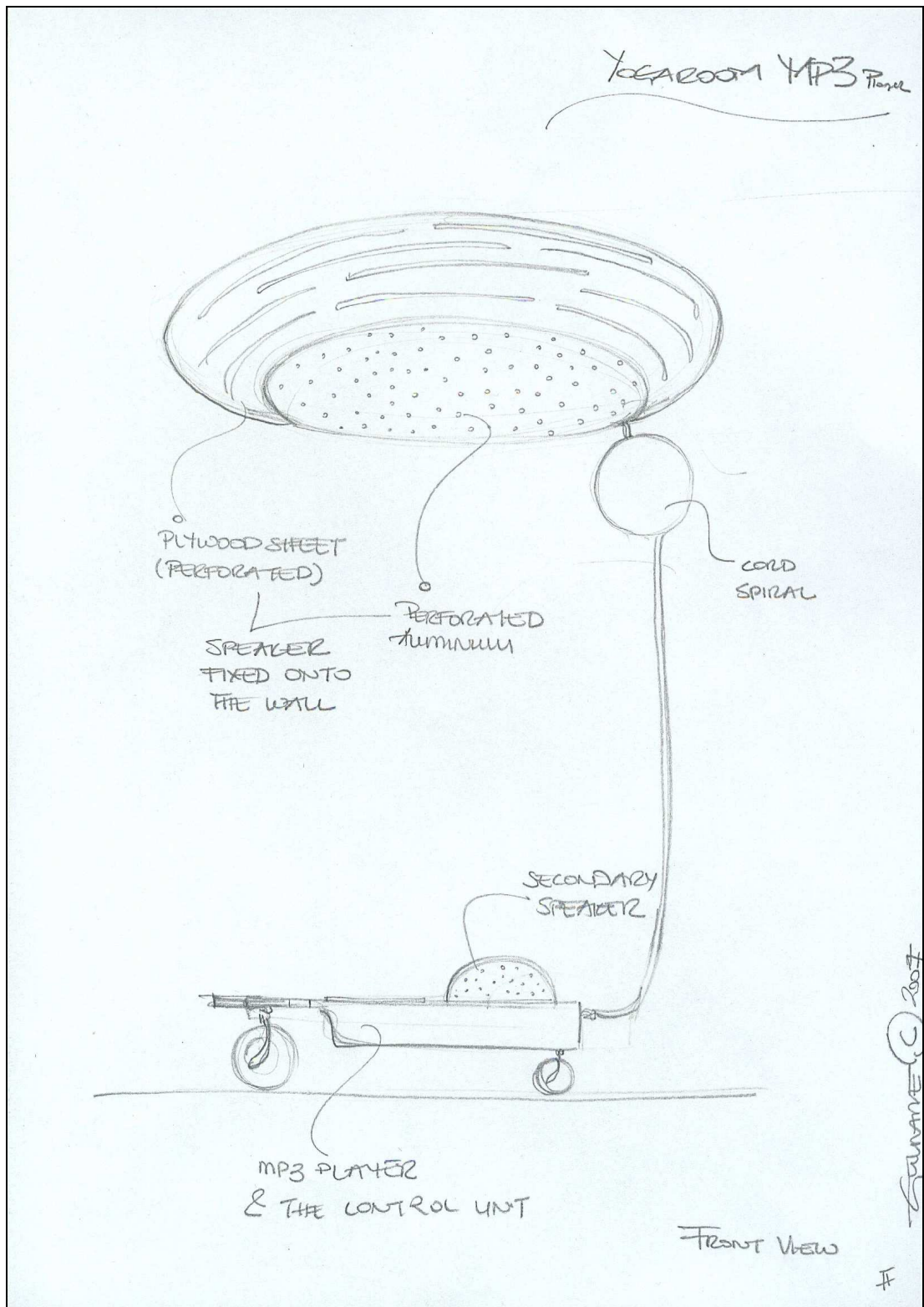


Figure E.16: GT fantasy system (b)

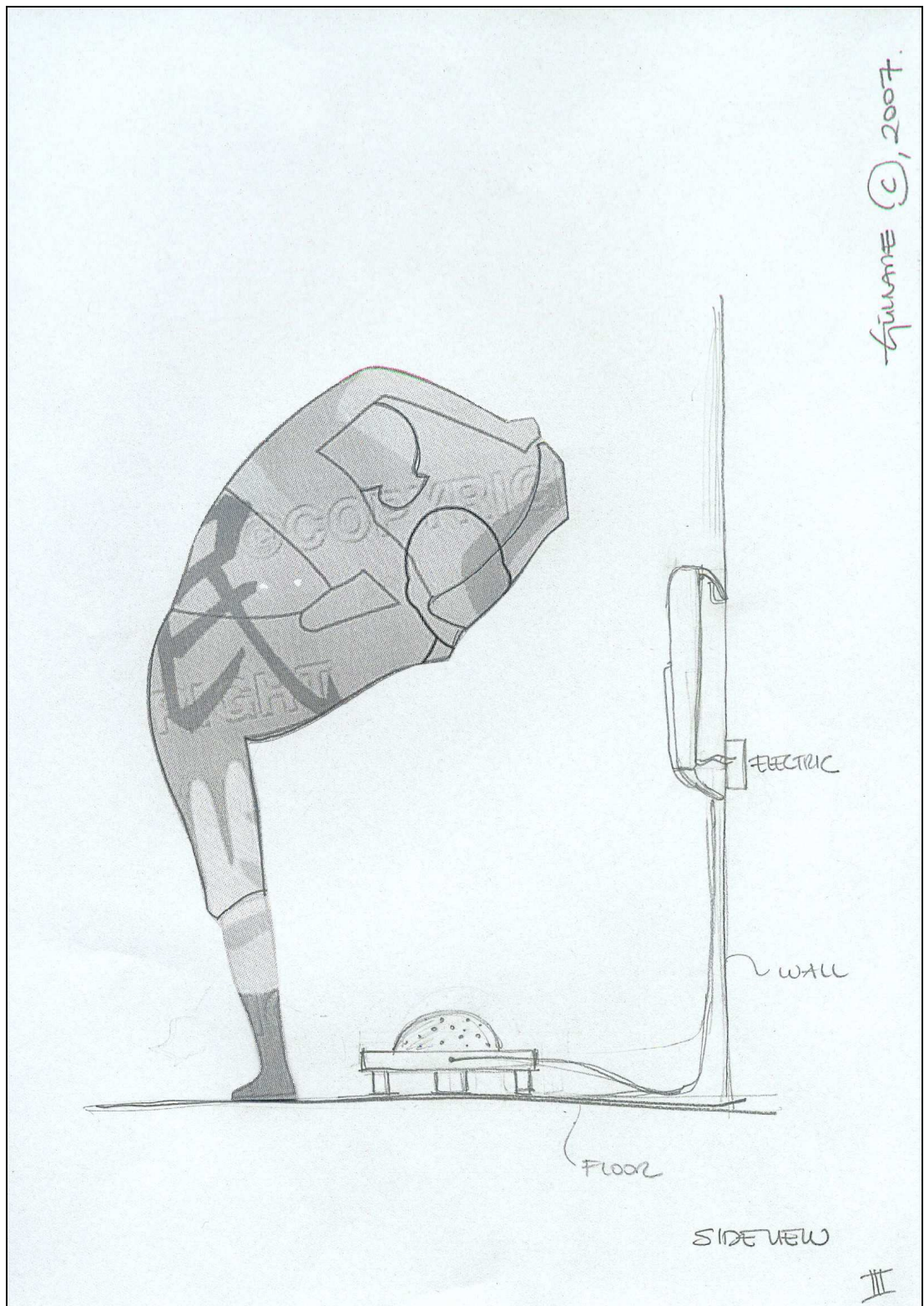


Figure E.17: GT fantasy system (c)

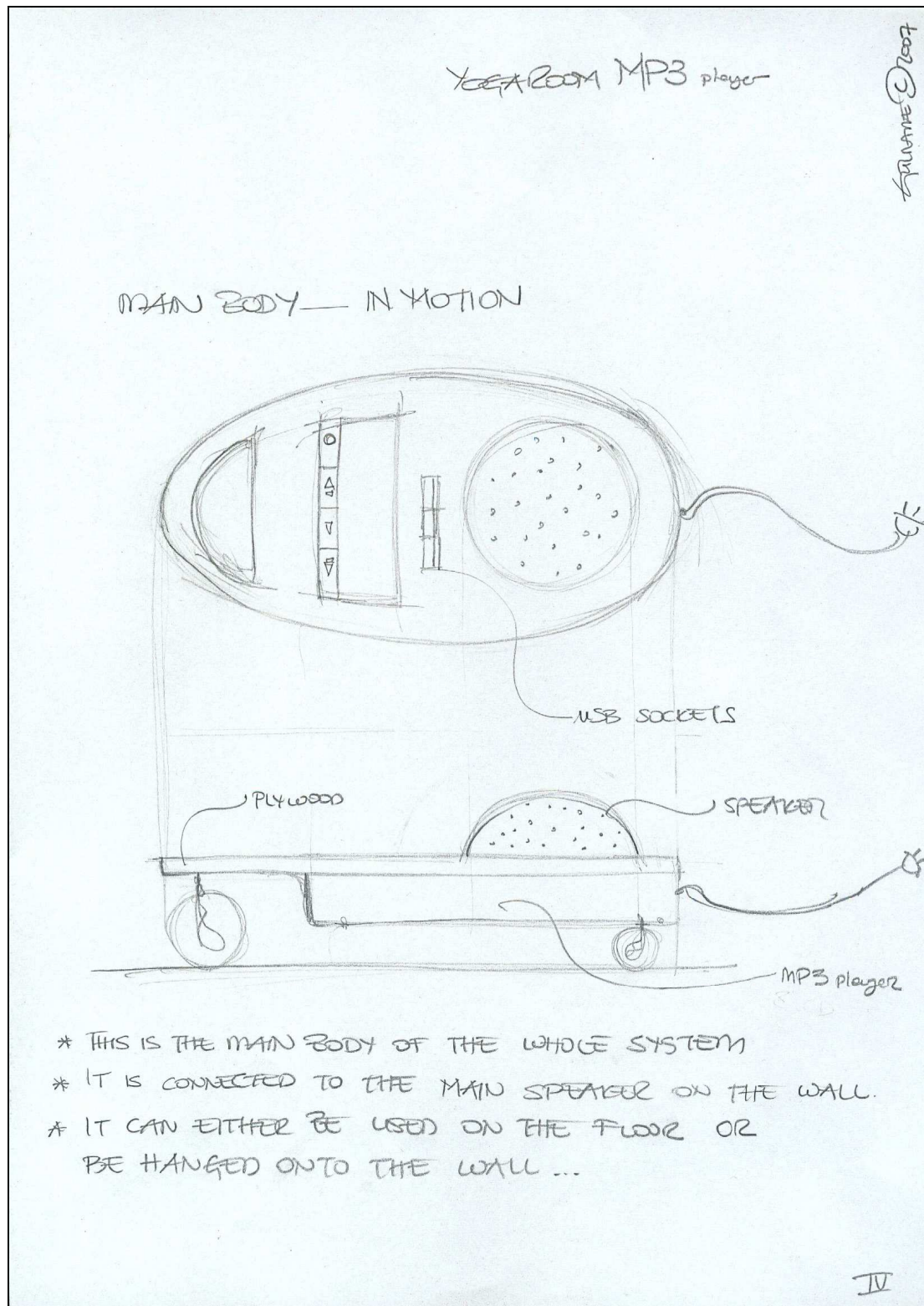


Figure E.18: GT fantasy system (d)

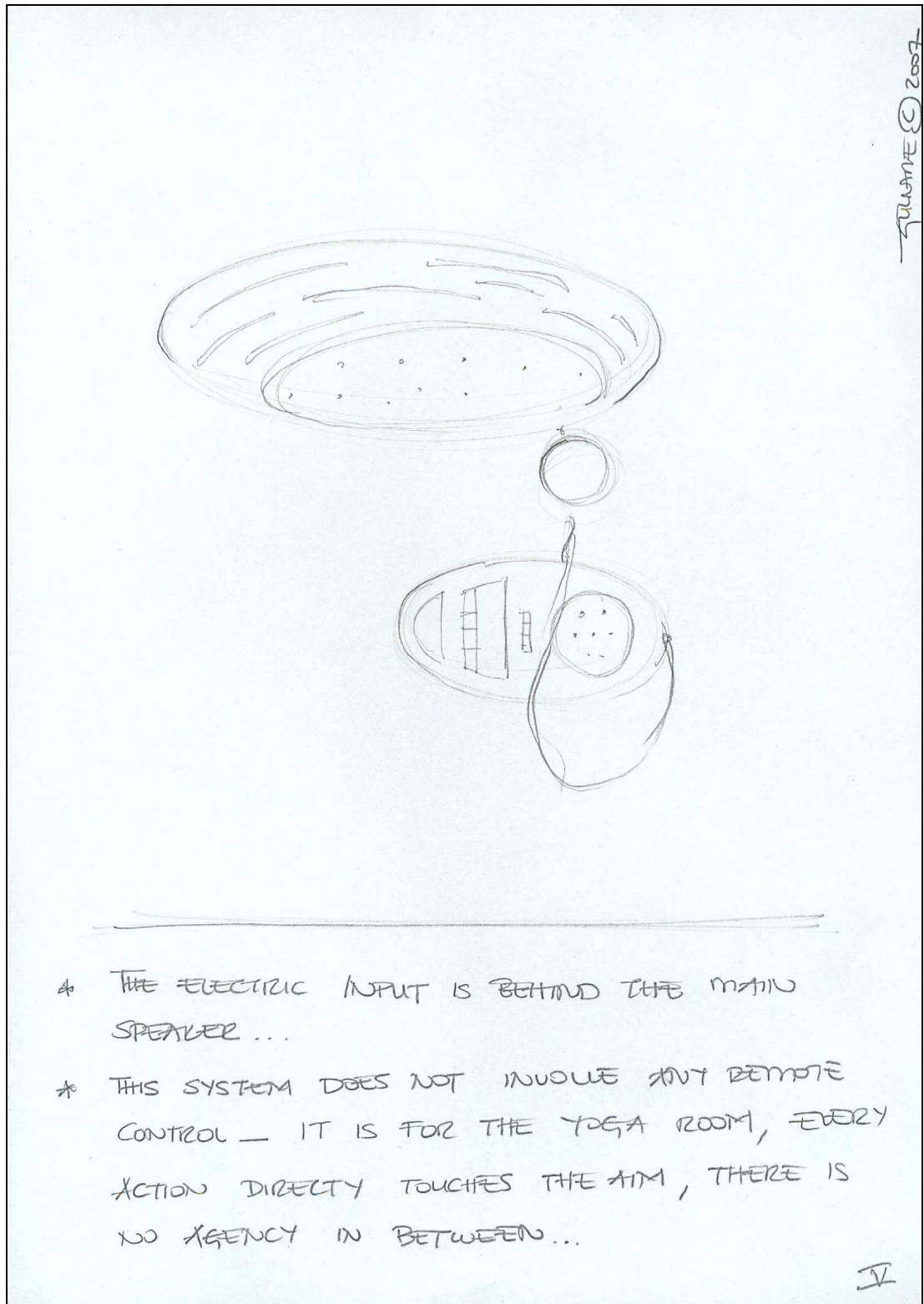


Figure E.19: GT fantasy system (e)

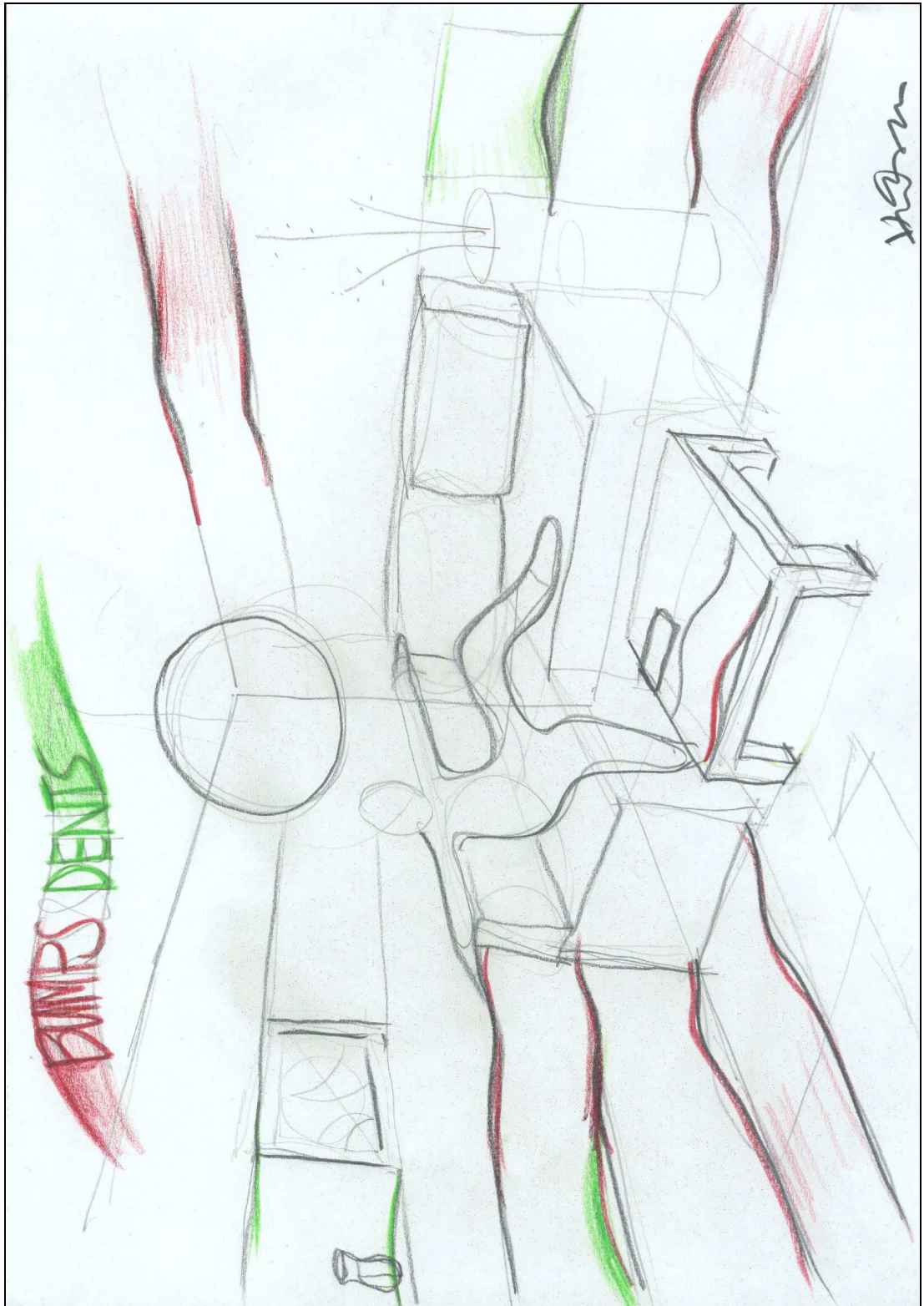


Figure E.20: HB fantasy system (a)

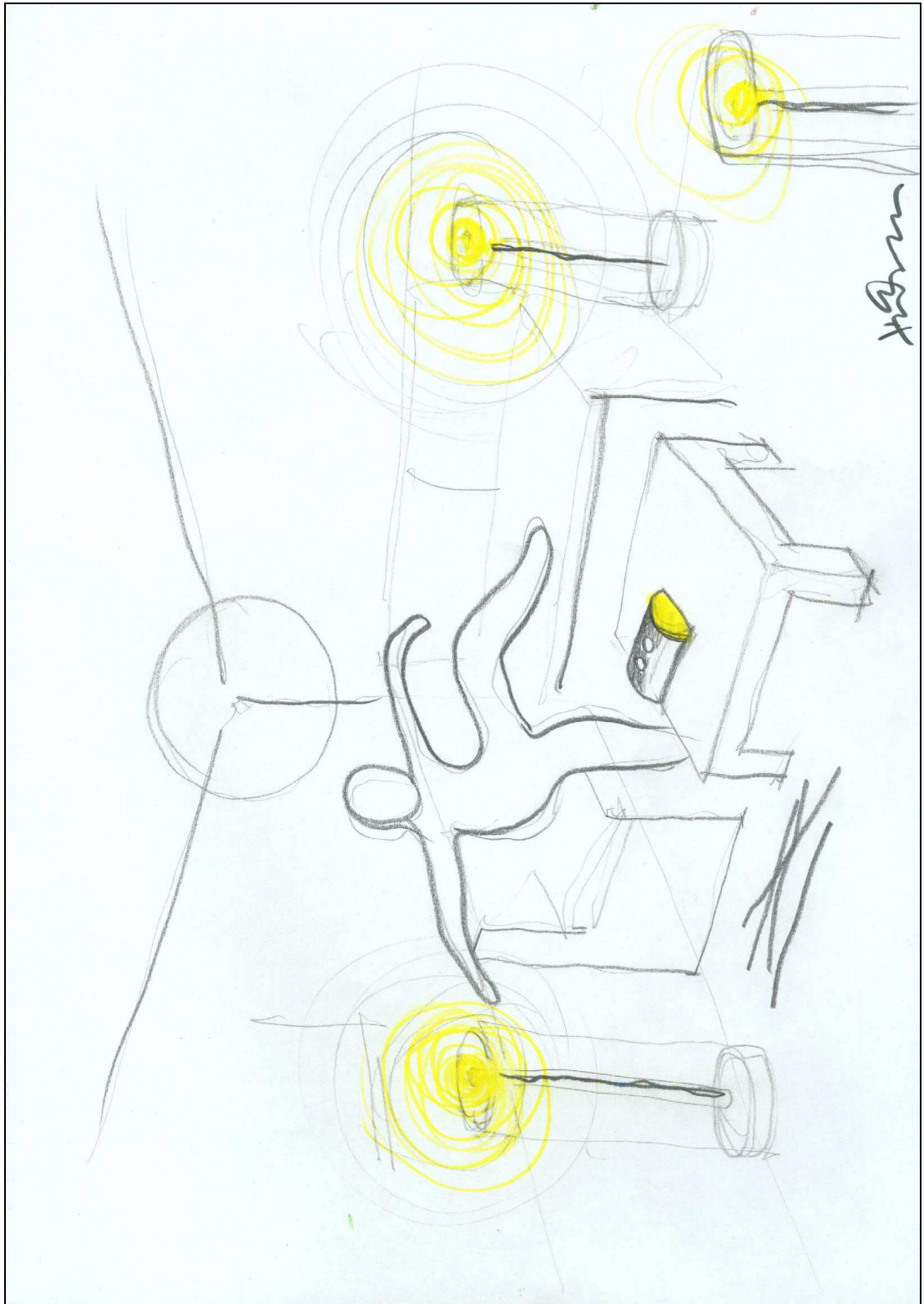


Figure E.21: HB fantasy system (b)

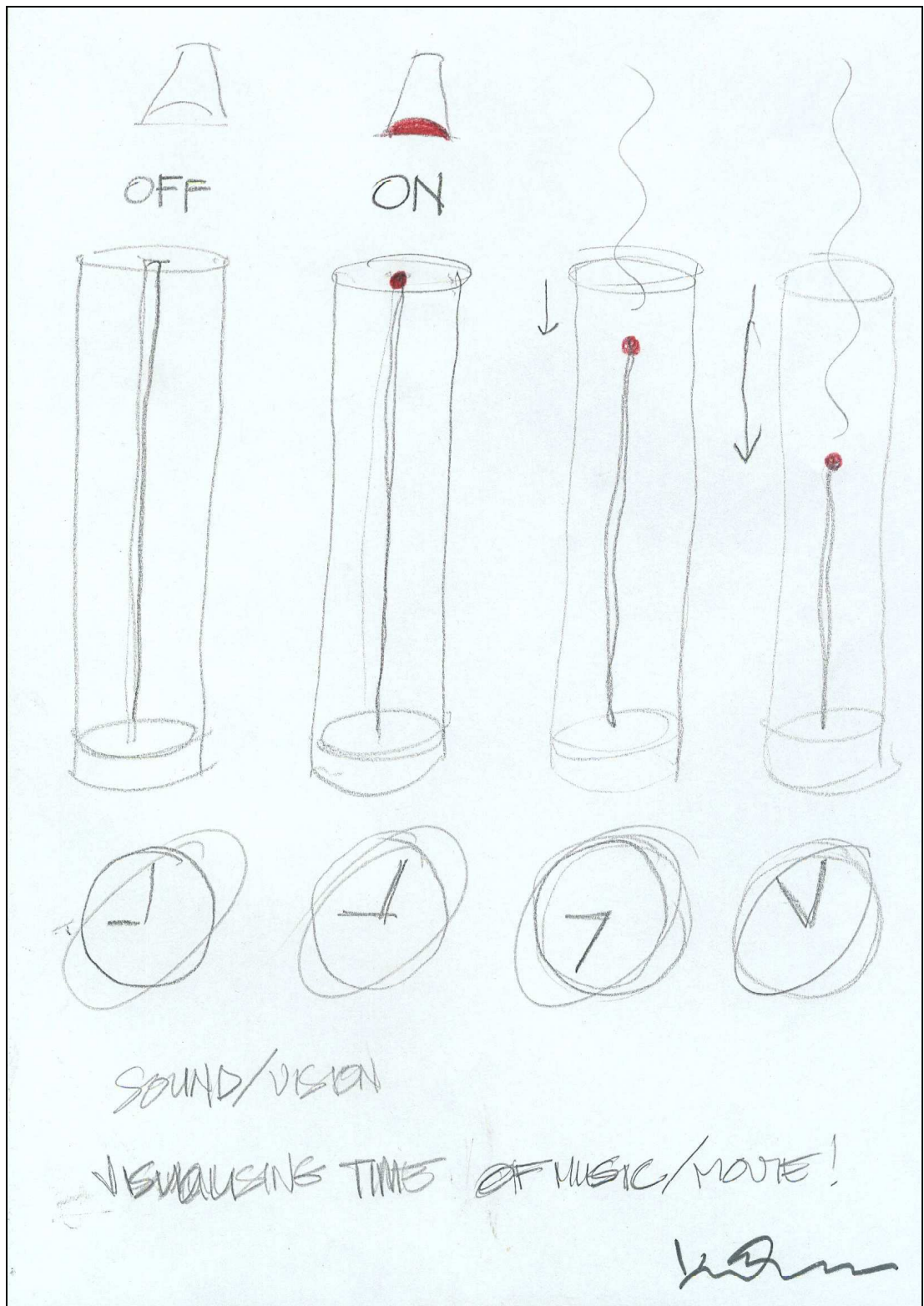


Figure E.22: HB fantasy system (c)

Appendix F: Participant Interview Transcripts

Transcripts of interviews with participants are presented below in historical order.

Interview transcript for Gülname Turan and Ahmet Zeki Turan

Tuesday, 3 April 2007 (2:32 pm)

Both Gülname and Ahmet were interviewed in the same session.

“M” is Mithat, “G” is Gülname, and “A” is Ahmet.

M: Ok, I am sitting here with Gülname and Ahmet. It's 2:32 on Tuesday the third of April, and we will be talking about their sketches that they have done for me for my thesis project. Who goes first?

G: Ladies...

M: Ladies first.

A: Ladies first, yes

[all three laugh]

G: Do you want me to tell it freely or will you ask questions or...?

M: Why don't you start by telling me freely what you think are the important points and then if I have any questions I will ask questions.

G: Ok. First when I read the brief I thought that it was not a hard task, but then I started to think of it. It was not an easy one because it was non-portable. Because when I thought of something non-portable then I thought it must be fixed, but in fact it isn't. Of course it for example the hi-fi sets are not portable but they are not fixed. I needed... I just thought that I would put it on the wall or it would be something built in like a built in furniture...

M: Or like “*ankastre*” (flush-mounted) ...?

G: Yeah like “*ankastre*” something, yeah. And then since it should be something unportable then I thought about the place... in which room... I just thought that it was for my house and in which room would I need something like that? And I thought that in an empty room I will like to have something, if I would buy a non-portable or design a non-portable fantasy set, fantasy music set. And then you know I just try to exercise yoga and that's one of the longest time that I not ... I actively listen to music. [phone rings] Sorry. My mom.

[edit]

So, I think that when it is something, when it is, eh, a music set on its own, then I thought that it would be better to have it if you are listening to music directly. So, the yoga room.

M: So what you basically have is a, uh, a sort of platter-based ...uh...

G: What based?

M: Platter

G: Platter?

M: Like a plate.

G: Yeah

M: To accompany your yoga activities.

G: Yes

M: Ok

G: So in the ... I also tried to relate it to yoga exercise. This is the speaker which can also be... which is hanged to the wall. You... I thought this is the last thing that I put here, ok?

M: Ok

G: I did not think of its electric supply and so on. But you can put this on the wall. You hang it onto hooks here, and eh this is the main speaker. But what is different with this set it that eh you have some... this platter you can't... you bring it to your... you bring it near you and control it with your hands. You don't ... you directly control the mp3 player, you don't have the remote control here. Because it's related to the yoga activity. Direct... You can... ah... m... I think I tried to... the system does not involve any remote control. It is for the yoga room.

M: Uh-huh

G: Every action directly touches the aim.

M: And that...

G: There's no agency in between.

M: And that, and that comes directly from a yoga philosophy?

G: Yeah.

M: Ok.

G: And while moving this around, I though I would not like... The cord is one of the main things that is a problem in my life ... the electric cord.... Is it called cord, or...?

M: Cord or cable

G: Yeah, cables. So, and what I like a lot about the vacuum cleaners are that they collect it back, and so here I just thought of an element here which is, which will be... This is all crystallized, you know? This is not compact. All the parts are separate, detached, hmmm? And this collects the cable in,

M: Ok

G: and out. And also if you want you can put this back on the wall; you can hang it on the wall.

M: Ok

G: Have the whole system on the wall. And with this, which I thought that since it is a part of the set,

M: Uh-huh

G: It won't go like this, you know?

M: Uh-huh

G: This is the aesthetical part of it, which is like flowing. And [pause]...

M: Actually what this really reminds me of, and I'm wondering if this is what you were thinking of, it reminds me of those Zen sand gardens.

G: Yeah.

M: You know, with the stones?

G: Yeah, yeah.

M: This feature in particular has that stone-like, Zen garden quality.

G: And this also: you can close this speaker, this is the main speaker, and if you want to feel this platter...

M: Uh-huh

G: ...there's also secondary speaker on this, which you can only just turn on this on.

M: Ok

G: I don't know if it is technically possible or not, but will...

M: But these are not the same size though, are they?

G: No

M: Ok

G: This is something...

M: ...larger.

G: Yes. Maybe I can put some measurements in it if you like.

M: I think, I think this... this gives us a good idea of the context.

G: Yes.

M: Well... that's really cool.

G: [laughs]

M: Uh... Ok, I'm going to point out something else I was wondering if you were aware of. This kind of has a vacuum cleaner like quality... you mentioned that the... this pickup...

G: Uh-huh

M: ...thing from the vacuum cleaner? This also has a kind of vacuum cleaner like form to it. I don't know if you were...

G: Really?

M: Did you feel that way?

G: No...

M: Ok

G: No, because it's not that bulky.

M: It's certainly not that bulky.

G: Maybe just because it's on the floor and low and with...

M: ...with wheels?

G: Yeah, but...

M: So I suppose we could say it's...

G: And also, I also imagined the materials, and this is plywood, and then something maybe plastic under it. And so the material is so different that it...

M: Why plywood? I think I know the reason, but I want to ask you.

G: Because it is wood [laughs]. It's a natural.

M: Wood and not... ok. Since it's a natural, natural...

G: Yeah. And with no veneer and all natural stuff.

M: Just naked wood.

G: Yeah, naked wood.

M: Ok. Super.

G: I thought that this could be somehow matched, would match with a light around. But then I remembered the brief and did not put it.

M: Which part of the brief did that conflict with?

G: As far as I can remember...

A: The functions should be related with...

G: The functions should be... it should be with the music...

M: At least indirectly related to...

G: Yeah. I also that that it could change with the rhythm of the music, the light. But then it did not fit with yoga, you know?

M: Ok.

G: It seemed a bit more... [pause]

M: Super, superb. Anything else you want to add at this point?

G: No, if you ask me maybe I can...

M: Don't worry, if I have any other questions I'll come back to you. Thank-you. That was Gülname. And now we will turn our attention to Ahmet. Ahmet and Gülname are married. How long have you been married?

G: Two and a half years.

M: Two and a half years?

G: Yeah.

M: And they both work in the same apartment, so this is a... the same department, excuse me. I assume you work in the same apartment as well...

G: [laughs, but only a little]

A: Yeah.

M: Great.

A: So... this is in relation to Gülanme's proposal a little bit, eh, less detailed. In aspects of like materials and some formal and iconic representations. But I think that this is a personal way of working for me, sketching. I... while talking about the subject matter, which the non-portable music reproduction system, maybe I also should talk about the process of creating a proposal about it, on it. So, since I have a... It has not a philosophy like, based on a philosophy like a yoga philosophy or Zen philosophy, it's quite commercial and... [laughs]. But, eh, I can talk about the philosophy of solving problems.

M: Ok.

A: While not putting out restricted problem area, trying just directly to sketch. So you see it's not so ordered in the first phase.

M: Ok

A: Eh... creating and solving problems and trying to come to a proposal.

M: Ok. So if I can paraphrase, the sketches are as much about the process of getting you toward your final solution as they are the final solution.

A: Uh-huh [consents]. Yeah.

M: Now was that an important part of the project for you? The actual process?

A: It is an important part because I, I, I always insist on mentioning that because it is the core thing that brings the solution... the, the, the approach to the project. The approach should be... could bring another type of solution. But this is one way, this happened to be one way, I think. So, and, uh, a little about the subject matters, which is the music production, I ... I... mmm... I thought that it would be, it should be, according to the brief, it should be something non-portable, basically non-portable, originally non-portable, but... eh... something cannot be totally, the idea of that something cannot be totally non-portable and totally portable. So what is the trying to figure out the balance of that.

M: Ok

A: And putting the non-portable idea to the center, to the visible center, but also, eh, carrying, eh, representing today's portable idea or concept into that non-portable room, which is... whichever it is. I think it's... and one important aspect of the, my conceptualization is that the in the brief it says, "the ideal," what is something ideal

for you. It is also problematic, I think what the concept of ideal, because ideal is ideal, but when it comes to the world it is real, not ideal. This is a reality...

M: It's kind of Platonic, isn't it?

A: Yeah, it is real, it is not ideal. So, then the reality has always some problems, which is not ideal. So, but that is the core of the brief, so it should be something ideal. Eh, what could be ideal for my personal perception of that music reproduction? These are conceptual backgrounds of the process and also synchronically, I also think about what this would reproduce? Will it play CD or DVD or would it have a tuner? Would it play MP3? Both things should be I think, it should be thought the relation of ideal and real and the should it play the tuner and the MP3 should be synchronically considered, I think. And it is considered.

Eh.. Although my usual sketching way looks even worse than that area [laughs] I tried to make it a little bit clearer just that we will getting communication soon. Just to communicate, to have the possibility of to communicate.

So, it has a remote unit and I put it on the center, which is in fact relatively non-, relatively a portable unit.

M: Uh-huh

A: And it is a stationary unit. It is something like fixed. And I thought that about that as a system of visual and audio and digital, eh, *birleşme, yani...*

M: Unification.

A: Unification, what could it be. And one important aspect was using the less equipment to produce today's most...

M: ...functionality?

A: ...functional, functionality. That's something ideal for me I think. That means less equipment, less manufacture, less material, less cables, less thing visible.

One important concept in here I think, when you... I tried to bring the interaction to the hands of the user, which is the, this is principle drawings of that, not a final design of course, which can be indicated as the main display and main interface where you put data and get data. I made it portable in a non-portable room.

M: Ok

A: So, everything is in your hands here.

M: So if understand you correctly, what you are talking about is a fairly passive central unit, and basically all the interface to the system is done via a portable handheld unit.

A: Yes, yes it is. It... eh... I have some aspects of it. The remote unit, the stationary unit and the speakers. Remote unit is in connection with direct current and PC with a stand, maybe.

M: Uh-huh.

A: And this owns (?) an idea has a display interface where the music to be played is organized with a touch-screen pen on the side area, something like that. Has no hard disk but sends and receives information to the stationary unit, which has the hard disk here. Works with chargeable batteries, and suitable for one level, one hand use. You can use it in for, one hand. And the stationary unit is in connection with speakers and display unit, which... I think it should also something like DVDs. I don't need any DVD player, another equipment. Eh, display unit ... and with remote unit of course wireless connection, it has amplifier, CD player, DVD player possibly, tuner, and a hard disk for MP3 and etc. It receives and sends information to the remote unit. It works with direct current, and that remote unit is also in connection with the PC, but I didn't write it here I think. While I think it should be... It is indicated as a USB connection here, but I think it should be something like a wireless connection is possible between that thing and that thing. And, eh, a similar idea about the speakers. The speakers may be wireless, but that will bring the problem of power supply for them I think. They should, they would then, they would be either battery supported or then... then they... then would be connected to the... then it's not so logical so I thought that the speakers should be cabled to the stationary unit, but they also like in Gülname's proposal, they should have an equipment where you can adjust the cable length.

M: I noticed on this diagram that you indicated adjustable cable.

G: [at same time] We didn't see each other's drawings.

A: [at same time] Something, I just...

M: And yeah... did you...

G: No.

M: Let me... before this you have...

A: No, no.

M: Is this the first time you are seeing each other's drawings?

G: Yes.

A: Yes, first time. Eh, the portable, speakers, amplifiers, stationary, drrrzht, yes... what is in hand? A little to the... then I go to the, some other ideas about the system. And this is another representation of the system I think, which in the center has that remote thing, the display is in your hands, and I thought that about the stationary unit it should be something like, eh, a multi-, multi-direction thing, where you can put

horizontically and where you can put it to some restricted places vertically, something like this. Because I took away the interaction from it...

M: Uh-huh

A: ...it could be something like a box, a black box.

M: [unintelligible]

A: Nearly a black box I can say, where of course you go and put the CD or the DVD. At least in this, according to that stage.

M: So, ok, one thing I'm going to ask you then:

A: Uh-huh

M: In terms of let's say the, er, I mean you indicated that this central unit, it's basically been, the interaction has been reduced to zero except for basically exchanging discs.

A: Maybe it, I think maybe to zero, but it might change to the, in the process.

M: Have you given much thought to... you mentioned... as far as its impact on aesthetics goes, or impact on functionality, that it should be able to orient itself in a number of positions,

A: [consents]

M: ...and you said that it could be a black box, which sort of gets at aesthetics. Now aesthetically what are you thinking of? Should it... are you seeing this as something that should may be disappear into the space that it's in, or are you thinking that it should be something of a feature in the space that it's in, or something in between?

A: It's a hard question I think, because it's a matter of choice. It could be designed something like a modem or something like that, a box, it is a stationary unit, which can also be close to a closet, a closed place. It can also be designed as a something iconic.

M: What's your preference... I mean if, for your listening room or wherever you, wherever you are thinking of installing it?

A: My preference is that. I would try to create a visual language on it that has also the quality of presenting itself along... in open space, and if it is needed there it can also be close to the closed space, but the criterion should be for me is the positions it's get. It should be vertical, it should be horizontal, it should have certain places where the cables come, or it should have certain places where the receiver is, about the remote control, it should have certain... *kapak*...

M: cover

A: ...cover for the CD, you put the CD; there are some practical feature that you consider and solve about that. And that practical virtues may bring, can bring, the, it's own aesthetic quality, I think, which is...

M: You're getting at that in this diagram.

A: Yeah, this is a, this could be an example of it. You, if you have that, if you can solve it in that direction, then it is also a, it is a black box, yes, it is not an interface, but it's also a feature of the space.

M: Uh-huh

A: I think.

[pause]

M: Ok

A: I don't want.. it's a... it's a matter of choice I think. You can force the user to hide it, or to show it, but I don't... I prefer to be neutral about that. Show it or hide it. But if you show it, it is something to be showed.

M: It's something... so you prefer it to be something that can be shown...

A: ...can be shown...

M: ...but not necessarily.

A: ...not necessary to show.

M: Ok. Now are these loudspeaker ideas?

A: Yeah, some ideas about loudspeakers.

M: Ok. Anything in particular that you want to say about these?

A: Uh...

M: I see you are trying to create some kind of language...

A: Yeah...

M: Here you are working with circles primarily...

A: In relation with the station idea I produced before, what is... I don't really have that time to research about the technology.

M: Uh-huh

A: So if I had time, because... especially on the speakers, I would search the technology and the regulations about the lengths, how should be, how long it should, how deep it should be, how long it should be, what's the tweeter size, something like that. I don't know that technical aspects now. So it's, it's ideal. [laughs]

M: Ok, ok, ideal is a good word in this context. Ok, good. Anything...

A: I don't have any special offer, proposal about the remote control system, but...

M: But you did mention one requirement is that it be usable by one hand.

A: One hand, yes. It should be used by one hand. It would be very nice if it also controlled the TV...

M: Uh-huh

A: ...also, I think, TV unit. So, I have one thing which is ideal [laughs] I can have several functions.

M: Super. Super. Two fairly different... I can see two fairly different ways of solving the same problem. You've given me a lot to think about.

[End of recording]

Interview transcript for Hümanur Bağlı

Tuesday, 3 April 2007 (4:33 pm)

"H" is Hümanur, "M" is Mithat.

M: I am sitting here with Hümanur Bağlı on a sunny afternoon, 4:33 in the afternoon on the third of April, and we're going to talk about her sketches for my thesis project. That's ok with you, right, if I record it?

H: Yes, of course.

M: Ok. Alright. Lay it on me.

H: [laughs]

M: Er, what I would like to do is just maybe, uh, have you talk me through your ideas, your sketches and your ideas.

H: Mmm.

M: And then if I have any questions as we're going along I'll ask them, and then afterwards if I have any questions I'll ask them too.

H: Uh-huh. So you want me to explain my projects.

M: Just your ideas, yeah. And in English if possible because that will make...

H: Yeah, I was going to ask...

M: ...transcribing a lot easier.

H: Ok. I'll try my best. [laughs] Ok, it's... when I saw that... when you said it was going to be installed in the space in the house, so I automatically draw a space, an interior, and then... and I started to think in terms of the special qualities, not in the sense of objects, because it was going to be installed in the space, in the interior. So maybe I can... I thought that, er... puh...it's hard to explain... er... [pause]

M: Can you describe it in Turkish? Or is it just hard to explain in any language?

H: But if I make it in Turkish, then it will be hard for you?

M: That's my problem.

H: Ok. *Ben de kafamı toplamayı çalışıyorum şimdi [unintelligible] İki tane alternatif var...* (I am trying to pull it together now... [] There are two alternatives...) There are two alternatives. And there was another one that I didn't draw. Er, I wanted in this one, this Bumps and Dents one, I wanted to, I wanted the system to be part of the space itself. So I just... I wanted to be... *dönüştürmek?*..

M: transform

H: ...transform the space. So, uh, because sound makes an, maybe it's so personal but I feel that it makes an effect on the air or the atmosphere, and it comes forth and back. So I wanted to represent the sound itself by the shapes in the space. So I chose the terms like "Bumps and Dents." [pause as she checks an SMS message and turns off ringer] That's why I chose those keywords and I tried to represent them on space. Uh, there is no specific location. You can choose wherever you want. Uh, because in surround systems, you can place the headphones... what do you call it?... headphones?...

M: Speakers?

H: ... speakers wherever you want. So, I didn't ... especially... of course there are some specific mathematically calculated places, but I don't know where they are. [laughs] So I just put them randomly. So I just wanted to represent, to show visually how it will be very broadly look like.

M: Uh-huh

H: I think that's all. These are the sound effects themselves. That's all. There's nothing.

M: Ok. What kind of control interface, I mean how do you...

H: [laughs]

M: Some kind... some kind of a remote control

H: Yes.

M: Handheld unit?

H: Yes. But, as you see the figure is very happy with it. So he doesn't... he will be happy with the existing... I think he will not try to change everything, so... I didn't show the TV because I think the music is highly related with sound, not vision.

M: A quick question: you know you said that, uh, you know, with a surround sound system you can essentially place the speakers anywhere, however there is probably a mathematically precise place, blah blah blah blah blah?

H: Yes.

M: Uh, am I interpreting your comment correctly or your comments correctly if I say for you the way the system sort of integrates with the space...

H: Yes.

M: ...is at least as important if not more important than the absolute sound quality?

H: Uh...

M: In other words, what's the relationship in terms of prioritization between, uh, what's perfect from an acoustic engineering point of view and this what I see as being something that's highly integrated into the, into the space?

H: Actually what I wanted to so was to visualize sound, that's all, not the engineering part. And not visualizing separately things. Separate sound sources.

M: My question then is: is that sense of visualizing sound I terms of... and that comes across very clearly in the sketch... in order to accomplish that, if you have to accept some compromise in the actual sound engineering or audio engineering, for you is that an acceptable tradeoff?

H: I don't understand.

M: Ah, *Türkçe sorabilecek miyim? Şimdi burada...* (Am I going to be able to ask this in Turkish? Now here...)

H: *Yani, engineeringle olan, yapılacak şeyler uyacak...?* (You mean, will the engineering things that must be done fit with...?)

M: *Yani şey... şimdi, şey açısından akustiği açısından, şeyi görselleştirmek, sesi bu şekilde görselleştirmek ve bu kadar çevreye entegre edilmesine aykırı olursa...* (I mean, now... from the point of view of... to visualize... if visualizing the sound this way and integrating into the environment this much runs contrary to acoustics...)

H: *Uh-huh, "...değiştirir misin?"* (Uh-huh, "...will you change it?")

M: *Ah, yani, senin kadar... senin için o çok önemli mi... yani, son derece ses kalitesi?* (Ah, you know, as much as you... for you, is it very important... I mean, the last word in sound quality?)

H: No, that's not that important.

M: Ok

H: That is not my main concern. And I wanted them to...

M: What is your main concern?

H: My main concern is I wanted to... industrial design is very related... and that is the part that I don't like... we are making very separate objects like objects, objects, objects, and we are throwing them into the air and we are... the environment in full of objects. And I hate it, actually. And when it comes to sound, and when it comes to the atmosphere, created by sound, then I am not happy with the speakers, one by one. I want them to be generated from the space itself.

M: Ok

H: Because it's a part of the space, much more than any object. So that's why. And I want them... I want people to perceive... not to perceive them directly from the space, but just sense the sound sources, because sound... as if sound changes this... geometry.

M: Ok. So, are these lines here meant to indicate sound or are they meant to indicate actual objects?

H: Indicate sound, but it's... it's... it's an architectural touch actually. You have to change the space itself. If it's a straight wall then you can... it's hard to make it...

M: Ok. It has a little bit of a bump or a dent?

H: [laughs] It should be installed maybe when the building was initially...

M: Ok.

H: Yes.

M: I think I got it.

H: [laughs] That's the whole point. You can make it anywhere you like. It doesn't move. Maybe you can sense that it's changing its bump and dent-ship... no... when it's bump it is bump, when it is dent it's dent. Maybe tweeters and you know [laughs] changing, I don't know. Maybe small parts, bigger parts, bigger bumps maybe, resemble the ... *ne denir ona büyük olana*... what do you call that... *işte*...

M: The, the subwoofer.

H: The subwoofer maybe, yes. The subwoofer suits very well to the floor, I don't know.

M: Ok.

H: These are mainly tweeters. And this is my house, by the way.

M: Literally, is this...?

H: Yeah. [laughs]

M: Is this how...

H: This is my corner.

M: ... you have your space laid out?

H: [laughs]

M: Excellent. Is this a light?

H: Yes. [laughs] Another ideas was that, that I didn't draw, was also the similar one. I want the existing objects that we already have to make sound. For example the frames itself, the cup...

M: ...cups...

H: ...itself, they will generate sounds...

M: So again it's part of this idea of sort of, uh, uninvasive or even disappearing...

H: Yeah.

M: ...disappearing...

H: Not disappearing, but, eh, not surprising, but maybe you should investigate where this sound is coming from. It's like a puzzle...

M: Uh-huh, uh-huh.

H: ...or, you should try to find... Hmm.. in normal surround systems also, for example in some movies like sound is coming from here and you directly turn your head and try to see where the sound is coming from. So it will be great if it's possible when you turn your head to see a little bump there and ... [giggles]

M: ...discover...

H: Yeah, discover. That's the term, uh-huh.

M: Discover rather than have it be imposed...

H: Uh-huh.

M: ...maybe.

H: So you can change the places of the subwoofers and all existing points, so it suits well with the existing objects like I can change the cup here and make it farther. I have a surround system and, for example, I couldn't find a place here because there is the couch, so I sometimes put it here, and I don't have the *ayak*...

M: ...stand...

H: ...stand, and I put it between these and when I lay down, a strange sound coming from here and, it's funny [laughs] I tried to change the place but I cannot. So it gave me the idea, I think, the existing experience that I have.

M: Cool.

H: Yeah. I think that's all for this.

M: Ok. Ah, and you have another idea as well?

H: Yeah, but I am not too happy with it.

M: So this one here...

H: This is my favorite.

M: The "Bumps and Dents" is your preferred...

H: Yeah.

M: Ok

H: It's the one that I prefer. This is the, idea was to consume, visualizing the time of music.

M: Mmmm.

H: it is like, *şey, nedir o... tütsü* (what's it called... incense)?

M: Incense.

H: Incense. There are some spare incense. You put them inside some stands, and when you start the music or move, then it start to consume itself, and it gives a smell.

M: Uh-huh.

H: Eh, and when I see that I am in the middle of the movie, I will visualize the time that I spent with music or movie and... the enjoyable time.

M: Now, so these are just general sort of... em, how can I put this?... Ah, these don't necessarily correlate to a particular piece of music...

H: No, no.

M: ...it's just generally...

H: Yeah, it's Just generally, yes.

M: So, like every 20 hours, I...

H: It's like ticking time but in a more organic way.

M: Ok.

H: I will just visualize, and when it's finished maybe it's time to go to bed, or I will change and I will have some time more with the music.

M: Er... sort of give you a...

H: I will say, "I will consume all of them tonight, I will listen to my music." I will just count...

M: So, what's the relationship between this and, say, a ritual?

H: Yeah, it's... it's...

M: Underscoring sort of a ritual kind of...?

H: Yeah, I think so. I didn't think about it, but it's... it's my idea. It's also has a parallel point with the... this idea of atmosphere...

M: Uh-huh.

H: ...created with the music.

M: In this case, ah, it's... and you said that these are actually smell generating.

H: Yes, these are.

M: But in this case it's creating both sound and literally, literal atmosphere.

H: [laughs] Yeah.

M: Do you have a... a sort of ritual with music, with listening to music?

H: Eh...

M: Ah, I mean is there kind of a pattern or a particular way that you listen... you know, "In the evening before I go to bed," or something? You know, do you have...

H: I like to listen to music when I am designing, for example, when I am working with visual things on the... For example I tried to write a report last night, it was a very serious and very boring one, and I couldn't listen music with it, and I felt bad about it because the most, eh, beautiful thing for me, as a designer I can listen music when I am doing my job. [laughs] It's the best part. So I like to listen music when I am designing, when I am working with...

M: Uh-huh

H: ...visual things. And it's hard to sit like this and listen music, even though I draw it.

M: You rarely actually just sit down to listen to music?

H: Yeah. If I listen to something that I can... *katılmak neydi* (what was "*katılmak*")? Join...

M: Join in?

H: Join in, eh... maybe I can just sit and sing together with that music.

M: But again, this seems to also express a certain amount of... well here, I mean the features... this has the strong features of the... I'm guessing these are speakers, right?

H: Yes.

M: Ah, this sort of incense-driven loudspeaker. But the rest of the technology is pretty much, I mean apart from the remote control, the rest of the technology is pretty much, ah, invisible.

H: Hmmm.

M: Is that a conscious choice?

H: I just wanted to make a color match.

M: That's what I'm saying. We don't see in the... in both of these sketches, we don't see where the user would, say, load their CD collection or load their CD or load their

MP3 collection. I mean that part of the technology picture is missing from both of these, suggesting to me that there is sort of a preference for that part of the game to be invisible.

H: Yes, yes. That is exactly the case.

M: In both cases you are underscoring the, ah, actual sound generation...

H: ...sound generation systems...

M: ...rather than the sort of front end of it.

H: Hmm, hmm.

M: I mean you're emphasizing in both of these that the... very end product, which is the generation of waves, rather than sort of what driving the whole process.

H: Uh-huh. Uh-huh. Yes, that's true. Uh-huh.

M: And I was wondering if that was a conscious choice or whether, ah...?

H: I don't know. I automatically started drawing like this, because I first draw the space, I don't know if it's correct, I don't know, and then I tried to place the elements and how would I want...

M: ...them to be...

H: ...them to be, yes.

M: Cool. Alright.

H: [giggles]

M: neat.

H: Yeah, this is like [unintelligible]; it doesn't show anything. [pause, sound of pages turning] This is much better. You can [unintelligible].

M: Do these burn from the top down or from the bottom up?

H: Top down [laughs]

M: Because it could... if it went from the bottom up, it would almost look like a fuse.

H: Uh-huh [laughs]

M: Ok.

H: No... I want them to be finished, to be consumed and to be fade out, and tell you the time is passing.

M: Uh-huh

H: That's the idea.

M: Cool. That's actually a really cool idea, very cool idea.

H: [laughs] Thank-you.

M: Anything else you want to add at this point?

H: Mmmmm... maybe you can put some objects...

M: ...into some of the dents?

H: Yeah. It can be a part of the interior design that you can use for other purposes. You can use straight parts to put your objects and dented part you can start. And you can create your interior design by using those elements too.

M: That's, that's really cool.

H: [laughs] Thank-you.

M: Ah, ok, so let me throw out a very general question at you. Do you know what the, what the research subject is?

H: I forgot.

M: You forgot?

H: Yes.

M: I haven't told you.

H: Uh-huh.

M: Ok... it will stay a secret then. I'll keep it a secret a little bit longer.

H: Ok.

M: In fact, let's keep it a secret until after the repertory grid.

H: Ok

M: Then I'll let you know.

H: Uh-huh, uh-huh. Ok.

M: If you already knew, then I was going to ask you some questions, but...

H: Hmmm...

M: Alright.

H: I don't know.... If it's not written on the material then,

M: No. Ok. I think that's going to do it for now. If I have any other questions, I'll send you email.

H: Ok. Can you use [gives email address]?

M: Yeah.

H: I can hardly look at...

M: Is it just [repeats email address]?

H: Uh-huh.

M: Ok, no problem. Thank-you.

H: Is it all done?

M: I think so. If there's anything more you want to say, anything more you want to add at this point...

H: The only problem if you were planning to give them to people, maybe they might not understand these very abstract things. Will you give them an explanation or do you want me to write...

M: I... I guess as required based on the transcripts from what we say here, if I have to make any sort of specific references to anything, I will... I mean I'll add that text myself.

H: Ok.

M: Ok? Unless you would prefer to add the text yourself, I can add the text myself.

H: Uh-huh, uh-huh. So you can... *yani benden yazmamı isteyebilirsiniz* (you may want me to write something).

M: *Yok, şey, yani, text tercih senin. Sen yazmak istiyorsan, tabi ki, büyük bir sevinçle, sevgiyle...* (No, you know, the choice regarding text is yours. If you want to write, ok course with great joy, love...)

H: [laughs]

M: ...şey, uh... *kabul ederim, ama gerek yok.* (...well, uh... I'll accept it, but there's no need.)

H: *Yazmak istemiyorum, böyle bırakmak istiyorum.* (I don't want to write anything; I want to leave it like this.)

M: *Tamam, tamam, sorun değil.* (Fine, fine, no problem.) Ok?

H: Ok.

M: Alright.

H: I didn't know that it was going to be too quick.

M: Well, I... I am... 20 minutes, not bad...

H: [laughs]

M: I am sort of... let me take care of this first...

[End of recording]

Interview transcript for Cem Alppay

Thursday, 5 April 2007 (approx. 10:30 am)

“C” is Cem, “M” is Mithat.

M: I am sitting here with Cem Alppay on the fifth of April 2007, and we are going to talk about his sketches he has done for my masters project, masters research.

C: Ok.

M: Ah, let's see. Why don't I first ask you, uh, basically what's behind the design, how you came up with what you have here, and what you find important in the design.

C: Ah, when the subject comes to high-fidelity music equipment, I cannot be... I think I may not be very objective so, because I have some hobby abouts this equipment, I approach these equipment. So I prefer that these equipments be maximum quality, maximum... ah... *sadet, şey* (fidelity, you know)...

M: ...fidelity...

C: yes, ah, maximum fidelity, not be too, uh, *süslü* (decorative)...

M: ...decorative...

C: yes, too, ah, decorative. So that... and so they have a visual identity of high technology. They must look like some high technologic equipments. So I have preferred to designed, to make a sketch of a product that's high technological identity. That's [unintelligible].

M: So the expression of some... I mean, you want something to express “high-technology.”

C: Yes.

M: Ok.

C: I would like to express the high-technology.

M: So in terms of your sketch, I am looking at your final sketch right now...

C: Yes, ok.

M: ...uh, can you draw attention to any specific elements...

C: Yes...

M: ...or anything in general that you think...

C: Ok, uh...

M: What contributes to this sense of “high-tech-nests”?

C: Uh... It’s very thin, thin design. It’s not so thick. It’s thickness is fairly limited. For example some 5 centimeters the total thickness of the system, and you can attach to the wall. But, eh, it also has an long-play system, a turntable system. The heart of the system is still the turntable...

M: ...turntable...

C: ...turntable, yes. In the heart of the system there is a turntable, but it is a little hidden.

M: Uh-huh.

C: So there is a cover here, and when you press your hands there is a sensor sense your hands, and the cover slides to the top and, “zzzzt” it open and you can place your long-play vertically into the turntable, and when you touch the cover, it’s automatically closes the button and it begins to play. It’s not looks like a conventional turntable, but it’s still a turntable, it is still the heart of the system, because many high-fidelity experts still say that the turntable is the “real high-fidelity” sound source. Eh, many of them still doesn’t accept compact disc for example, but by reason economic, economies and technological reasons the CD has passed the long play. And by means of practicality, because it is not so practical to play a long-play.

M: They’re not as portable.

C: Yes, it is not as portable, and to open the cover to take the long play and place it to the turntable, and place the.... *şey, adı neydi onun* (you know, what was it called)...?

M: Stylus or cartridge?

C: Yes, stylus. And the stylus, and the stylus and the cartridge, etcetera, etcetera. So this long play is still the heard of the system, so its dimensions have been the core of the music playing part. Eh, it is bigger than a standard long play, 33 rpm long play.

M: So was that the limiting, uh, factor on the size of the system?

C: Yes, yes.

M: It had to...

C: Yes, yes

M: ...house a long play record. I remember back when, you know, in the pre-CD days, when my interest in high-fidelity equipment first started taking off...

C: Uh-huh

M: There were... I sort of developed a ritual, well, to call it a ritual is maybe a little bit grandiose I mean, but it was almost a ritual of taking the...

C: Yes...

M: ...record out the inner sleeve...

C: ...yes, yes...

M: putting it down, cleaning it...

C: ...yes...

M: ...carefully cleaning the stylus...

C: ...yes...

M: I am wondering if that, that sort of ritual process is an important part of...

C: Yes, of course.

M: ...part of the hobby for you.

C: Sure, yes. Especially the cover.. the cover graphics, the cover designs were something very different when we had long plays. Because when you have the smaller compact disc, you cannot, you may not be so, the cover design may not be so, so detailed.

M: That's another thesis subject altogether, isn't it?

C: Yes.

M: Going... It's a graphic thesis project...

C: Yes.

M: ...but we'll not delve into that.

C: Yes.

M: Uh, ok, let's talk maybe a little bit about the control interface. Or actually, no, let me ask you something about, ah, what you have here is basically a single piece...

C: No it not [unintelligible]...

M: It looks like a single piece.

C: Yes, it looks like a single piece, but, ah, the core of the, the heart of the system is the, is the long play and compact disc together one piece, and you have the amplifier on the top, a small amplifier, and two speakers on left and right. The speakers are placed horizontally and to be attached to the wall. But if you want to enlarge the system you can add some parts. Eh, for example, the tuner, the MP3 player maybe...

M: Ok.

C: ...another power amplifier, another power amplifier so... to amplify the system, to... to make the system...

M: Ok...

C: ...more and more powerful. For example, for the MP3 player you may, eh, you may attach a hard disk or some, or some stick, memory stick for example from the left side... I have not detailed that [laughs] idea, but uh...

M: What about the loudspeakers? Are those... can you move them or are they...

C: Yes.

M: ...pretty much... ok.

C: Oh yes.

M: So you could actually make it...

C: Yes.

M: Once installed it could be... might have the visual... I mean right now what you've drawn is something that has the visual impact of just a single piece.

C: Uh-huh, uh-huh, yes.

M: However, when finally installed it may have...

C: But you can detach... yes...

M: ...have a three, sort of a three piece...

C: But you can detach the speakers, or you can...

M: Ok.

C: ...make the system more separate... make the system more separate.

M: Ok. What about the control interface?

C: The control interface... ah... When I first started to sketch, I... [sounds of rustling paper] I thought it that there would be a cover here, so the cover will be... mmmm. I cannot find it, but... [sounds of rustling paper] There's a cover here and when you for example touch the cover, the cover will "zzzt" and will open, and you...

M: So it's a hinged cover?

C: Yes, yes.

M: It's a cover on a hinge, and it automatically senses...

C: But... yes...

M: ...the cat walking past [unintelligible]...

C: But I have forgotten to apply that idea to the final sketches.

M: Ok.

C: To the final sketches. Em... but the most visible controls are the volume and bass-treble controls, and there's an LCD screen here which has a form parallel to the waves, sound waves, sound wave lines, and some... there is I think four or five basic control, basic sound source buttons: turntable, compact disc, or tuner or like that.

M: So, one of... the thing... so what you are saying is these smooth lines are inspired from the idea of sound waves.

C: Yes...

M: Ok, and this large control on the right would be volume...

C: Yes.

M: ...and the two smaller controls...

C: Yes.

M: ...are bass and treble.

C: Yes.

M: Ok.

C: Yes. And the cover of the turntable, I thought it's can be open using these trays. Eh... these two rails also will go up...

M: Uh-huh.

C: ...two parts, "zzzzt, zzzzt."

M: CD? Does it support CD playing?

C: Yes, it support CD playing. This cover also has...

M: Ok.

C: ...opens. The cover is also a player. The cover of the long play is also player.

M: Ok.

C: I can adds here.

M: Ok.

C: The cover of the turntable is also a CD player.

M: Ok... interesting... these are some... I am looking at...

C: Yes.

M: ...I think, what, some of your initial sketches? And...

C: Yes, initial sketches.

M: ...you were thinking perhaps a stand mounted design?

C: Yes, yes.

M: Uh, what made you move away from the stand mounted idea and toward a wall-mounted?

C: In the first, in the first look it seems very attractive and sexy, but when you can, for example, walk, when you stand up in the room, you can hits this... this is a very basic thing. But for example if you can put a furniture something like that, uh, around that mounting system you can avoids to hit it.

M: Ok, what kind of room... Did you give much thought to what kind of room you would install this in?

C: What kind of room?

M: Yeah. I mean, are you thinking about this in a dedicated listening room..

C: Hmmm...

M: ...or a dedicated media room, or your living room... bedroom?

C: No, I think that the best place is salon, the main room, for watching TV, for watching DVDs, or some listening to music...

M: Uh-huh.

C: It's the single, central room idea, I can, I can...

M: This would be what I guess you would call in Turkish the *misafir odası* (guest room, i.e., special salon used only for guests) or the *salon* (family room)?

C: No, salon, salon. But not in the terms of the conventional Turkish salon, because, for example in my house I don't have a dinner table. I am living single, so I don't [laughs]...

M: You don't have dinner?

C: Yes. [laughs] But for example these days I am looking for some houses to buy. The first thing when I enter the house, I look where I will place my, my hi-fi system, my speakers, because my speakers are very big. British made...

M: I was going to ask you, what is your current system?

C: My current system, I have two speakers, brand of, their brand is British brand, there's a British brand called Cyrus, Cyrus brand. They are one meter tall...

M: Uh-huh.

C: ...and Harman/Kardon amplifier, Linn brand turntable, a Sony tape player—a cassette player, a Marantz compact disc player. And I have recent bought a Onkyo brand home cinema system, and my last step to buy a new plasma TV [laughs], my last step will be.

M: When do you think that might happen?

C: In one month.

M: Oh?

C: Yes, because I will... when I enter a new home, my first thing, where I will place this things. And for example, my mother, my father asks did you place your electronics?

M: In your mind?

C: Yes. [unintelligible] Yes, I say.

M: So, uh, when did you first develop your interest in hi-fi?

C: I first develop, my first, I think at the end of high school, but it maybe 1992. No, after finished high school because my friends has bought some system, I have seen that system. So I saw that there are better equipment to play, using better... it's high fidelity. So I have decided to buy this, to buy this kind of system.

M: What was it that impressed you most about your friend's system?

C: The sound quality first. The sound quality, it was very good. It was not very attractive in the first look. It was very *sade* (plain)?

M: plain

C: Plain... yes. There, for example there were less buttons, less lights [laughs], few buttons for example, but it was looking very robust, very robust and unseen. For example, most people were buying some... *müzik seti nasıl define ederim?* (how can I define "music set"?) compact systems that were very, which were many, many lights, many, many buttons, many, many functions, but for example their sound quality were declining after one year two year. These aspects are impressed me to find the systems.

M: Ok. Actually, I'm going to let you know... Maybe you've already... Some people have already seen based on my seminar presentation what this study is about, and what I'm looking into is some of the gender influences.

C: Uh-huh, uh-huh.

M: Basically, really what I am looking at is the gender gap in music reproduction equipment.

C: Yes.

M: There's a, from what I've seen, a big gender gap. Uh, let me just ask you what you think might be contributing to women not seeming to have as much interest in this kind of hobby. Even not necessarily even as a hobby, as a...

C: As a...

M: ...something to have in the home. I mean, most homes have a TV, and TV use...

C: Women as users, or buyer?

M: Either, either.

C: This is good thing. I think it is not a male thing. It's universal thing, because listen to music in a good sense, in a good quality...

M: Ok, you've been involved in the hobby here for several years.

C: Yes.

M: Do you know any women who are active?

C: No, I have not women [laughs].

M: How many men do you know who are active?

C: Ten people, ten people. For example, two of my friends from the university are in this hobby, are in this hobby.

M: Have you ever talked about it with women, or tried to share your interest?

C: No.

M: Visitors to your home...

C: Yes, yes, yes, but they are not so interested. They are not so interested. Ah they say, "Oh, it feels very good; it feels very clearly; it feels with very high fidelity, but that's ok." [laughs]

M: And that's the extent of their...

C: Yes, that's ok.

M: Ah, anything else you want to tell me either about your design or about the hobby in general?

C: The hobby in general? For example, in the recent years I have witnessed that hobby, eh, for example has been replaced with the home cinema hobby, and when you go to the electronic shops, the most of the equipment you see is home cinema systems. You don't see any integrated stereo amplifiers, you don't see any compact disc players or turntables or high fidelity speakers, but you see audio-visual receivers with five plus one speaker systems or small five plus one speakers, or some players, for example not compact disc players but DVD players. The hobby has been replaced with the home cinema concepts. But, for example, when my compact disc player has some problems last week, I have taken it and gone to the Turkey distributor, and they have said that the hobby is, has begun to increase, to gain importance because many people has bought the home cinema concept for *gösteriş* (ostentation)...

M: For impressing people.

C: Yes, to impress people when they have guests, “Hey look, I have five plus one home cinema system,” but they don’t watch anything.

M: So, uh, do you... how do you plan to integrate, or do you plan to integrate your hi-fi system with your new plasma TV?

C: No, I don’t want to integrate, but in one site I will have my plasma TV with this stands, and in this stand I will have my audio-visual receiver, my DVD player, and my satellite receiver, and on the other side I will have a separate rack system and I will have my hi-fi system [laughs]. That’s the best thing, because in the... because as a product designer I have always believed and I have been taught in the university a thing which does everything, it doesn’t any of them good.

M: Ok.

C: Because I have always tried to but separate things.

M: Uh-huh.

C: Separate thing which do their own job best. I always believe that, that concept, that idea.

M: This may seem like an obvious question, but then do you foresee any kind of difficulties with, basically what we’re talking about is a salon that has quite a bit of equipment in it.

C: Yes.

M: And that’s obviously not a concern for you.

C: For example, my parents are because I have used my system in my parent’s house for years, and for example here I have my speakers and here I have a big dinner table [laughs]. So the sound starts up from the speakers but it hits the table and it doesn’t reach the ear. So I don’t use my system with high performance, with high productivity, with high... efficiently.

M: Ok.

C: So, for example I don’t have... I don’t want anything between me and my speakers for example. When I sit my seat, I want to hear directly my speakers.

M: So will you have a dedicated seat for listening, or...?

C: No, my *oturma grubu*...seating group, seating group... I will have my seating group, maybe I will have my *alçak sehpa* (low stand or coffee table)...

M: A low seat, er, *sehpa* is like a stand, right?

C: Yes...

M: ...like an ottoman...

C: A low stand for example to put some accessories, some..

M: Something like a coffee table?

C: Coffee table...

M: Or an end table or something like that...

C: And the other hand I will dine (?) with my half, my plasma TV, my speakers, etcetera.

M: Ok. Ok. I think that might be all I have for now unless there's anything else you want to add?

C: No, I don't want.

M: Ok.

C: I cannot find anything. [laughs]

M: Then, ah let me look over... actually I'm going to stop recording now.

C: Ok

[end of recording]

Interview transcript for Ali Oğulcan İlhan

Thursday, 9 April 2007 (approx. 3:00 pm)

"A" is Ali, "M" is Mithat.

A: [says something unintelligible]

M: I am sitting here with Ali Oğulcan, a very evil human, but one whom I have asked...

A: [laughs (very little)]

M: ...to participate in my study as well. And I think it's what, about three in the afternoon on the...

A: ...eighth...

M: ...ninth...

A: ...ninth?

M: ...of April.

A: [gasps]

M: I think it's the ninth. My watch says the ninth.

A: It's the ninth. Ah... *çok kötü*. (...that's very bad).

M: Alright. And we're going to do this a little bit differently because Ali has not yet finished his sketch. So he will be sketching and explaining his, ah, ideas as we go along.

A: *Peki. Şimdi bu aletin özelliği, beş-artı-bir...* (Ok. Now, the thing that's special about this device is five-point-one...)

M: Would it be too difficult for you to...

A: ...difficult for me to...

M: ...do it in English?

A: *Denerim*. (I will try.) This is a five-plus-one... no, not five-plus-one... *beş-artı-bir mi?* (...is it five-plus-one?)

M: Five-point-one? The standards are, the standards ones, if you are thinking of one of the standards, there's stereo, five-one, and seven-one.

A: Anyway, forget about the number of...

M: Ok.

A: We have a main unit, ok? And a number of some sub-units. The main idea is that this thing is floating.

M: Floating in what sense? In the air?

A: Yes.

M: Ok.

A: And you have a ring. It's very simple, it's just a... ah... RF transmitter or something like that. It just gives a clue of your location...

M: Ok.

A: ...this thing. And it only plays MP3s, which downloads from your computer through Wi-Fi. It doesn't have a CD, it doesn't play any cassette players or anything. And when you move somewhere in the room, let's say this is your sofa or your sitting here, this thing... em... find the best position,

M: Depending on where you are?

A: Yes. And so you have the perfect sound.

M: Wherever you are.

A: Yeah. About... hmm?

M: Ok, ok.

A: About the form, I have a very... I have read once a very famous fantastic novel, I don't remember name. But there was some flying castles there. Some wizards, sort of, created those flying castles, and they created them from real castles. So, it was like this ... they have real castles. [unintelligible]

M: Uh-huh.

A: And so they tear the castles from the soil.

M: Ok.

A: And so these... I was thinking about this... I don't know where it came from, but this thing has inspired me. It's sort of a something that is, that has been torn off from the soil...

M: Ok.

A: Basically from the side view it's something like that. From the front view [pause] something like this, and you have a thing here.

M: And, this is what?

A: This is the main unit.

M: The main unit. Ok.

A: Yeah. Ok. And the other things are just the same.

M: So this main unit is floating in the air.

A: Yes.

M: Ok. What kind of dimensions are we talking about here? What kind of scale? About, oh, 30 centimeters or so... 40 to 40 centimeters.

A: And this is like 15.

M: Ok.

A: Fifteen to 20 let's say. And little things are just the same.

M: So the central unit houses basically, uh... what?

A: Basically a Wi-Fi system, which you can download your MP3s, and it doesn't have anything other than that, because if it... this is my dream system, I don't want any remote controls or anything. I was access it through my computer or through, uh, voice recognition.

M: Ok,

A: Ok. So, I just want the basic functions. Play, stop, blah blah. The rest I will... for example if I want to make a list I will do it from my computer, like I use my iPod.

M: You mean if you want to make a playlist?

A: Playlist, yeah.

M: You'll.. ok... you'll manufacture it...

A: I don't want anything. It'll just play the songs and stop.

M: Ok.

A: And, ah, go between the songs or stuff. That's all, basically. Other units, they are just the replica of this thing. They are much more smaller...

M: ...they're smaller...

A: Like this.

M: About, eh...

A: ...about...

M: ...a quarter the size.

A: Like this. Yeah, a quarter of the size.

M: Ok, so you're showing about the size of a computer speaker.

A: Yeah, Yeah.

M: Ok.

A: So basically that's it. Do you need more sketches?

M: Uh... no, I don't think so. I think that, em, I think that pretty well explains it. The central unit, does it, does it have a sound-making, uh...

A: Yeah, maybe. I haven't thought about it honestly.

M: Ok. So basically you have these things... ah, you've got the smaller units floating around...

A: Yes.

M: And the big unit floating around.

A: Yes.

M: Or is the big unit...

A: No.

M: ...is the big unit fixed?

A: I mean, I was thinking of that thing, but I couldn't decide. If it's fixed maybe it can be better, but I don't have any controls on this thing—no, no displaced anything. So...

M: Uh-huh.

A: It may be also floating, and also we can embed something in it, for example some speakers, some tweeters, I don't know.

M: Ok. Ok. Cool. And you said the primary interaction with the system is through, ah...

A: ...through voice...

M: ...through the computer or voice [unintelligible]

A: But through voice you will do very limited things—just play, stop, rewind...

M: Uh-huh

A: ...two songs, just like that. Not very complicated things. For example: "find me this song,"... no. If you want to do something like that you will do it through your computer.

M: Ok. So basically, this, ah... in order to function, it needs a computer...

A: Yeah.

M: ...device attached to it.

A: Yeah. Because if it is my dream system and I'm always with my computer...

M: Ok.

A: I hate using a second... for example while I am watching TV or while doing something else, I hate using some other device. I would like to control everything through my computer because 80% of the time my computer is open, it's downloading something, it's... I am using laptop mainly. I don't have a fixed, desktop computer with me, so... uh... 80% of my time my computer is open and I am doing something with it, either I am writing, I am listening to music... Even if I am not doing anything, I'm just keeping it open for checking my mails, everything... so...

M: Now, I am going to ask you one thing, then. It'll make the rest of this a little easier and it'll also make it a little easier for me to use your idea when I'm talking to other people, as you'll when we go to the next thing we're going to do here when we make the repertory grid. If you could sketch for me, in just some moderate level of detail, uh, the central unit and one of the speakers.

A: Ok.

M: And let's do that on a clean sheet so I can... so it gets sort of... so the idea is standing on its own.

A: It can be either like this, or like that. This is not the main unit, ok? You have somewhere here your speaker, so it will be if you look at it through the perspective [sounds of drawing]

M: ...something...

A: ...something like this. You have a little dent. It's just for the housing of the speaker, something like that. And maybe you have some little lights here. You may want some ambience lightening with it, ok? And the main unit is just same, only with this part [sounds of drawing] it's bigger but [sounds of drawing]... Maybe I have some little, I was thinking about this, little haphazardly spread little dots on it, but you can't see them. Only in dark you can have some sort of, you know, illusions or...

M: So you don't bump into it in the night? [laughs]

A: [laughs] No... but the thing is, I was thinking about this thing. What do I do with it when it's not floating? Will it be constantly floating around, or...? Like always.... So maybe we can do something like, like this... [sounds of drawing] so it's maybe... [sounds of drawing] or maybe like this... [sound of drawing] so it can... [sound of drawing] can be standing like...

M: Uh-huh

A: Ok?

M: Ok.

A: Also you can do the same with... it will be kind of tilted...

M: Uh-huh, uh-huh.

[sound of drawing]

A: ...like this. [sound of drawing] So I don't know any details, this is the point. I want a, you know...

M: That's ok.

A: ...sculptural look, very basic, very clean. Maybe in glossy white or like iPod or black, it will be piano black. Very simple, very basic look.

M: Uh-huh.

A: No details, nothing on it. I hate those, you know, this kind of... this look but... [pause]

M: Ok. Ah, what do you like best about this? I mean, how do you... what was, ah, what was the driving force...

A: My biggest complaint about my own hi-fi system is that, uh, the place where I stand, where I am listening to music... for example sometimes I have this as the, uh, plan of my house [sounds of drawing] ... Here I have the long table; this is the kitchen and it's open, ok?

M: Uh-huh.

A: Here I got the TV system and here I have a big sofa, here I have the dining table. This is out of scale, ok? [sound of drawing] Mmm, I have some other units to sit, here and here, ok? And the speakers are somewhere here, and the main unit is somewhere here. So when I am here it's ok. It's a triangular effect. [sound of drawing] But when I am here, I use the sofa most of the time and I have a little, you know,...

M: Uh-huh.

A: ...small table around, and I use my laptop either here, there, or there. It's a big problem for me. I can't hear anythings. And also as this is the main entrance to the house, I can't put those things like this or here, this is the kitchen.

M: Uh-huh.

A: So wherever I go I would like to have the same quality of the sound. This is the main motive why I draw something like that.

M: Ok. Cool. [sound of paper rustling] Let's see if there's anything else I want to ask you. Ah... we talked a little bit about where the form came from... [sound of paper

rustling] Em... ah... So basically, you're talking about something that was driven by the desire to fit into your life somehow.

A: Yes, exactly.

M: And support the general activities in your life: you know, whether...

A: If it's my dream system it will be only suitable for my lifestyle...

M: Uh-huh.

A: Me and me only. So I didn't think about the others people.

M: So how do you use, ah, music? As something that serves as a background for, like, whatever activity, or are there times that you just sit down and listen to music?

A: Both.

M: Both.

A: Yeah. When I was younger, I was very enthusiastic about, you know, experiencing new music, discovering something new. But now I can't find time to do it. So basically I just gather some MP3s from my friends to discover new music. I don't have time for, you know, getting through the internet or discovering new bands or style. So I just collect some new things from my friends. So MP3 is a very, you know, useful medium for me. I no longer have the time for going through the CDs, and also it is very, you know, expensive for me. So, I... I transfer all my archive, em, transform it into MP3.

M: Uh-huh.

A: So it's the best format for me. I don't use anything anymore. I mean, other than MP3s. No CDs, no big... *ne onlar...* *plak* (what are those... records)?

M: LPs, long-plays.

A: LPs. Neither do I have the equipment for playing that, so...

M: What about performance, then? How pure to... ah... if you were to prioritize this... this, this... incorporation into your lifestyle as one standard and performance as another standard, what's the relationship between those two? How important is performance to you versus...

A: I'm not a performance freak. I mean, the quality of sound may be a little bit, you know, less compared to the professional hi-fis, like Arcam or the rest. But I don't care. I mean, it must be very well fitting into my lifestyle, that's my point. I don't care about the quality and the performance. Because I don't, I don't have the ear to distinguish between those little small details.

M: Uh-huh.

A: I only use MP3s that are recorded... *nasıl söylüyorsun? O 192-şey var, ya?* (...what do you call it? You there's that 192-thing?)

M: 192 bits per second.

A: *Minimum kullandığım o* (That's the minimum I use), but they may be a little bit higher.

M: Uh-huh.

A: That's all, that's my only criteria.

M: Uh-huh.

A: That's all.

M: Uh-huh. Ok. Ah, so what do you think, ah... Why do you think some people prefer... have a preference for this integrative kind of approach to music reproduction versus performance?

A: Like?

M: Like... You said that your... you place a greater emphasis on stuff integrating into your lifestyle...

A: Uh-huh.

M: ...some people place a greater emphasis on performance.

A: Uh-huh.

M: Ah, if you were to guess, what would you say accounts for those differences? Why is, sort of, lifestyle integration more important to one person and performance more...

A: In my experience, the second kind of people are also very keen about the thing called performance in general. For example, when they are buying a car, they want to buy the, you know, how to say it, *yani, en hızlı, en iyi giden, işte yol tutuşu en iyi olan...* (you know, the fastest, the one with the best ride, the one with the best traction...)

M: Uh-huh.

A: But I don't care. If it's small enough, if it goes, it takes me from somewhere to another, and it doesn't you know... *çok fazla benzin harcamıyorsa* (if it doesn't consume too much fuel)

M: Uh-huh.

A: *Beni bir yerden bir yere götürüyorsa, belli bir kalitenin üstünderse, [unintelligible], en iyisi olması gerekmiyor.* (If it takes me from place to place, if it's above a certain quality level, [unintelligible], it doesn't have to be the best.

M: Ok.

A: The other thing is, most of those kind of people are music freaks. For example, I have those kind of audiophiles, my friends. They have been playing some instrument for years and they have... One of them is an electronics engineer, he's very keen on those stuff.

M: Uh-huh.

A: So they are very keen of performance, but people like me, I mean... I only see music a part of my life, it's not very central. I don't care about the performance. So, don't... I am chopping my onions and I am listening to music. I am "pat, pat, pat, pat, pat!" I can't tell the difference, you know?

M: Uh-huh.

A: Also, I am watching TV, I'm designing something, I'm... simultaneously I am also listening to music. So, the performance just goes out of the window.

M: Uh-huh. Ah, just out of curiosity, do you know of any women who are audiophiles?

A: Mmm....

M: Or they all...

A: ...mmm...

M: How many audiophile would you say you know?

A: Like, five or six.

M: Five or six. Are any of them women?

A: No. [laughs] Women are not, *yani hiç bir şey konusunda öyle değiller ki. Araba, elektronik... hiç görmedim ben... elektronik manyağı kadın, araba manyağı bir kadın...* (you know, they're not that way about anything. Cars, electronics... I haven't seen any... a woman crazy about electronics, a woman crazy about cars...)

M: But don't some of them, aren't some of them kind of concerned with having, you know, the latest washing machine, or the latest dishwasher... the things you might think they use on a regular basis?

A: The latest, yes. But not in terms of performance, only latest.

M: Ahh. Ok. So you think it's more of a fashion thing than a performance thing?

A: Yes, of course. I mean... they can't go through all those cycles. For example, say you have the latest machine and it has 50 programs, and they won't be using like 40 of them. But it's the latest thing, it's you know... Maybe not out of fashion. Maybe they really do, you know, ah, do put an emphasis on performance, but not in terms of real life. I mean it's just an arbitrary thing that they...

M: Ah... sort of the thinking that, "If I get the newest thing..."

A: Yeah.

M: "...I am automatically guaranteed..."

A: Yeah, exactly!

M: "...having the highest performance without really having to think..."

A: But they are not going through those specs and those other stuff—no they are not doing it. For example... Also in my experience, I do a lot of search in those benchmark sites when I am buying something like a computer, a new camera, and there are very few women users out there. Most of them are men. I mean, if they are women there, they are talking about some superficial things. But men are really keen on those stuff. For example, the length of your, you know...

M: Focal length

A: Yeah, everything.

M: Uh-huh.

A: But women, no. Most of them not.

M: Ok.

A: That's my experience. Maybe that there are lots of different women around the world, but in my experience I don't know anyone like that.

M: Do you think a woman would be happy with your system?

A: Yeah, probably. But, but the main problem about my system is that it is very dependent on the computer. I mean, if you don't have a computer, if it's not open, it crashes. So, they may not be happy about it, because most of the women are not comfortable with using all those computer stuff.

M: Uh-huh.

A: They are only using their computer when they are, when they need it. But my computer is always open. I'm downloading something, it's playing something, I'm waiting for my mails...

M: Yeah... if you're like me, you're waiting for the next update to your whatever site you happen to be following, your next RSS message or something.

A: It's always open, I mean.

M: Yeah. Ok, anything else that you think, em, that you want to tell me about this or about music reproduction in general, or anything that...

A: About music reproduction in general?

M: ...that seems relevant to you, seems important to you...

A: I don't know if my thoughts are important about the music reproduction equipment, but there is a profound change because of MP3, and people are not thinking very profoundly on this profound change. I mean, it all changed the way we consume music, the way we distribute music. For example, in the old times, I was, you know, I knew every single song that was on my CDs. But now I know nothing—I just know the melodies. I'm just shuffling around them because it's so easy. And I have, you know... When I had CDs, it was a ritual for me to, you know, opening those, ah... *Yani CD kapını açmak, onu çıkartmak, koymak, şarkı dinlemek. Ama şimdi duruyor, "Eh, beğenmedim, geçiyorum," 2000 tane şarkı var içerisinde.* (You know, opening the CD cover, taking it out, placing it, listening to songs. But now it just sits there, "Hey, I don't like it, next." It's got 2000 songs in it.)

M: So it's been... music has been thoroughly commoditized...

A: Yes.

M: ...commodified I guess is the word.

A: A, yeh, evet. *Hala çok [unintelligible] var, ama bilmiyorum... Bu belki benden kaynaklanıyor, yani. Oturup müzikle ilgili de eskiden çok... gitar da çalıyordum da çok süslü, grup keşfedirdim, insanları bulurdum, şey yapardım. Şimdi öyle şey yok. Şimdi sadece, yani, dinliyorum.* (A, yeah, yes. There is still [unintelligible], but, I don't know... Maybe it's me, you know. In the past I would concern myself with music's... I would play a lot of guitar, discover groups, find people, do stuff. Now there's nothing of the sort. Now, you know, I just listen.)

M: Ok. I think I want to move on to the next thing I want to do. Do you have time? It'll take...

A: About how much?

M: Hmm... 40 minutes maybe.

A: Peki. (Ok.)

M: Let me turn this off.

[end of recording]

Interview Transcript for Dilek Ayyıldız

Due to scheduling issues, an interview with Dilek Ayyıldız was not performed.

Appendix G: Semiological Analysis of Participant Systems

Semiological analysis of participants' systems in alphabetic order according to first first-name, last-name initials. The notes below are based on the conventions and signifieds coming out of the semiological analysis of a prototypical system given in the body of the thesis.

AI: Ali İlhan (male)

AT: Ahmet Turan (male)

CA: Cem Alppay (male)

DA: Dilek Ayyıldız (female)

GT: Gülname Turan (female)

HB: Hümanur Bağlı (female)

AI (m)

Formal conventions

Component heterogeneity. The system is composed of several parts, but they are all aesthetically linked (partly generic, partly counter-cultural). There is a medium amount of physical consolidation.

Size equates with quality. The system is not large, but may take up a lot of “space”.

Symmetry. Symmetry is maintained in the listening area.

Component form. Slightly bulky, but components are curvilinear.

Finish. Similar in spirit to aluminum—gloss white and piano black are the “new” and poor-man’s aluminum.

Components display working parts. The system’s working bits are all concealed.

System installations do not try to conceal the system. The installation calls attention to itself in spite of adapting to user’s position.

Significations and stances

"Expertise": a system is an expression of expertise. User comfort and adaptability are at the forefront with this design. This makes the solution contra-cultural or possibly a-cultural.

"Power and ability": a system demonstrates its owner's power and ability. The system highlights the demands of the user’s multi-faceted lifestyle and need for things around him to adapt to these demands. This highlights the user’s abilities, and so the design is transformative in this respect.

"Domination": the system is the most important thing in the room; 1) The system is an extension of the user's power and 2) The system is an expression of

the user's desire to be subordinated. The intent of the system is not to dominate the room, but rather to adapt to the needs of the user in the room. Contra-cultural.

"Toolishness/Machine-ness": a system is a machine. Owing to the gloss white or piano black finish, the units have the appearance of a "modernist's machine;" therefore in this respect the design is transformative. However, the units' forms serve to distance the design from machine-ness, so it is also contra-cultural.

"Performance first": a system stops at nothing to deliver the highest performance possible. By the designer's admission, performance is not a primary criterion. Adaptability to his lifestyle is paramount. Therefore this solution is contra-cultural.

AT (m)

Formal conventions

Component heterogeneity. The system appears to be a mix-and-match of independent units with no emphasis on visual integration—just like a prototypical system.

Size equates with quality. The sketches do not clearly express the size of the units. However, it appears as though the loudspeakers are typical of a medium quality system, and the central unit about the size of a typical amplifier.

Symmetry. Symmetry is maintained.

Component form. Rectilinear and bulky forms are maintained.

Finish. It appears that finishes similar to prototypical solutions are maintained.

Components display working parts. Driver units of the loudspeaker units are displayed; the central unit's form highlights the CD/DVD player's transport mechanism.

System installations do not try to conceal the system. The system makes no effort to integrate into the space; however, the central unit can be hidden away if desired.

Significations and stances

"Expertise": a system is an expression of expertise. The complexity of the system's setup still requires expertise, therefore the solution is transformative.

"Power and ability": a system demonstrates its owner's power and ability. By virtue of the retaining an "expertise" signification, in conjunction with the system's comprehensive functionality, results in the signification of power and ability. Therefore in this respect the solution could be said to be both generic and transformative.

"Domination": the system is the most important thing in the room; and 1) The system is an extension of the user's power, 2) The system is an expression of the

user's desire to be subordinated. The system isn't as egotistical as a prototypical system and tends to a "support my activity" perspective. Therefore it is slightly contra-cultural.

"Toolishness/Machine-ness": a system is a machine. The system is generic in this respect.

"Performance first": a system stops at nothing to deliver the highest performance possible. The emphasis on is on performance and comprehensive functionality; therefore the solution is essentially generic in this respect.

CA (m)

Formal conventions

Component heterogeneity. The system is modular but integrated, both visually and physically.

Size equates with quality. The system is relatively compact.

Symmetry. Symmetry is maintained.

Component form. The overall form is svelte but with a tendency toward the rectilinear.

Finish. The system is finished in classic "high-tech" materials.

Components display working parts. Working parts are generally hidden, but some forms directly represent the inner workings of the system, the turntable in particular.

System installations do not try to conceal the system. The system is tidily mounted on a wall, allowing easy access without imposing itself on the space.

Significations and stances

"Expertise": a system is an expression of expertise. The system is as much about "taste" as it is "expertise". Therefore it is both generic and contra-cultural in this respect.

"Power and ability": a system demonstrates its owner's power and ability. The "taste" emphasis discussed above undermines the power projection of the system. In this regard the system takes essentially no position about the user's power and ability and is therefore a-cultural.

"Domination": the system is the most important thing in the room; and 1) The system is an extension of the user's power, 2) The system is an expression of the user's desire to be subordinated. The importance conferred to the system is at the installer's discretion, but the package's svelte form makes it difficult to dominate the room. In this respect the system is contra-cultural.

"Toolishness/Machine-ness": a system is a machine. The unit maintains a machine-like appearance and so is essentially generic in this regard.

"Performance first": a system stops at nothing to deliver the highest performance possible. By the designer's admission, performance is of the utmost importance in this design; however, visually this is not reflected aggressively. It is reflected in highlighting of the turntable's form, the strict symmetry, and the focus on only the most important controls. Therefore the system could best be regarded as either generic or transformative.

DA (f)

Formal conventions

Component heterogeneity. The system is modular but integrated, both visually and physically.

Size equates with quality. The size is appreciably smaller than a prototypical system

Symmetry. Symmetry is not maintained.

Component form. Bulkiness is maintained, however cylindrical forms rather than rectilinear ones are used throughout.

Finish. The finish was not specified by the designer, but the computer rendering seems to suggest grey plastic—a less expensive version of aluminum or other metallic finish.

Components display working parts. The CD player mechanism is somewhat featured.

System installations do not try to conceal the system. The system integrates into the space because of its "lamp-like" or "vase-like" quality.

Significations and stances

"Expertise": a system is an expression of expertise. The system is more about "taste" than it is "expertise". Therefore it is contra-cultural in this respect.

"Power and ability": a system demonstrates its owner's power and ability. The "taste" emphasis discussed above undermines the power projection of the system. In this regard the system takes essentially no position about the user's power and ability and is therefore a-cultural.

"Domination": the system is the most important thing in the room; and 1) The system is an extension of the user's power, 2) The system is an expression of the user's desire to be subordinated. The system does not dominate the space; it either integrates into the space or even tries to disappear into the space. In this regard the system is counter-cultural.

"Toolishness/Machine-ness": a system is a machine. The system is both mechanical and decorative; therefore it is both generic and contra-cultural.

"Performance first": a system stops at nothing to deliver the highest performance possible. Integration into the space is at the forefront with this design, therefore the solution is contra-cultural.

GT (f)

Formal conventions

Component heterogeneity. The system is composed of two parts, but they are aesthetically integrated. Modularity is not used.

Size equates with quality. The system is not large and is installed in a very compact way (flat items on the wall and floor).

Symmetry. The system is not symmetric.

Component form. Forms are svelte and curvilinear.

Finish. Perforated aluminum is used, but this is offset by the use of *unfinished* plywood. This brings out a "rawness" in the aluminum rather than a "machine-ness".

Components display working parts. Based on yoga philosophy, the system displays inner workings.

System installations do not try to conceal the system. The system installation does not conceal the system; in fact, it is the only object in the room. However, "unpleasant" aspects of the system, namely cables, are concealed.

Significations and stances

"Expertise": a system is an expression of expertise. Integration (i.e., no modularity) eliminates the need for expertise. Simplicity is at the forefront; therefore the system is contra-cultural.

"Power and ability": a system demonstrates its owner's power and ability. The "simplicity" emphasis discussed above undermines the power projection of the system. In this regard the system takes essentially no position about the user's power and ability and is therefore a-cultural. Under a yoga philosophy, it may even be contra-cultural, that is, it may be striving to oppose recognition of power and ability.

"Domination": the system is the most important thing in the room; and 1) The system is an extension of the user's power, 2) The system is an expression of the user's desire to be subordinated. Even though the system is the only object in the room and physically dominates by virtue of that fact, the system is a companion to and facilitator of higher activities; and this undermines its own dominance. Therefore, the system is ironic in this respect. To look at it less abstractly, the system is not ego-centric; it is activity-centric.

"Toolishness/Machine-ness": a system is a machine. The system is a means of facilitating enlightenment; does this qualify it as a machine? If so, the system is transformative. If not, then it is contra-cultural.

"Performance first": a system stops at nothing to deliver the highest performance possible. Support of a lifestyle, not performance, is the most important aspect of the system. Therefore the system is contra-cultural in this respect.

HB (f)

Formal conventions

Component heterogeneity. The system is composed of a set of highly integrated components.

Size equates with quality. The system is large, but it effectively disappears into the design of the room's boundaries.

Symmetry. Symmetry is not maintained.

Component form. Flat, curvilinear forms dominate.

Finish. The finish is not specified in the design sketch.

Components display working parts. No working parts are displayed in the system.

System installations do not try to conceal the system. All interconnections and inner workings are concealed; however, "essences" (i.e., the loudspeakers) are articulated as features of the room's surfaces.

Significations and stances

"Expertise": a system is an expression of expertise. The system is merely an integral part of the room as an architectural feature. It says much more about comfort than expertise, therefore it is contra-cultural in this respect.

"Power and ability": a system demonstrates its owner's power and ability. The "comfort" emphasis discussed above undermines the power projection of the system. In this regard the system takes essentially no position about the user's power and ability and is therefore a-cultural.

"Domination": the system is the most important thing in the room; and 1) The system is an extension of the user's power, 2) The system is an expression of the user's desire to be subordinated. The system dominates the room insofar as it forms a major part of the room's boundaries. However, in spite of this physical domination, the system is not ego-centric; it is room-centric. Therefore the system is ironic in this regard.

"Toolishness/Machine-ness": a system is a machine. The system is the room, not a machine. Therefore it is contra-cultural in this regard.

"Performance first": a system stops at nothing to deliver the highest performance possible. The scale of the system underscores performance issues, but the integration into the architecture equally emphasizes lifestyle. Therefore the system is both transformative and contra-cultural.

Appendix H: Criteria Identification Terms

The following is a tabulation of the criteria identification terms and the categories to which they belong used by participants in the construction of their repertory grids.

Table H.1: Criteria identification terms and their categories

similarity term	difference term	category or categories
crystallized	compact	abstract/formal
defined	modified	abstract/formal
positivist	uncanny	abstract
wavy	cubic	formal
hobbyist	professional	personality
outsider	insider	personality
feminine	masculine	personality
robust	light	personality/formal
rough	elegant	personality
light	bulky	formal/personality
<i>kendinden menkul</i> (self-appointed)	space and technology dependent	personality
fantasy	realistic	personality/functional
formal consistency	collage	formal/abstract
masculine	kitchen-like	personality
multi-piece	B&O style	factual
flexible	architecture-dependent	functional/formal
contemporary	retro	style
integrated	separate	factual/formal
conventional	innovative	style
contoured	flat	formal
original	conventional	style
conceivable	ambiguous	functional
mounted	self-standing	factual
unstable/fuzzy	stable	abstract
levels/layers/3D	planar/orthogonal	formal
visible	invisible	formal
instinctual	intentional	abstract
conventional	abstract/ fictional	abstract/style
off-putting/ repelling	hi-fi oriented	personality
decorative	impractical	personality/functional
fictional	light/soft	personality/functional
light	impractical	personality/functional
technical	fictional	personality
personal	soft	personality

Appendix I: Participant Responses to Prototypical System

Participants were sent the following e-mail message with the photo shown attached.

Dear Participant,

In connection with my thesis project, I would appreciate it very much if you could take a minute to answer the three questions below.

Regarding the music reproduction system whose picture is attached to this message, please answer the following three questions. Be as brief or as lengthy as you wish.

- 1) What do you find appealing in this system?
- 2) What do you find unappealing in this system?
- 3) How would you feel about placing this system in your home?

Many thanks in advance,
-Mithat



Participant responses to the email appear below. (Email addresses have been obscured to protect participants' privacy.)

From : ali ilhan <xx@xxx.xxx>
Sent : Saturday, April 28, 2007 1:12 PM
To : "Mithat Konar" <xx@xxx.xxx>
Subject : Re: Thesis followup question

- 1- Nothing...
- 2- So professional looking, so boring, lots of cables, old looking, mechanical I am sure it provides an excellent sound quality but that is not my priority I am not an audio-ophile.
- 3- definitely not :)
- 4- Is this your own system?

- 5- Why didn't you cover the cables? :=)
6- Why don't you try B&O? hehe

On 4/28/07, Mithat Konar <xx@xxx.xxx> wrote:
Dear Participant,

In connection with my thesis project, I would appreciate it very much if you could take a minute to answer the three questions below.

Regarding the music reproduction system whose picture is attached to this message, please answer the following three questions. Be as brief or as lengthy as you wish.

- 1) What do you find appealing in this system?
- 2) What do you find unappealing in this system?
- 3) How would you feel about placing this system in your home?

Many thanks in advance,
-Mithat

From : ahmet zeki turan < xx@xxx.xxx >
Sent : Sunday, April 29, 2007 6:14 AM
To : "Mithat Konar" <xx@xxx.xxx>
Subject : Re: Thesis followup question

Dear Mithat,

Here are my answers:

- 1) It is quite clear, readable, do not seem to have over designed features. It also promises professional, high quality of sound.
- 2) It occupies quite big amount of space and the table stand is poorly designed as for many of similar examples.
- 3) It makes me feel that music reproduction is a central element or activity in my life, which is actually wrong.

best,

azt

On 4/28/07, Mithat Konar <xx@xxx.xxx> wrote:
Dear Participant,

In connection with my thesis project, I would appreciate it very much if you could take a minute to answer the three questions below.

Regarding the music reproduction system whose picture is attached to this message, please answer the following three questions. Be as brief or as lengthy as you wish.

- 1) What do you find appealing in this system?
- 2) What do you find unappealing in this system?
- 3) How would you feel about placing this system in your home?

Many thanks in advance,
-Mithat

From: Cem Alppay (xxx@xxx.com)
Sent: Mon 5/28/07 11:31 AM
To: 'Mithat Konar' (xxx@xxx.com)
Subject: RE: Thesis followup question?

Mithat merhaba,
Ev taşıma işlerimin yoğunluğun çok geç cevap yazabildim.
Umarım geç kalmamışımdır, Sorularına cevabım aşağıdaki gibi:

*[Translation:
Hello Mithat,
I was late getting back to you because I have been so busy with moving into
a new house. I hope it's not too late, Answers to your questions are as
given below:]*

- 1) Pure hi-fi and masculin identity, extremely pragmatic
- 2) Too much cables
- 3) Besides of my home cinema system, at center of the living room

Gecikme için şimdiden özür :)
Selamlar
cem

*[Sorry about the delay :)
Regards
cem]*

-----Original Message-----
From: Mithat Konar [mailto:mithat_konar@hotmail.com]
Sent: 28 Nisan 2007 Cumartesi 14:16
To: calppay@itu.edu.tr
Subject: Thesis followup question

Dear Participant,

In connection with my thesis project, I would appreciate it very much if you could take a minute to answer the three questions below.

Regarding the music reproduction system whose picture is attached to this message, please answer the following three questions. Be as brief or as lengthy as you wish.

- 1) What do you find appealing in this system?
- 2) What do you find unappealing in this system?
- 3) How would you feel about placing this system in your home?

Many thanks in advance,
-Mithat

From : Dilek Ayyildiz <xx@xxx.xxx >
Sent : Sunday, April 29, 2007 6:16 AM
To : "Mithat Konar" <xx@xxx.xxx>
Subject : RE: Thesis followup question

- 1) Putting all components on a shelf could be good for place. You don't need much more place to set this system.
- 2) I don't want to see a lot of cables in my room. Also the the player and the speakers aren't compatible with eachother. Player is in silver color and the speaker is black.
- 3) I think I wouldn't like to take this kind of system, because, for my opinion it isn't aesthetic.

From: Mithat Konar [mailto:xx@xxx.xxx]
Sent: Sat 4/28/2007 4:05 PM
To: Dilek Ayyildiz
Subject: Thesis followup question

Dear Participant,

In connection with my thesis project, I would appreciate it very much if you could take a minute to answer the three questions below.

Regarding the music reproduction system whose picture is attached to this message, please answer the following three questions. Be as brief or as lengthy as you wish.

- 1) What do you find appealing in this system?
- 2) What do you find unappealing in this system?
- 3) How would you feel about placing this system in your home?

Many thanks in advance,
-Mithat

Bu e-mail mesajı ve eklerinde gizli kalması gereken özel bilgiler olabilir. Mesajı yanlışlıkla aldıysanız, baskalarına aktarmayınız ve kopyalamayınız. Lütfen göndereni uyarınız ve mesajı siliniz. Duyarlılığınızdan dolayı teşekkür ederiz. Dogus Üniversitesi bu e-mail mesajı ile eklerinin gönderilmesinden ve saklanmasından sorumlu değildir. Bu e-mail mesajı ve ekleri gönderenin görüşlerini içerir.

This e-mail and its attachments may contain confidential and/or privileged information. If you have received this e-mail in error, please destroy this e-mail and notify the sender immediately. Thank you for your co-operation. Dogus University excludes any liability of any kind for the information transmission, reception, storage or use of such in any way whatsoever. The opinions expressed in this e-mail and its attachments belong to sender alone.

From : gulname turan <xx@xxx.xxx>
Sent : Monday, April 30, 2007 10:29 AM
To : "Mithat Konar" <xx@xxx.xxx>
Subject : Re: Thesis research followup question

Selam Mithat,
Sorry for my late answer, I hope this will still be useful for you.

- 1- I didn't find anything appealing :)
- 2- The cables and the bulky speakers.
- 3- I really would not like to place it in my home. Because I would feel as if I was in a professional music club, or even a studio.

All the best
Gulname

On 4/28/07, Mithat Konar <xx@xxx.xxx> wrote:
Dear Participant,

In connection with my thesis project, I would appreciate it very much if you could take a minute to answer the three questions below.

Regarding the music reproduction system whose picture is attached to this message, please answer the following three questions. Be as brief or as lengthy as you wish.

- 1) What do you find appealing in this system?
- 2) What do you find unappealing in this system?
- 3) How would you feel about placing this system in your home?

Many thanks in advance,
-Mithat

From : humanur bagli <xx@xxx.xxx>
Sent : Saturday, April 28, 2007 8:35 PM
To : "Mithat Konar" <xx@xxx.xxx>
Subject : Re: Thesis followup question

written in blue....

On 4/28/07, Mithat Konar <xx@xxx.xxx> wrote:
Dear Participant,

In connection with my thesis project, I would appreciate it very much if you could take a minute to answer the three questions below.

Regarding the music reproduction system whose picture is attached to this message, please answer the following three questions. Be as brief or as lengthy as you wish.

- 1) What do you find appealing in this system?

I found no appealing part but If I force myself to see it appealing it looks professional and I might guess I would get a good sound quality from such devices- depending my previous experiences of sound systems...

2) What do you find unappealing in this system?

I found it unappealing because it doesn't have a consistency in material and volume, controllers are metal and light in comparison to speakers as black, plastic looking and bulky.

3) How would you feel about placing this system in your home?

I wouldn't feel comfortable with it because it needs to be installed and put extra furniture-like supporting elements rather than the system itself. It would probably not fit to the existing materials and style of my saloon (because of its inconsistency of materials) and it would require too much space and a specific placement of furniture to get a better result of sound.

Many thanks in advance,

good luck

-Mithat

Appendix J: Participant Permission Forms

Participant release forms in alphabetic order according to first-name, last-name initial.

Agreement for Research Participation

This is an agreement between Ali O. Ilhan (hereafter referred to as "you" and "your") and Mithat Konar (hereafter referred to as "me", "I", and "my").

Basis

You have agreed to participate in my thesis research. Participation in the research will consist of the following phases:

- I. Fantasy Sketch (detailed in a separate document)
- II. Interview
- III. Construction of a Repertory Grid

Right and Permissions

You will retain all copyright and patent rights to any intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research, and ownership of these rights will be yours and yours alone.

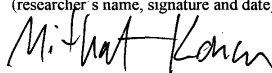
You give me permission to reproduce all intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research in academic and other publications without limit and without compensation and to show others your intellectual property as needed for research purposes.

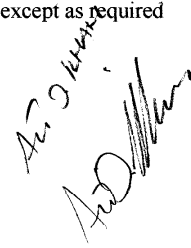
You give me permission to record and reproduce in text and other forms the contents of Phase II and Phase III of the research in academic and other publications without limit and without compensation and to share this data with others as needed for research purposes.

Identification

Please select one of the following options and initial your choice.

- ☐ The permissions above are given with the understanding that your intellectual property and comments **must** be fully identified and credited by name in the published research.
- ☒ The permissions above are given with the understanding that your intellectual property and comments **may** be fully identified and credited by name (at my discretion) in the published research.
- ☐ The permissions above are given with the understanding that your identity **will be kept confidential** in all publications, except as required for thesis review and approval. This means that while your intellectual property and comments may appear in published works, you will not be identified or credited by name, except as required for academic review and approval.


Mithat Konar
(researcher's name, signature and date)
9 April 2007



(participant's name, signature and date)

Agreement for Research Participation

This is an agreement between Ahmet Zeki Turan (hereafter referred to as "you" and "your") and Mithat Konar (hereafter referred to as "me", "I", and "my").

Basis

You have agreed to participate in my thesis research. Participation in the research will consist of the following phases:

- I. Fantasy Sketch (detailed in a separate document)
- II. Interview
- III. Construction of a Repertory Grid

Right and Permissions

You will retain all copyright and patent rights to any intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research, and ownership of these rights will be yours and yours alone.

You give me permission to reproduce all intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research in academic and other publications without limit and without compensation and to show others your intellectual property as needed for research purposes.

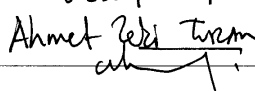
You give me permission to record and reproduce in text and other forms the contents of Phase II and Phase III of the research in academic and other publications without limit and without compensation and to share this data with others as needed for research purposes.

Identification

Please select one of the following options and initial your choice.

- ☐ The permissions above are given with the understanding that your intellectual property and comments **must** be fully identified and credited by name in the published research.
- ☒ The permissions above are given with the understanding that your intellectual property and comments **may** be fully identified and credited by name (at my discretion) in the published research.
- ☐ The permissions above are given with the understanding that your identity **will be kept confidential** in all publications, except as required for thesis review and approval. This means that while your intellectual property and comments may appear in published works, you will not be identified or credited by name, except as required for academic review and approval.


Mithat Konar
(researcher's name, signature and date)

03.04.2007

Ahmet Zeki Turan
(participant's name, signature and date)

Agreement for Research Participation

This is an agreement between Cem Alpay (hereafter referred to as "you" and "your") and Mithat Konar (hereafter referred to as "me", "I", and "my").

Basis

You have agreed to participate in my thesis research. Participation in the research will consist of the following phases:

- I. Fantasy Sketch (detailed in a separate document)
- II. Interview
- III. Construction of a Repertory Grid

Right and Permissions

You will retain all copyright and patent rights to any intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research, and ownership of these rights will be yours and yours alone.

You give me permission to reproduce all intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research in academic and other publications without limit and without compensation and to show others your intellectual property as needed for research purposes.

You give me permission to record and reproduce in text and other forms the contents of Phase II and Phase III of the research in academic and other publications without limit and without compensation and to share this data with others as needed for research purposes.

Identification

Please select one of the following options and initial your choice.

- ☒ The permissions above are given with the understanding that your intellectual property and comments **must** be fully identified and credited by name in the published research.
- ☐ The permissions above are given with the understanding that your intellectual property and comments **may** be fully identified and credited by name (at my discretion) in the published research.
- ☐ The permissions above are given with the understanding that your identity **will be kept confidential** in all publications, except as required for thesis review and approval. This means that while your intellectual property and comments may appear in published works, you will not be identified or credited by name, except as required for academic review and approval.


Mithat Konar 05/04/2007

Mithat Konar
(researcher's name, signature and date)


Cem Alpay 05/04/2007

(participant's name, signature and date)

Agreement for Research Participation

This is an agreement between Dilek Aygildiz (hereafter referred to as "you" and "your") and Mithat Konar (hereafter referred to as "me", "I", and "my").

Basis

You have agreed to participate in my thesis research. Participation in the research will consist of the following phases:

- I. Fantasy Sketch (detailed in a separate document)
- II. Interview
- III. Construction of a Repertory Grid

Right and Permissions

You will retain all copyright and patent rights to any intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research, and ownership of these rights will be yours and yours alone.

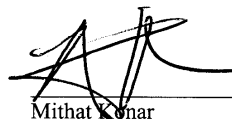
You give me permission to reproduce all intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research in academic and other publications without limit and without compensation and to show others your intellectual property as needed for research purposes.

You give me permission to record and reproduce in text and other forms the contents of Phase II and Phase III of the research in academic and other publications without limit and without compensation and to share this data with others as needed for research purposes.

Identification

Please select one of the following options and initial your choice.

- ☐ The permissions above are given with the understanding that your intellectual property and comments **must** be fully identified and credited by name in the published research.
- ☒ The permissions above are given with the understanding that your intellectual property and comments **may** be fully identified and credited by name (at my discretion) in the published research.
- ☐ The permissions above are given with the understanding that your identity **will be kept confidential** in all publications, except as required for thesis review and approval. This means that while your intellectual property and comments may appear in published works, you will not be identified or credited by name, except as required for academic review and approval.


Mithat Konar
(researcher's name, signature and date)
27 April 2007


Dilek Aygildiz
(participant's name, signature and date)
03.05.2007

Agreement for Research Participation

This is an agreement between GÜNNAYE TUBAN (hereafter referred to as "you" and "your") and Mithat Konar (hereafter referred to as "me", "I", and "my").

Basis

You have agreed to participate in my thesis research. Participation in the research will consist of the following phases:

- I. Fantasy Sketch (detailed in a separate document)
- II. Interview
- III. Construction of a Repertory Grid

Right and Permissions

You will retain all copyright and patent rights to any intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research, and ownership of these rights will be yours and yours alone.

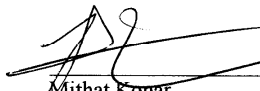
You give me permission to reproduce all intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research in academic and other publications without limit and without compensation and to show others your intellectual property as needed for research purposes.

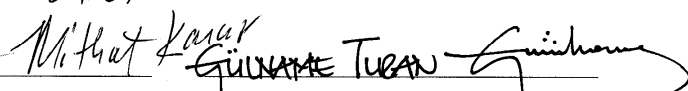
You give me permission to record and reproduce in text and other forms the contents of Phase II and Phase III of the research in academic and other publications without limit and without compensation and to share this data with others as needed for research purposes.

Identification

Please select one of the following options and initial your choice.

- ☐ The permissions above are given with the understanding that your intellectual property and comments *must* be fully identified and credited by name in the published research.
- ☒ The permissions above are given with the understanding that your intellectual property and comments *may* be fully identified and credited by name (at my discretion) in the published research.
- ☐ The permissions above are given with the understanding that your identity *will be kept confidential* in all publications, except as required for thesis review and approval. This means that while your intellectual property and comments may appear in published works, you will not be identified or credited by name, except as required for academic review and approval.

03.04.07

Mithat Konar
(researcher's name, signature and date)

03.04.07

GÜNNAYE TUBAN
(participant's name, signature and date)

Agreement for Research Participation

This is an agreement between Hümanur Bağlı (hereafter referred to as "you" and "your") and Mithat Konar (hereafter referred to as "me", "I", and "my").

Basis

You have agreed to participate in my thesis research. Participation in the research will consist of the following phases:

- I. Fantasy Sketch (detailed in a separate document)
- II. Interview
- III. Construction of a Repertory Grid

Right and Permissions

You will retain all copyright and patent rights to any intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research, and ownership of these rights will be yours and yours alone.

You give me permission to reproduce all intellectual property that you produce in Phase I (the "Fantasy Sketch" portion) of the research in academic and other publications without limit and without compensation and to show others your intellectual property as needed for research purposes.

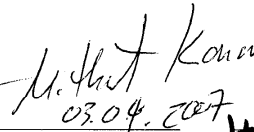
You give me permission to record and reproduce in text and other forms the contents of Phase II and Phase III of the research in academic and other publications without limit and without compensation and to share this data with others as needed for research purposes.

Identification

Please select one of the following options and initial your choice.

- ☐ The permissions above are given with the understanding that your intellectual property and comments **must** be fully identified and credited by name in the published research.
- ☒ The permissions above are given with the understanding that your intellectual property and comments **may** be fully identified and credited by name (at my discretion) in the published research.
- ☐ The permissions above are given with the understanding that your identity **will be kept confidential** in all publications, except as required for thesis review and approval. This means that while your intellectual property and comments may appear in published works, you will not be identified or credited by name, except as required for academic review and approval.


Mithat Konar
(researcher's name, signature and date)


03.04.2007
HÜMANUR BAĞLI
3.4.07
(participant's name, signature and date)

ABOUT THE AUTHOR

Mr. Konar was born in 1962 in the United States of America and lived there until 2001. He relocated to İstanbul, Turkey in that year to begin work at Doğuş University, where he is currently a lecturer in Computer Engineering. He holds degrees in Electrical Engineering and Speech-Communication, both from the University of Minnesota. He is currently also active as a technical design consultant in the area of music reproduction equipment.

His academic honors include Eta Kappa Nu, Tau Beta Pi, Phi Kappa Phi, and Golden Key National Honor societies; and he was a Dean's Scholar at the Illinois Institute of Technology, where he briefly studied graduate Product Design in the Institute of Design.

Prior to locating to İstanbul, Mr. Konar worked as a production assistant in public television, as a software engineer for a manufacturer of electronic music instruments, and as an applications engineer for a manufacturer of audio test equipment. While in the U.S.A. he also founded an independent business for the purposes of designing, manufacturing, and marketing high-value music reproduction equipment.

His design interests include design theory, design methodology, gender issues in design, and interdisciplinary approaches to design.