FROM MACHINE HOUSE TO SMART HOME: THE RELATIONSHIP BETWEEN TECHNOLOGY AND PRIVATE SPHERE THROUGHOUT THE 20TH CENTURY

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ABSTRACT

FROM MACHINE HOUSE TO SMART HOME:
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THROUGHOUT THE 20TH CENTURY

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This study is an attempt for providing a socio-historical perspective to the *smart home* concept that is a proposal for the future domestic sphere by the application of intelligent technologies. For achieving this attempt, the smart home is investigated with its roots within the social history of domestic technology, by posing the question of a relation between the *machine house* idea of modern architecture and the smart home concept as the main question of the research. After an inquiry on the smart home concept and on the future private sphere that is envisaged within it, the emergence of modern private sphere, the transformation of private sphere under the impacts of industrialization, the appearance and the social consequences of the machine house idea, the introduction of mass produced appliances to the home and the impacts of it on private sphere, the development of communication and information technologies and their domestication processes are investigated. The co-constructive relationship of technology with the private sphere is pursued throughout this investigation.

The research questions of the study are answered in the light of the gained knowledge and critical perspective throughout the investigations. At the end, it is revealed that the smart home has conceptual, technical, and ideological constructive roots within the histories of the modern private sphere, modern architecture and design, and domestic communication and information technologies. It is discussed that these roots constitute the smart home as a domain of social reproduction, which also provides the ground for its conceptualization and promotion as the future domestic sphere.

Keywords: Smart Home, Private Sphere, Technology, Machine House, Domestication of Technology, Technological Determinism, Modernism, Social Engineering, Domestic Products, Communication and Information Technologies, Panopticism, Surveillance Technology.

öz

MAKİNA EV'DEN AKILLI EV'E:
20. YÜZYIL BOYUNCA TEKNOLOJİ VE ÖZEL ALAN İLİŞKİSİ

Günlü, Esra
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Bu çalışma akıllı teknolojilerin eve uygulanmasına dair bir öneri olan *akıllı ev* kavramına sosyo-tarihsel bir perspektif sunma amacıyla yapılmıştır. Bu amaca erişmek için, akıllı ev, modern mimarinin kurguladığı bir kavram olan *makina ev* ilişkisi bağlamında sorgulanarak ve teknolojinin evcilleştirilmesinin sosyo-tarihi içinde kökenleri aranarak incelenmiştir. Akıllı ev kavramının bir sorgulamasından sonra, modern özel alanın ortaya çıkışı, özel alanın endüstrileşme etkisi altında değişimi, makina ev fikrinin ortaya çıkışı ve doğurduğu sonuçlar, endüstriyel ürünlerin eve girişi, iletişim teknolojilerinin ortaya çıkışı, gelişimi ve evcilleştirilmesi konuları incelenmiştir. Bu inceleme boyunca yapılan tartışmalar içinde, teknoloji ve özel alanın karşılıklı olarak birbirini yapılandıran ilişkisi ortaya konmuştur.

Çalışma boyunca yapılan araştırma ve tartışmaların sonunda kazanılan birikim ve eleştirel bakış açısı ışığında, çalışma başında ortaya konulan araştırma sorularına cevap veren tartışmalar sunulmuştur. Akıllı evin, modern özel alan, modern mimari ve tasarım ve evcilleştirilmiş iletişim ve bilişim teknolojilerinin tarihleri içinde, kavramsal, teknik ve ideolojik yapısal köklerinin olduğu, ve akıllı evi, bir yeniden

üretim alanı olarak tesis eden bu yapısal köklerin, aynı zamanda, akıllı evin, geleceğin evi olarak tasavvur edilişine zemin sağladığı ortaya konmuştur.

Anahtar Sözcükler: Akıllı Ev, Özel Alan, Teknoloji, Makine Ev, Teknolojinin Evcilleştirilmesi, Teknolojik Determinizm, Modernizm, Toplum Mühendisliği, Endüstriyel Ev Ürünleri, Medya ve İletişim Teknolojileri, Panoptizm, Gözetim Teknolojisi.

To my family and my grandparents…

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CHAPTER 1

INTRODUCTION

> The sites of public memory in the twentieth century are no longer public buildings....the twentieth century is from the beginning, and as it closes, obsessed with the house (Colomina, 1999, p.337).

1.1. Motivation behind the Study

An arbitrary question that emerged months before the start of the study, when the author first faced with the smart home concept, provided the propulsion of this study: Is there any relationship between the idea of *smart home* and Le Corbusier's *machine house* concept? This question rose because of both the two concepts' being about domestic sphere and technology. Even without knowing the meanings of these concepts, there could be discerned a connection between their denotative meanings; at least between smart and machine and between house and home. However, knowing the meaning of these concepts in general terms, it appeared that the main connection between these concepts was on another dimension: The advent of both concepts as 'ideal houses' of their periods. This question waited for a while in mind until deciding to start such a study.

At the beginning of the study, a research on both of the concepts and the conditions of their historical periods was made to put this spontaneous question in a context and to formulate it as an academic research question. During this early research, it was realized that both the smart home and the machine house concepts could be analyzed in the much wider context of the integration of technology (its products, tools, systems, ideologies) into the domestic sphere.

Thus, this study is based on two main assumptions: First, the assumption that the 'smart home' concept (even though it is a predictive idea for the future conditions of domestic sphere and even though it uses most novel technologies) is not a novel concept in its basic intentions and challenges behind. Second, the assumption that the 'machine house' concept of the modern architecture in the beginning of the 20th century and the 'smart home' concept that is a predictive concept to identify the future domestic sphere embedded with intelligent technologies have a relation that can be sought for in the context of the social history of technology.

Based on the assumptions above, the study is grounded on discussions on the relationship between technology and the private sphere since the industrialization period.

1.2. Scope and Focus of the Study

This study is an attempt for providing a perspective within the discussions on the social history of the relationship of technology and domestic sphere. Thus, this study surveys the history of the evolution and reformation of the domestic sphere and technology in relation with each other since the industrialization period within its scope. The machine house idea, domestic design and domestic technology throughout the 20th century successive to the machine house idea are the issues of discussion within the context of the study. The focus of the study within this socio-historical scope is the investigation and discussion of important points that constituted the roots of the smart home idea.

1.3. Aim of the Study

The aim of this study is to provide a socio-historical perspective to the smart home concept. For achieving this, the history of the relationship between technology and private sphere is investigated to find out the roots of the smart home idea in this social history that covered mainly the 20th century since the emergence of the machine house idea.

1.4. Research Questions

According to the assumption that, in spite of the novel technologies behind it and in spite of its being a proposal for the future, the 'smart home' concept is not a novel concept in its basic intentions and challenges behind, and has constructive roots in the history of the architecture, design and technology since the industrialization period,

- What is the relation between the 'machine house' idea of modern architecture and the 'smart home' concept?

The main research question is supported with the following sub-questions:

1. According to the assumption that the 'machine house' is an architectural concept formed under the impacts of technological and social issues of its period,

- What are the social and technological conditions that led to the development of the machine house idea?
- What is the context in which the machine house idea takes place in the relationship between technology and domestic sphere?
- What are the impacts of the machine house idea on the domestic sphere?

2. Believing that the concept of smart home emerged with important influences of the developments in communication and information technologies,

- What were the motivations behind the domestication of the communication and information technologies?
- What are the effects of these technologies on the private sphere?

3. As the smart home idea is a technological design proposal for the private sphere,

- How is the private sphere conceptualized within the smart home concept?
- What are the socio-historical roots of the private sphere conceptualized within the smart home idea in the history of private sphere?

1.5. Key Terms and Concepts

This study is mainly constructed on literature research from different disciplines, namely sociology, engineering, design engineering, computer sciences, industrial design, design history, media studies, women studies, architecture and history. Thus, it uses various concepts derived from these disciplines. Therefore, for providing a more comprehensive reading, it is necessary to clarify the meanings and contexts of some important concepts and to mark out those contexts, which are covered in this study.

Technology

Encyclopedia of Britannica (EB) defines *technology* as "the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment" ("Technology", 2007). Moreover, in the article *History of Technology* (2007) in EB, it is explained that technology etymologically is a combination of two Greek words: *techne* -meaning art, craft- and *logos* -meaning word, speech-. Thus, it signified a discourse about arts. For a long period, technology remained to mean the *discourse* and, as it is explained by Misa (2003) the sum of written or anonymous *knowledge* about fine and applied arts. In the 17th century when it appeared in English, its meaning was reduced to applied arts, and this changed in the course of time to include the means and these arts' resulting systems and products. Thus, starting from around the 20th century, the signification range of technology includes "means, processes, and ideas in addition to tools and machines" ("History of Technology", 2007).

In this shortly explained wide context, it should be indicated that technology signifies a kind of process, providing a 'change' in the environment, from the beginning to its end. The thinking and designation period, the application period and the resulting thing -not necessarily something physical- can be described with the term technology.

In this study, the use of the term *technology* is limited with its context starting from the industrialization era, when the practicality and purposeful manipulation took significance. Technology started to be perceived as the application of the scientific knowledge. However, it should be noted that technology is a more general term, and that a technology does not necessarily have to carry a relation to science. To give concrete examples; a system designed for an organization of an environment can be named as a technology as well, as used for panoptic systems by Foucault (see Chapter 4); or a daily object designated for solving a certain problem, like the feeding bottle for babies, is also counted as a technology. On the other hand, the more current purposeful and practical systems and tools such as electronic devices and communication systems are also technologies. Hence, technology within this study indicates such a wide context that can provide us a social perspective, rather than a merely technical one, to approach to technology.

Technological Determinism

One of the most important concepts in the discussions of this study is *technological determinism*. Technological determinism as used by Williams (1990), Pantzar (1997), Morley (2000), and Silverstone (2006), defines an approach in social sciences, in the studies of science and technology. Even though it was firstly used to criticize a vision in social sciences in the 1970s, it now covers a general tendency of considering science and technology as the determining paradigms in the social, cultural and political changes.[1] Technological determinism can be a way of understanding the social changes in history. However, it can be also associated with futuristic perspectives and turn to a predictive notion, which assigns the social changes, which will appear in the future, to the technological and scientific progress. This idea has been criticized by different social theorists and scholars, it was revealed that the social aspects are emerging or altering in effect of a number

[1] Williams (1990) in a study provided in 1974 discusses the technological determinist vision and states that is supports that, "New technologies are discovered, by an essentially internal process of research and development, which 'created the modern world'. The effects of the technologies, whether direct or indirect, foreseen or unforseen, are as it were the rest of history. The steam engine, the automobile, television, the atomic bomb, have made modern man and the modern condition" (p.5).

of very complex relations of, again, other social aspects. Thus, technology is not the determining factor of social changes.

Nevertheless, this does not mean that technology has nothing to do with social conditions and does not affect the society. Instead of this, it is important to talk about the mutual effects of technology and social aspects. Misa (2003) defines this relationship as the mutual 'co-construction' of technology and social conditions, and explains that, "Technologies interact deeply with society and culture, but the interactions involve mutual influence, substantial uncertainty, and historical ambiguity, eliciting resistance, accommodation, acceptance, and even enthusiasm" (p.3). Thus, technology should be inserted within a social context, which is continuously reshaping the technology while being reshaped by it (but not only by it).

Consequently, the perspective in this study abstains from a technological deterministic perspective while discussing the past, present or future issues, as it is necessary especially for a social and historical investigation of technology.

Home, House, Domestic Sphere

Home, house and *domestic sphere* are concepts, which are mostly used synonymously, showing that they have a common point in their meanings. However, they also have important distinctions. To start with *house*; the first of the 24 definitions of Oxford English Dictionary (OED) for house is; "A building for human habitation; esp. a building that is the ordinary dwelling-place of a family." In the second definition in OED, it is defined as; "A building for human occupation, for some purpose other than that of an ordinary dwelling". It gives the examples of workhouse, lighthouse, almshouse, etc. The importance of these two definitions is that they indicate a structure (i.e. building) defining a space with physical boundaries. A similar context is also visible in other definitions of house. Thus, even in its different uses, what *house* defines is something 'physical' or, visible and tangible. On the other hand, *home,* which is considered a synonym of house, is something more about 'feelings'. One of the definitions of *home* in the OED is, "A

place, region, or state to which one properly belongs, in which one's affections centre, or where one finds refuge, rest, or satisfaction." Hence, it defines a space or an environment that not necessarily has some physical boundaries, but mainly provides some specific feelings. It can be a house, a country, a public building and even just a situation like talking to a person or looking at a special view. However, it must be distinguished that the context of *home* concept, as used in this thesis, defines a 'house' providing some special feelings (or a spiritual context). Thus, for us, home is a special kind of house.

To define *domestic sphere*, which appears also in literature as domestic space or domestic environment, it is necessary to define the term *domestic*. According to OED, *domestic* simply means "of or belonging to the home, house, or household; pertaining to one's place of residence or family affairs". Domestic is an adjective for defining a thing being in relation with family's or individual's house or home. This relationship can have physical or 'spiritual' context. Consequently, *domestic sphere* covers both physical/spatial and spiritual/perceptual areas. In the light of the explanations of the meanings of home, house and domestic sphere, in this study, domestic sphere is used as a more general term including both home and house.

Private, Public

Privacy and publicity are generally accepted as opposite terms. Weintraub (1997) defines two criteria in contrasting public and private:

> 1. What is hidden or withdrawn versus what is open, revealed, or accessible. 2. What is individual, or pertains only to an individual, versus what is collective, or affects of a collectivity of individuals. This individual/collective distinction can, by extension, take the form of a distinction between part and whole (of some social collectivity) (pp.4-5).

Moreover, he adds that private and public can blur into each other or they can be combined in different ways in some special cases, but he accepts that the perspective above clarifies their distinction in principle (Weintraub, 1997). Thus, according to the statement of Weintraub, *publicity* contains mainly 'collectivity' and

'(equal) accessibility' as its important contexts, while *privacy* indicates 'individuality' and a 'limited accessibility' or 'inaccessibility'.

Publicity in social sciences is debated in close relation with politics and state, which is out of the scope of this study, even while accepting that the debates in the study can be extended to these contexts. Since the focus of the study is mainly on private domain, *publicity* in the thesis is used in its general terms of meaning and mainly, in relation with *privacy*.

In the International Encyclopedia of the Social Sciences, Simmel (1968) explains *privacy* in its contextual relationship with some concepts. He defines *privacy* as a concept related to "solitude, secrecy, and autonomy" (p.480).

Unlike Simmel's approach, Bok takes attention to privacy's relationship to 'outside'. She defines it as "the condition of being protected from unwanted access by others - either physical access, personal information or attention" (Bok, as cited in Smith, 2001, p. 11250).

This last definition of Bok leads us to the context of privacy as used in this study. Privacy, as a condition can be 'obtained' in different realms, which can provide the protection from others. These realms can change according to different cultures and different periods. However, for this study, due to the focused historical period, privacy is a condition obtained mainly -but not only- in domestic sphere, which contains both the family realm and individual realm. Leaving the clarification of the reasons behind this situation to a later discussion, this explanation constitutes the main context of *privacy* in the study.

Public and private are mostly accepted and perceived as opposite realms. The opposition or dualism between these concepts dates back to as early as the Ancient period. However, it is better to define them as two distinct terms instead of opposite ones for several reasons. Firstly, as it is discussed briefly in Chapter 2, these terms had different meanings in different historical periods, which even contradicted with

one another (i.e. In one period, if a sphere or action was identified as 'private', it could be counted as 'public' in another period, and vice versa). Secondly, there can be found always a relativity of a public or private act that can change according to different circumstances. Thirdly, the 'dichotomical' perception in social sciences could be criticized and there can be found different ideological and contextual conflicts, as it was revealed especially by feminists.[2] Thus, the approach in this study does not define these two spheres exactly as opposite. Instead, they are approached as two concepts in continuous interaction, which reforms both sides of this interaction.

1.6. Methodology and the Structure of the Study

The method conducted throughout this study is mainly based on literature research. In order to reflect a wide perspective, which is necessary for a consistent socio-historical debate on the issues covered by the study, the research is conducted within different literature ranging from social to engineering sciences. The issues that have been studied by different theoreticians and scholars are discussed with consideration of different arguments provided by them. The studies on histories of technology, architecture and design were surveyed and the theoretical discussions on the historical issues were examined parallel to these surveys. Consequently, this study is mainly constituted from reviews of necessary historical issues and from the following discussions that were informed by these reviews.

Chapter 2 focuses on the smart home idea. After the explanation of the technical and conceptual background of the idea, a review of some current important studies on the smart home is provided. Since the concept is still a developing one, rather than the inhabited smart homes, several conceptual scenarios built by important research groups are illustrated. After this introduction to the concept, the main

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[2] In feminist literature different dichotomies in social sciences (public-private, spiritual-logical, object-subject, ..) are discussed to be mainly rooted in the historical dualism of two genders, and the dualist perception in social sciences is critisized with carrying a sexist dualist point of view. Look at *L'un est l'autre* by French historian Elisabeth Badinter or its Turkish translation *Biri Ötekidir,* Şirin Tekeli (trans.), Afa Yayınları.

features of the technological systems within the smart home are presented. Likewise, the private sphere envisaged within the current visions of smart home and the functionalities provided according to these are examined. Lastly, a discussion on the current critical visions on the smart home is carried out.

The three chapters, after Chapter 2, follow roughly a historical order starting from the industrialization era until today. They are structured in consideration of seeking the origins of the analyzed characteristics of the smart home in the history of the mutual relationship of technology and private sphere. Thus, the main issues covered in these chapters are the emergence and configuration of private sphere in the modern era, the reformation of home in the early 20th century under the impacts of the architectural and industrial attempts, and the social shaping of media, communication and information technologies and their impacts on the relationship of the private and public spheres.

In Chapter 3, the emergence of the modern private sphere and its accepted formation as the opposite of public sphere is discussed. The attempts for rationalization of the private sphere with the impacts of the industrialization, and the shaping of home as an area of techno-scientific study are analyzed. The meanings and conditions of home originated in the early modern and industrialization periods are revealed.

One of the two important concepts in the study, the machine house, is investigated in Chapter 4. Modern architecture is discussed and criticized with its ideological and social intentions formed by earlier modern perspectives. In a similar manner, the homes of tomorrow of the 1930s are also reviewed and their affiliations to modern architecture and to other periodic ideologies are revealed. The responses to the 'machine house' and 'home of tomorrow' concepts within society are discussed. The second section of Chapter 4 covers the debates on the domestication of early products particularly in the USA, considering its significant consequences. The process of integration of technological products to home is scrutinized with its connections to the issues handled in the previous sections of Chapters 3 and 4. At

the end, the impacts of both modern architectural approaches and domestication of products on private domain and the social consequences of them are discussed.

Chapter 5 concentrates on the period of the domestication of information and communication technologies (ICTs), which appeared mainly in the second half of the 20th century. This period is discussed starting from the emergence of physical mobilization that motivated the development of ICTs in relation with different social, political and economic conditions of the period. The social shaping of media and communication and then computing technologies and their reproductive impacts on the private domain are investigated within this chapter. The social and ideological context that these technologies resided in, and that are conveyed from the history discussed in the previous chapters are investigated. At the end of the chapter, the current private domain, which also constitutes the target of conveyors of the smart home idea, is discussed with its social conditions.

In Chapter 6, the research questions are answered as a result of the survey made. The socio-historical background that the smart home concept rests on and the relation of the smart home idea to the machine house idea are revealed in the light of the discussions conducted throughout the thesis.

CHAPTER 2

BACKGROUND OF THE SMART HOME CONCEPT

> For forty years, computer systems have catered to machines. Purporting to serve people, they actually have forced people to serve them. They have been difficult to use. They have required us to interact with them on their terms, speaking their languages and manipulating their parts. They have not been aware of our needs or even of whether we were in the room with them ("Oxygen", 2002, p.3).

2.1. The Definition of the 'Smart Home'

Aldrich (2004) defines *smart home* as,

> A residence equipped with computing and information technology, which anticipates and responds to the needs of the occupants, working to promote their comfort, convenience, security and entertainment through the management of technology within the home and connections to the world beyond (p. 17).

In the official website of Philips Research[3], the smart home is explained as a new house environment that is embedded with *Ambient Intelligence* technology, which can "think on its own and react to (or, possibly even predict!) your individual needs so that you don't have to work to use it" (Philips Research, 2004a). In the same webpage, the smart home is envisioned as a space where seamlessly connected technological systems are invisibly embedded in the environment, and controlled through natural movements, gestures and voices of people.

[3] Philips currently works on its own smart home concept in an experimental level in HomeLab, which is a prototypic home of Philips with embedded technologies.

Hence, the smart home is a predictive conceptual home environment that contains a communication system among the things in every part in the home, which reacts to the actions of dwellers of the home and provides them with different functionalities.

2.1.1. Conceptual Background of the Smart Home Idea

The conceptual roots of the smart home idea date back to as early as the 1930s, when the first engineering versions of *homes of tomorrow* with the Dymaxion House of Buckminster Fuller appeared. The Dymaxion House was envisioning an engineering model of homes of tomorrow, which contained both different communication products as well as perfectly working lighting and heating systems Thus, it was a leisure and communication center.

The 'home of tomorrow' notion started as modernist houses of the 1930s and was divided into two different formats after the fall of the idea of mass-produced houses (see Chapter 4). In one direction, the notion grew more on an architectural basis. In the other direction, they had a more industrial design and engineering basis as the home filled with electronic and automatic home gadgets. The homes of this second direction were based on the fantastic concepts that were used in the promotion of the products of the period. Early versions of that second kind were mostly houses with robotic-like appliances (or directly robots) and electronic controlling systems working mostly wirelessly, which can be resembled to the remote controls of today.

An educational movie, *Leave it to Roll-Oh* produced for New York World's Fair in 1940 by Handy (Jam) Organization clearly visualizes the approach in the second direction. In the movie, a happy housewife is visualized who has a robot (Roll-Oh) in the home that deals with cleaning, cooking and other house works. In another part of the movie, factories, cars, schools, and other public places are shown with working mechanical details inside them. These mechanical pieces are named as small machines by the narrator of the movie and it is predicted that, they will be everywhere around in the future as 'thinking things' (Figure 1).

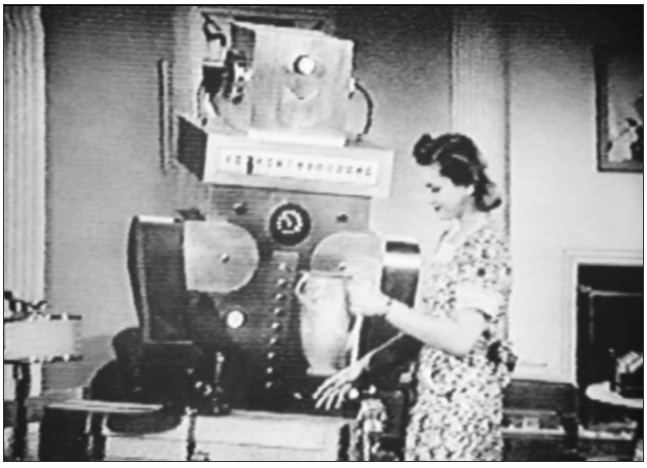

Figure 1: A scene from *Leave It to Roll-Oh* movie, Jam Handy Organization, 1940. (Source: Spigel, 2005, p.406)

Figure 2: A scene from the *Design for Dreaming* movie, MPO Productions, 1956. (Source: http://www.archive.org/details/Designfo1956)

These fantastic visions for houses of tomorrow survived during the second half of the 20th century, as well. [4] The movie, *Design for Dreaming,* produced in 1961 by MPO Productions for General Motor's Motoroma exhibition is another important visual source to understand the visions for homes of tomorrow during the period. The movie shows a woman traveling in the 'wonder world' provided by design with

[4] During the period, there were produced tens of these movies shown in public exhibitions and fairs and on TV, after the emergence of TV. (For a review, see the Prelinger Archives online at www.prelinger.com) Some other important fantastic movies visualizing houses of tomorrow are *Magic in the Air* for Chevrolet in 1941 (about TV as a leisure tool), *Touch of Magic* (1961) for General Motors, *Out of this World* (1961) for General Motors, *Your Home is What you Make it* (1969) for Whirlpool Corp.

guidance of a magician-like man (perhaps, representing a designer). In the movie automobiles and a futuristic kitchen with interesting products, take the attention (Figure 2).

2.1.2. Technical Background of the Smart Home Idea

In various studies on the smart home carried out in the fields of technology, science and engineering, the history of the smart home is explained as dating back to the 1980s when the first applications of digital technologies to home appeared, and mostly to the early 1990s, when the computer scientists took a general interest in the concept of *ubiquitous computing*, which was developed by Marc Weiser. Ubiquitous computing was firstly announced in 1991, and it simply contains a vision of embedding invisible intelligent technologies in objects and environment, which will provide different functionalities by simply working with natural gestures and movements of humans without the necessity for a physical interface for controlling them. Thus, it is important to indicate that the general notions of the researches on smart systems for the domestic environment concentrate on the applications of ubiquitous computing.

2.1.2.1. Ubiquitous Computing

Ubiquitous technology (Ubicomp) is a concept developed by Weiser, and announced by him in 1991 in his paper *The Computer for the 21st Century*. It is also used synonymously with the terms *pervasive computing*, *calm technology* and *ambient intelligence*. In the website of Weiser, the history of computing is analyzed in three parts. At the beginning, it is explained, the computers were consisting of mainframes shared by many people simultaneously. The next period is defined as the personal computing era, which we currently experience by interacting with a computer alone mainly through a monitor and keyboard. In the website, it is stated that, after personal computers, "Next comes ubiquitous computing, or the age of *calm technology*, when technology recedes into the background of our lives" (Ubiquitous Computing, 2007).

This third wave of computing is argued as the opposite to the second wave, that is, virtual reality. Again, in the same website virtual reality is accused to put people in a 'computer-generated world' while ubicomp is envisioned to take the computer to the everyday environment. To make it clear, instead of people dominated by computers, computers are reacting and working according to the actions and preferences of people. It is stated that, "Virtual reality is primarily a horse power problem; ubiquitous computing is a very difficult integration of human factors, computer science, engineering, and social sciences" (para.5) (Figure 3).

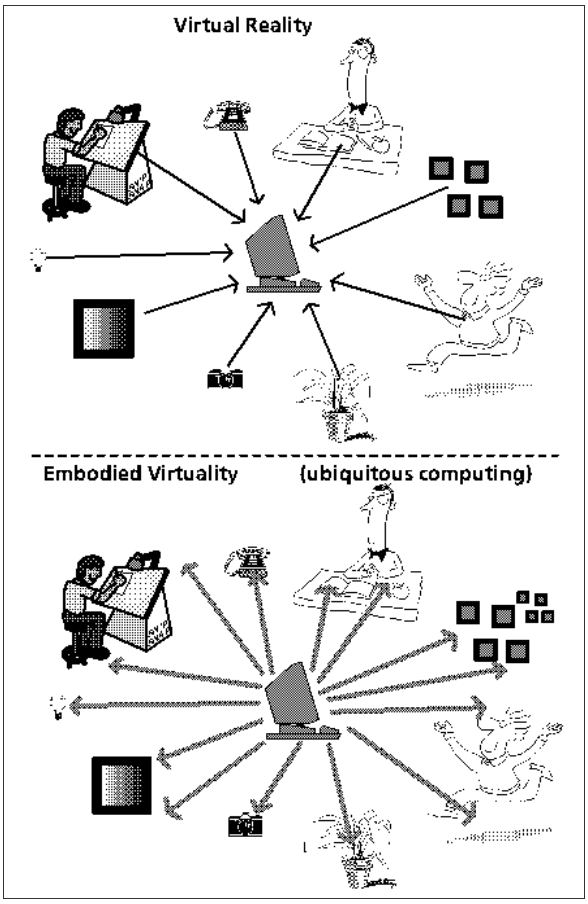

Figure 3: Cartoon illustrating virtual reality compared to ubicomp.
This cartoon indicates that in virtual reality, the computer was the core and people necessitated to fit to the obligations of computers, but in the ubicomp the computer will be embedded in different environments and objects, which will be suited to the daily behaviors and natural actions of people. (Source: http://www.ubiq.com/hypertext/weiser/UbiHome.html)

According to Weiser (1999), "The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it." (p.3). He supposes that for ubicomp to be realized, there are three necessary elements: Cheap, low-power computers with convenient displays, the necessary software and the network, which ties all these together. The current technical applications for ubiquitous computing are surely different from the first versions developed by Weiser and his colleagues, but the logic behind these systems are the same, which is inserting computational technology to environment and connecting all electronic pieces and software in a network. In an environment embedded with ubicomp, the system is a sensitive and responsive one that provides an interaction between human and system and between the products and 'tools' inside the system. Moreover, the network between different products gives the system of smart the ability of being informed about the people inside the system (not necessarily inside the home). This means that, the system, after analyzing the continuous behaviors or movements of users in time can automatize some functions of the system without the necessity of the control of the user. These all are what make it 'smart' or 'intelligent'.

The MIT Laboratory for Computer Science explains their vision of pervasive computing in the future as a human-centered system. They explain that,

> In the future, computation will be human-centered: it will enter the human world, handling our goals and needs and helping us to do more by doing less. *Computation will be pervasive, like batteries, power sockets, and the oxygen in the air we breathe*. Configurable generic devices, either handheld or embedded in the environment, will bring computation to us, whenever we need it and wherever we might be. As we interact with these "anonymous" devices, they will adopt our information personalities. They will respect our desires for privacy and security. We won't have to type, click, or learn new computer jargon. Instead, we'll communicate naturally, using speech and gestures that describe our intent ("send this to Hari" or "print that picture on the nearest uncongested printer"), and leave it to the computer to carry out our will ("Oxygen", 2002, p. 3. Emphasis added).

This vision, which seems to be more 'information-centered', envisions the pervasive computing systems as the superseder of computers. In fact, this explanation reveals the idea that announced by Weiser in a much clear way. Even though there are

some new product concepts, the studies on pervasive computing or ubicomp do not envisage new products that are superseding the current products or the 'form' of our houses. Rather, the idea is mainly designing systems that are inserted within the products or within the physical space in the environment, thus, to set up in these products the functions of previous electronic products (e.g. a pen can become a fax machine), novel functions (e.g. a sofa can become a tangible remote communication device), or new controlling systems of these functions (e.g. controlling the music player with voice through the system inserted in any object at home). All of these are mainly working through signal transformation and information transmission (computing) within a network, hardware of which is the whole physical environment.

To this extend, the smart home mainly constitutes the idea of a living environment that is embedded with these ubicomp systems. This environment is envisioned as consisting of smart lighting units, smart heating units, smart music and video systems, and also, smart tables, smart chairs, smart sinks, smart toilets, smart beds, smart carpets, etc., that can be controlled through the natural movements or behaviors in daily routine. Thus, all sorts of computing devices will disappear into the background of our everyday lives, and it is envisioned that the "the home of the future will actually look more like the home of the past" (Philips Research, 2004a) (Figure 4).

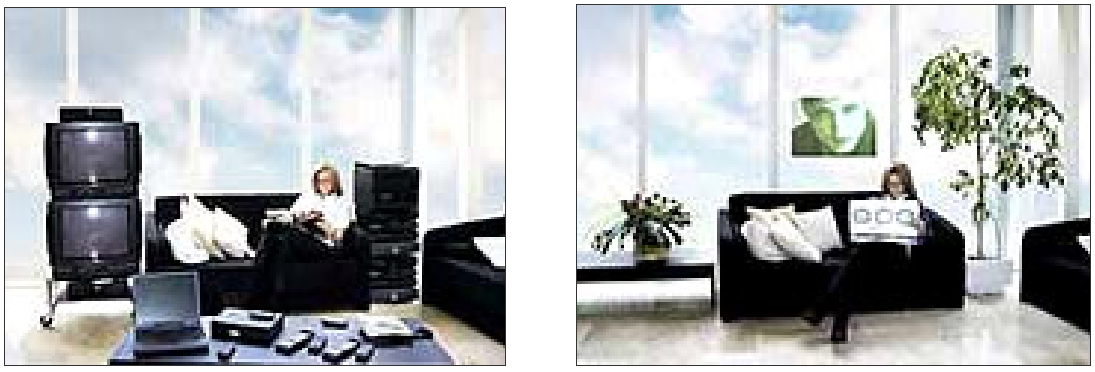

Figure 4: Current home compared to the smart home.
Left: The current situation; Right: Smart home version (Source: www.research.philips.com)

2.1.2.2. Current Smart Homes with Ubicomp Technology

The smart homes after the emergence of the ideas of wired house and ubiquitous technologies were mostly developed by the electronics and communication companies and by academic research institutions, as visionary concepts and as the prototypic laboratory houses for making research and for testing different smart systems. One of the first versions of the smart homes in current terms is the Adaptive House, which is a house embedded with sensors and computational devices and turned into a life laboratory, developed by the University of Colorado in 1998. As explained by Mozer (n.d.) who is a participator in the project, Adaptive House is an attempt for developing a computerized home that can observe and learn the dwellers' periodic actions and the way they perform tasks in the home. It 'programs itself' according to these patterns, and after a while predicts the necessities and acts 'automatically'. It provides functionalities such as controlling the heating, ventilation, air conditioning and lighting systems.

The ComHOME project developed by the Interactive Institute in Sweden in 1998 is another home lab inserted in an apartment for searching on the home-based activities through the sensors and voice control devices (Aldrich, 2003).

House_n developed by Massachusetts Institute of Technology is one of the most important smart home research projects, which was conducted in cooperation with different companies. As it is explained in the website of MIT, House_n is a house designed to be "a highly flexible and multi-disciplinary observational research facility for the *scientific study of people* and their interaction patterns with new technologies and home environments" (MIT House_n Research Group, n.d.).

After these projects, conducted mainly by academic institutions, newer versions of these living laboratories emerged within the conduct of the electronics, computing and communication companies. At the moment, IBM has a laboratory named PvC (pervasive computing) Technology Lab, where especially the applications of smart systems to kitchen environment is tested. In addition to these projects, Philips has

built the Home Lab, which is a house sharing the same context with those reviewed above (Figure 5).

The current versions of the smart homes in terms of being embedded with ubiquitous technologies (*multimodal interactive*[5] appliances and small computers in a network) are gathered mainly in two kinds. First, the houses as laboratories for technological and user research, similar to those explained above, and second, very expensive houses owned by the wealthy of the world, such as the house of Bill Gates.

Figure 5: *HomeLab* of Philips.
Left: HomeLab outside view. Right: HomeLab inside view. The animated digital image on the door of the house provides an individualization of the house. Inside of the Home Lab is a standard house environment, but it contains 34 cameras, many sensors, voice devices and other computerized tools embedded in the environment. (Source: http://www.research.philips.com)

Gates' home is a smart home built on a huge landscape. Visually, it looks like a modern castle with the highest luxury, but with a distinction; the use of visual, aural, tangible sensors hidden inside the house, and hidden hardware of wireless

[5] Multimodal interaction is an element of ubicomp or AmI technologies. It defines the kind of interaction provided by intelligent systems. These systems do reject the current interfaces consisting of merely visual systems (mostly screens) and purely-tangible controlling interfaces with touch pads or buttons. Multimodal interaction systems prefer to combine all the natural modalities in the interface of the products or systems and use an association of multimodalities during the interaction with system or products. That is, they aim to contain different versions of tangible (not only through hands), audial, visual (and in extreme cases, gustatory and odorant) interactions, which will lead to a more natural interaction opportunity (Oviatt and Cohen, 2000; Friedewald and Costa, 2003; Punie, 2003).

technologies. These technologies allow the Gates family to 'control' the smart systems such as the security systems, heating and aeration systems, systems for leisure activities (movie and TV watching systems, audio systems etc.), communication systems, systems for decoration (like digital screens). This house contains the most expensive and the latest technologies inside it, and it constitutes an ideal model for the smart homes of future.

2.1.2.3. Scenarios Developed for Smart Home Environments

Since the smart home is a developing concept, and since there are different available technologies, there is a huge number of types of smart homes currently in use or at a conceptual stage. The more conventional types of smart homes concentrate on a house full of automated gadgets (or, more automated versions of current domestic appliances), which are not necessarily connected to each other through a network, and not necessarily providing a multimodal interaction. However, the smart home vision that contains a claim of being the house of the near future is still developing, and it is still at a conceptual stage where currently developed systems and products are still in question. Thus, it is not possible to talk about constant types of smart homes, but the scenarios developed by different institutions can give an idea about the life inside a smart home.

A Smart Home Scenario by Philips is as follows:

> Ellen returns home after a long day's work. At the front door she is recognized by an intelligent surveillance camera, the door alarm is switched off, and the door unlocks and opens. When she enters the hall the house map indicates that her husband Peter is at an art fair in Paris, and that her daughter Charlotte is in the children's playroom, where she is playing with an interactive screen. The remote children surveillance service is notified that she is at home, and subsequently the on-line connection is switched off. When she enters the kitchen the family memo frame lights up to indicate that there are new messages. The shopping list that has been composed needs confirmation before it is sent to the supermarket for delivery. There is also a message notifying that the home information system has found new information on the semantic Web about economic holiday cottages with sea sight in Spain. She briefly connects to the playroom to say hello to Charlotte, and her video picture automatically appears on the flat screen that is currently used by Charlotte. Next, she connects to Peter at the art fair in Paris. He shows her through his contact lens camera some of the sculptures he intends to buy, and she confirms his choice. In the mean time she selects one of the displayed menus that indicate what can be prepared with the food that is currently available from the pantry and the

> refrigerator. Next, she switches to the video on demand channel to watch the latest news program. Through the follow me she switches over to the flat screen in the bedroom where she is going to have her personalized workout session. Later that evening, after Peter has returned home, they are chatting with a friend in the living room with their personalized ambient lighting switched on. They watch the virtual presenter that informs them about the programs and the information that have been recorded by the home storage server earlier that day (Philips Research, 2004a).

In the scenario above, the smart home is envisioned like an information center through which the daily tasks are organized and communication of family members within the home and outside the home is provided. Moreover, the smart home in this scenario provides new leisure experiences through smart visual and auditory systems. In another scenario by Philips, home is envisioned as a shopping and working center. That means, the people in the home can get information about products on a holographic screen and can order them. The same screen can work also for home-office scenarios as an alternative to working in front of a computer with a phone fax and other office products near to it (Figure 6).

Figure 6: Visuals of the smart home concept of Philips.
Left: Visual communication and media system concept. Right: Interactive play screen. (Source: www.research.philips.com)

In another scenario, developed by MIT Media Lab the attention is on the elderly, as it is a general tendency in the smart home projects, which considers the growing elderly population in Western societies ("Oxygen", 2002). In this scenario, an old couple living in a suburban house and having troubles in dealing with some daily

tasks, such as missing calls and visitors since they cannot move fast or forgetting the places of certain tools or missing the time of their medicines. Through E21[6], embedded inside the environments where they can possibly be present, they are reminded of daily routines, they can answer the phone or the door without moving, through the microphones inserted in the walls, or their doctor can be warned when there happens something wrong with their health, such as when they fall down on the floor. Thus, besides defined general functionalities inside a home, another vision in the smart home concept concentrates on health and age issues (for elderly and disabled people).

2.2. Discussion on the Common Principles of the Smart Home Concepts

System Logic

According to this introduction to the smart home idea, the smart home is an attempt to integrate novel technologies that cover currently the invisible, multimodal, interactive systems into the domestic environment. Thus, the smart home, the proposal of different technological institutions for the future domestic environment, is still developing in the light of the researches on the needs and wishes related to the (family) home. However, the current versions of smart homes include some common principles in terms of their technological systems,

- a wireless network among the 'things' inside the home that provides the system an awareness and learning ability,
- invisibility of embedded system devices that makes the home look like an ordinary home,
- interaction sensors for providing the user to interact with the system multimodally -through natural gestures and through speech-,

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[6] E21 is explained in the brochure of the MIT Oxygen Project as "stationary devices embedded in offices, buildings, homes, and vehicles, E21s enable us to create situated entities, often linked to local sensors and actuators that perform various functions on our behalf, even in our absence. For example, we can create entities and situate them to monitor and change the temperature of a room, close a garage door, or redirect email to colleagues, even when we are thousands of miles away. E21s provide large amounts of embedded computation, as well as interfaces to camera and microphone arrays, thereby enabling us to communicate naturally, using speech and gesture, in the spaces they define" ("Oxygen", 2002, p. 7).

- a wireless network connection with the outside of the home,
- a software infrastructure that enables the system to work, and to be controlled.

Figure 7: The monitoring room of HomeLab
Researchers observe the examinees and their interactions with the 'home' from cameras inserted in the HomeLab (Source: www.research.philips.com)

Research Method

In the website of Philips, it is explained that

> Ultimately however, Ambient Intelligence is not about technology but about people, because it is not Ambient Intelligence that will shape the future of ordinary people, it is ordinary people who will shape the future of Ambient Intelligence – by making decisions on how they want their lives to be changed. Some of the most vital research in HomeLab is therefore aimed at gaining important psychological clues as to what those decisions might be (Philips Research, 2004b).

As it is also the case, the smart home concept providers and researchers claim that, the intelligent systems of future will respond to the needs and conditions of people, since they are currently developing according to the researches about the life inside a home. In these laboratories, or in other parts of studies, people from different professions are taking part, ranging from designers, engineers, to social scientists. These home laboratories are studied-with/studying "ordinary […] guinea pigs" (Philips Research, 2004b), chosen according to some criteria. The behaviors, the

routines, the reactions and interactions are observed and analyzed psychologically and physically within these scientific studies (Figure 7). Moreover, there are also studies conducted outside these home labs. There are studies that base on the discussions with families about 'home', 'technology', their expectations, their dream homes, their ideas, worries and doubts about 'smart home' such as the studies of Eggen and Kyffin (2005). Thus, in developing smart systems and products, mainly, a scientific study of systems, people and their interaction are conducted.

Provided Functions

The system with such features provides different functionalities or new (more) interactive interface opportunities in controlling the system within the smart home. If the distinctly special functions dealing with health and age issues are taken apart, in most of the current smart home concepts, the scenarios are concentrating on the activities and functions about *leisure, consumption, home-based work, security, comfort* and *communication* (within and outside the home). This means, the mentioned functions are thought (predicted or assumed) to be necessary or at least related to private sphere. This situation brings a question to mind: What is the reason behind these assumptions? Alternatively, why are these activities and functions thought to be related to home and why are novel technologies reshaped according to these defined functionalities?

Challenges and Motivators

The smart systems within home have also some challenges. This means that the adaptation of people to these systems and products, or vice versa, stands as a problem for researchers who conduct these studies. One of the main worries of people is about 'privacy'. As these systems have mainly interactive characteristics, surveillance of the system appears as a necessity. For not only learning the routine behaviors and automatizing functions accordingly, but also for providing an interaction with the people, an 'aware' system that surveils people and records data is compulsory. Thus, the doubts on the system are mainly about preservation of privacy. Eggen and Kyffin (2005) provide an analysis on what to care in designing these systems, according to their studies conducted with different families:

> i-1. Intelligent products should not offer pre-defined experiences to people, but only create the right conditions to enable and support a personal or social experience. i-2. The behavior of intelligent products or systems should fit the rhythms and patterns of everyday life. i-3. Intelligent products should only explicitly attract people's attention when this is meaningful and appropriate. i-4. Intelligent systems should be trustworthy. i-5. People should always stay in control of intelligent systems. i-6. Building and testing experience prototypes in a realistic setting represents a crucial and necessary phase in the design of intelligent systems (pp.366-370).

Thus, the doubts of people mainly concentrates on change, disturbance, safety of the system and surveillance of private home life (Leppaenen and Jokinen, 2003; Eggen and Kyffin, 2005; Tolmie et al., 2003; Casert, 2004).

Greeson, who is a Senior Analyst of Emerging Residential Technologies at the company Parks Associates, notes in an interview in *Broadband House Magazine*;

> Biggest obstacle: no compelling reason why a consumer would want to buy one. The second most significant obstacle to home networking: no compelling reason why a consumer would want to buy one. The catalysts: entertainment, entertainment, and -are you holding your breath?- entertainment. Not that sharing a single IP address and sharing peripherals are NOT important. But imagine being able to share digital video-on-demand with true pause-and-play - one TV can receive a VOD at a certain time, while another TV may or not choose to receive the same VOD at a different time (Broadband House Magazine, 2001).

Besides entertainment or leisure facilities, smart systems are also appreciated with functions about health, elderly, home security as well.

The next chapter will provide a review on the emergence of modern privacy and the following chapters will discuss the relationship of privacy with technology throughout the 20th century both for investigating the answers of the questions posed at the beginning of the study and for seeking the roots of the smart home idea in the modern period.

CHAPTER 3

THE RISE OF MODERN PRIVATE SPHERE

> Private life is not something given in nature from the beginning of time. It is a historical reality, which different societies have constructed in different ways. The boundaries of private life are not laid down once and for all; the division of human activity between public and private spheres is subject to change. Private life makes sense only in relation to public life; its history is first of all the history of its definition (Prost, 1991, p.3).

In literature, the discussions on the history of the private and public spheres and their relationship date back to Ancient Greece. As it is discussed by Prost (1991), public sphere and private sphere had different meanings and conditions throughout the history and both of them took their current meanings with the impacts of different interrelated social changes starting from the early modern period. Therefore, although the focus of this study is on the period between the beginning of the 20th century and today, a short survey of the relationship between public and private spheres preceding this specific time interval will be provided.

3.1. Public and Private Spheres before the Industrialization Period

The period of Ancient Greece witnessed the first appearance of the public and private spheres as two distinct domains of life. Besides, the period also manifested the dominancy of public over private and the supply of necessary conditions of the public sphere by the private sphere. Slater (1998) defines the public sphere -"the *polis* or *res publica*"- in Ancient Greece as "the realm of free association between free citizens" who were men owning wealth (P.138). Contrary to the public sphere, the private sphere was the area of women, children, and slaves who were essential for fulfilling the physical needs of citizens and in that, for supplying the life in public sphere. Thus, in Ancient Greece (and in the early Roman period, as well) private

sphere was the precondition of public sphere, which consisted of men that were dealing with social activities such as sports and politics or rhetoric. Therefore, socialization in the public was more valued than spending time in private domain (Slater, 1998; Sennett, 1996).

The second historical era, with its own distinguishing features regarding the relationship of public and private spheres was the medieval Europe (Slater, 1998). During this period, the public and private spheres were not separated spatially as it was in Ancient Greece or as it is now.

Domosh and Seager (2001) explain that, "Most agricultural medieval homes were simple in design, with spaces undifferentiated by use, or by gender" (p.3). The houses were mostly not divided into specified rooms, and the space was used both for public activities, such as spinning, weaving and other productive activities; as well as for private activities, such as eating and sleeping. Both men and women were participating in productive activities, with some differentiation in the tasks according to genders (Domosh and Seager, 2001).

The early appearance of specialized rooms for different activities in the house appeared in the late medieval period. However, the basic appearance of house in current terms, with kitchen, separate rooms, and other differentiated parts, gained acceptance widely during the 18th century (Domosh and Seager, 2001; Meldrum, 1999). Moreover, the 18th century was also the era of the removal of production from home or the separation of workspace from living space. Besides that, the separation of workspace from private space was also the separation of production from reproduction. Starting from these times, Domosh and Seager (2001) state that, "men became the productive wage earners, while women carried on the reproductive tasks for the family" (p.4).

3.2. Industrialization and Modern Privacy

Privacy and publicity gained different meanings in modern period. In the literature, the semantic division of public and private is regarded as being in connection with

the epistemological discussions in the Age of Reason of the 17th century and in Enlightenment period covering mainly the 18th century. The dichotomies between spirit and reason and between nature and culture as debated in philosophical and sociological literature are accepted to constitute the semantic roots of the separation between private and public spheres. However, a division that became visible in the organization of space and time and that created new relations within the social life started around the end of the 18th century, which is also the period when the modern privacy is accepted to emerge (Meldrum, 1999; Slater, 1998; Sennett, 1992).

3.2.1. The Rise of Industrialization in Early Capitalism

> Industrialization is the system of production that has arisen from the steady development, study, and use of scientific knowledge. It is based on the division of labor and on specialization and uses mechanical, chemical, and power-driven, as well as organizational and intellectual aids in production. The primary objective of this method of organizing economic life, which had its genesis in the mid-eighteenth century, has been to reduce the real cost, per unit, of producing goods and services (Slichter as cited in Hughes, 1968, p.252).

In the mid-18th century, industrialization, following the rise of early capitalism emerged with the use of new mechanical tools and techniques with new materials in production. The new machinery in textile production, then the discovery of steam power, and successively, the use of cast-iron as material in different products were some most significant developments of the period, that stimulated important changes in manufacturing (Giedion, 1969; Sparke, 1989).

Marx analyzed that there are three stages in the development of capitalist manufacturing. After the craft production by individual craftsmen, the first stage started with early "co-operation of workers" that "share a workshop and purchase their materials and sell their goods collectively" (Marx as cited in Forty, 1986, p.43). Emergence of the early form of capitalism was in close relation with the increase in local and long-distance trading, which also led to the elimination of production from the domestic sphere. The textile production, which was one of basic production activities at the time, started to be conducted by merchants who were providing raw

material to families to weave and spin, then buying the end product from them for selling in local markets or exporting abroad. These merchants started to control the manufacturing process and labour employment as the owners of the capital. The rise in demand and sales provided early workshops away from homes, forming the first separation of work and living spaces.

In the second stage of early Capitalism, division of labour took the control from workman over the whole production process, and workman became an unskilled labour force who had the control only in a part of the entire production process. At the same time, the division of labour caused the division of intellectual labour from physical labour. Forty (1986) states that, design in the form of the "drawing up of instructions" activity "for directing the ignorance of workmen" appeared as a necessity in the second stage of capitalism (p.44).

In the third stage, industrial production emerged as the complementary stage of capitalist production. Europe and especially Britain had a leading position in the developments and rapid growing of industrialization until the beginning of the 20th century. After this period, the application of new ideas and methods to industrial production in the USA had important impacts on the era, and American Industrialization defined the next route of the capitalist industrial production.

3.2.2. Urbanization

The removal of production from domestic sphere, started in the early capitalist period, and gained further acceleration in the 18th and 19th centuries (Domosh and Seager, 2001). In the 18th century, especially in the second half of it, the rise of industrial capitalism was the crux in that acceleration. Capitalism and industrialization resulted in a rapid rise of population in cities (London and Paris being the most crowded ones), and the appearance of a new kind of public that consisted of strangers -but not foreigners- was crucial in the appearance of a new perception of public and private spheres. The public places started to be not as safe as it was before, and home started to be felt more safe and natural on the contrary to public places Moreover, The industrial cities consisted of crowds of workers that

were segregated from the living areas of aristocracy. The districts of working-class had very pure and inferior conditions in contrast to the upper-class districts (Sennett, 1992; Slater, 1998; Arendt, 1998). As stated by Marcus (1973), the environment in the city was so new and complex that it was creating the sense of the "unintelligible-and-illegible" for the citizens. Marcus explains that, the city "experienced as estrangement" was not "perceived as a coherent system of signs, as an environment communicating to us in a language that we know" (p.257).

These conditions of this 'strange' environment were important in the redefinition of private and public spheres and in the rise of new relations between them.

3.2.3. Gendered Division of Public and Private Domains

Although the semantic roots of it date back to an earlier period, the spatial division of public and private spheres appeared around the 18th century, and the rise of private sphere and its separation from public sphere is mostly accepted as having started in this century.

Sennett (1992) assigns the significance of the 18th century to the "discovery of childhood" (p.92), which is firstly revealed by a historian, Philippe Ariés. Childhood was distinguished as a special age of life as the reverse of adulthood in that period. The rise of childhood provided the definition of family in new terms. Moreover, it also triggered the acceptance of public sphere as unsuitable for children with its difficulties impossible for them to withstand. As further explained by Sennett, children started to be perceived to depend on others and needed nurturance that became a duty of family and especially of mother after a while. Moreover, because of her 'weakness' derived from her bodily and emotional needs, woman became the other constituent of private domesticity (Sennett, 1992; Slater, 1998).

Meldrom (1999) analyzes the era according to his research on the life at upper class homes. While arguing that the relationship of public and private emerged as a 'dichotomy' in the 18th century, he emphasizes the separation of the space of

servants in houses and the start of the removal of them from the houses in the 19th century. The segregation of servants from their mistresses and masters –once, who even could sleep together- originated from the families' growing inclination towards privacy. Thus, the separation of the space inside the house was to proceed obviously in the 18th century (Meldrom, 1999).

The complete development of the home as a private dwelling space that is separate from the working environment completed its evolution around the end of the 19th century. As emphasized by Prost (1991), although production at home survived in some cases, the main production area was not the house anymore; instead, it became the factories using industrial production methods.

The differentiation of work and dwelling spaces also defined the 'ideals' of the gender roles. The start of reformation of family in relation to the discovery of childhood in the 18th century affected the evolution of these roles, as well. The man became the wage earner for supplying the needs of his family, and the woman became the unemployed housewife responsible for housework and supplying physical needs of children and man (Oakley, 1974). Domosh and Seager (2001) decipher a relationship between the capitalist system and the gender-based separation of home and work space. They state that,

> This system required a commitment to hard work and competition in the marketplace and at the same time required the behind-the-scenes care and nurturance of family and children, and the unpaid maintenance of the physical (and psychological) needs of the workers (p.5).

According to Oakley (1974) the role of woman as the 'child-rearer' and 'house attendant', which superseded the role of woman as 'house-keeper' in Victorian family, permeated to the working classes as a "doctrine of feminine domesticity" (p.50) during the crossing period from the 19th to the 20th centuries. However, it should be emphasized that this situation was only an 'ideal' to achieve. Oakley notes that, a survey in 1904 found that "four out of five married women worked because of financial necessity" (p.50). Besides that, if the wage of man were enough to satisfy the needs of family, women preferred to stay at home. The reserve of home

as private sphere for woman and the work place as public sphere for man had been the ideal among middle class families, and took acceptance until after the Second World War (Oakley, 1974).

3.2.4. The Rise of Individualism

> …the emergence of the *social realm, which is neither private nor public*, strictly speaking, is a relatively new phenomenon whose origin coincided with the emergence of the modern age and which found its political form in the nation-state (Arendt, 1998, p. 28. Emphasis added).

Arendt (1998) explains the rise of modern privacy in relation to the rise of society in modernity. While indicating that the rise of society happened simultaneously with the emergence of "housekeeping, its activities, problems, and organizational devices" (p.38), Arendt compares society to a big family, all members of which are embraced and controlled by the society with equal strength. She says,

> It is decisive that society, on all its levels, excludes the possibility of action. […] Instead, society expects from each of its members a certain kind of behavior, imposing innumerable and various rules, all of which tend to "normalize" its members, to make them behave, to exclude spontaneous action or outstanding achievement (p.40).

In the light of these statements, Arendt (1998) explains the rise of modern privacy with a rebellion of human against the society and its "unbearable perversion of the human heart, its intrusion upon an innermost region in man which until then had needed no special protection" (p.39). Jean-Jacques Rousseau, as the inventor of this rebellion takes an important role in Arendt's explanations. According to Arendt, Rousseau theorized the need of protection of 'private' against society. Therefore, for Arendt, the roots of modern privacy and the rise of modern individual should be sought for in the rise of society (Arendt, 1998).

One can find a parallelism between the explanation of Sennett (1992) on the rise of family as the "natural seat" (p.90) of life, and the explanation of Arendt (1998) about modern privacy. Sennett explains the rise of natural man and family as the natural and private realm in relation to the invention of childhood, and indicates the

appearance of the need for protection of them against the public life. While using different conceptualizations and implications, Arendt also reveals that the need of protection of private arose in the form of a kind of rebellion against society. Despite that, the contexts of the concept of 'society' of Arendt and the concept of 'public life' of Sennett are not the same, one can clearly define that the 'privacy as family or as individual' arose against an outer (as society or as publicity) invasion or against a feeling of such kind of invasion that appeared in the conditions of the period.

Georges Simmel (1971), at the beginning of his study *The Metropolis and Mental Life,* explains the 18th and the 19th centuries and distinguishes them in terms of the contexts of the concept of 'individuality' during these two centuries. He defines the 18th century as the liberating era of individual from "all the ties which grew up historically in politics, in religion, in morality and in economics in order to permit the original natural virtue of man, which is *equal* in everyone, to develop without inhibition" (p. 324. Emphasis added). He states that, after the "cry for freedom and equality […] [individuals] sought now to distinguish themselves from one another" (Simmel, 1971, pp.338-339). According to Simmel (1973), the individualism of 18th century, while demanding liberty, had the "notion of atomized and basically undifferentiated individuals". On the other hand, "new individualism" of the 19th century raised with the impacts of Goethe and Romantics and of the economic division of labor, and was "the individualism of difference, with the deepening of individuality to the point of the individual's *incomparability*, to which he is 'called' both in his nature and in his achievement" (Simmel as cited in Lukes, 1973, p.18. Emphasis added). Simmel adds elsewhere that, the liberal *equality* of individual and the personal *uniqueness* of individual; these two conflicting positions of individuality provided a rich area for development of the mental life, which was nourished by the "qualitative relationships of the metropolis" (Simmel, 1971, p.338. Emphasis added).

In conclusion, the modern privacy has been formed in the conditions of the 18th and 19th centuries, and it started to be perceived as the sphere of child-based family and equal, unique individuals. At the end, privacy has been formed as a 'need' and eventually evolved to be perceived as a 'natural right' of any family and of equal

individuals. Privacy as a right became a 'protected sphere' against an invasion and intrusion from 'outside', which constituted the publicity as the counter part of privacy.

This differentiation of public and private spheres started in the 18th century, and the perception of privacy as a need and right among equal individuals began in the 19th century. Nevertheless, it was not until the 20th century that these ideas spread out to all social classes of society. According to Prost (1991),

> In one sense, the possibility of having a private life was a class privilege limited to those who lived, often on private incomes, in relatively sumptuous splendor. Those who worked for a living inevitably experienced some intermingling of public and private life. In this respect, the twentieth century may be seen as a period during which the differentiation of public and private, at first limited to the bourgeoisie, slowly spread throughout the population (p.7).

During the spread of the ideals of bourgeois privacy to the society, new ideologies, which emerged within the conditions of the industrialization in the USA, started to affect the private domain. These ideologies were Taylorism and Fordism that is explained in the coming section.

3.2.5. Industrialization in the USA

The division of labour that emerged also before the 18th century affected different social structures beginning from that period. However, its prominent impacts took place only after its association with the industrial mass-production (Sparke, 1989). Mass production and division of labour; these two main components of industrial production in Europe gained new configurations after their applications in the USA. There emerged new important developments in manufacturing methods, and the system of manufacturing in US was named as 'the American System' because of its distinct characteristics.

American manufacturing system evolved differently, since the conditions of industry were different. The labour costs were higher and qualified labour was less available than it was in Europe. Moreover, USA was lacking a craft tradition coming from the

past and a skilled labour power. Under these conditions, the industry started to seek for opportunities of cheaper production methods that would not need any skilled labour. Standardization and rationalization of production became key features of American System that had been successful and affected the industrial era all around the world (Heskett, 1980; Sparke, 1989).

Standardization

The first examples of standardized products emerged in Europe. First in Sweden in 1729 interchangeable gears for clocks were produced, later in France, Le Blanc used similar methods for producing muskets in 1782. However, it was in USA, where the more developed versions of standardization were applied firstly for military products. Muskets of Eli Whitney in 1789, flintlock rifles of John Hancock Hall in 1824 and Samuel Colt's revolvers in 1851 are important examples of the application of standardized products with interchangeable parts. The American products that were firstly undervalued because of their aesthetic quality, started to gain attention after The Great Exhibition in London in 1851 (Heskett, 1980; Sparke, 1989).

Besides standardization, the innovation of 'assembly line' idea of Oliver Evans applied in his flourmill was significant for reducing the time and cost of production. These two ideas were combined in Ford's automobile factory. Henry Ford, affected by Adam Smith's ideas about standardization, built a system of producing standardized automobiles. In 1914 with his invention of 'moving assembly line' he could achieve to decrease the cost of one automobile (Model T Ford) from $850 to $360 (Figure 8). The Model T achieved a big market success and was produced for almost 20 years uniformly until the "principle of stylistic variation" of General Motors superseded the success of Ford's standardization strategy (Sparke, 1989, pp.9-10).

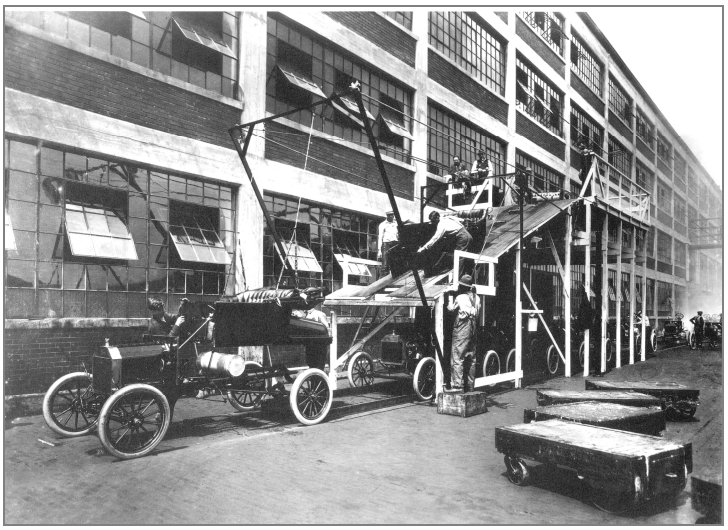

Figure 8: Chassis assembly of Ford Model T, Highland Park Factory, 1915
(Source: http://www.biz.colostate.edu)

Scientific Management

> The search for better, for more competent men, from the presidents of our great companies down to our household servants, was never more vigorous than it is now. And more than ever before is the demand for competent men in excess of the supply. […] In the past the man has been first; in the future the system must be first. This in no sense, however, implies that great men are not needed. On the contrary, the first object of any good system must be that of developing *first-class men*; and under systematic management the best man rises to the top more certainly and more rapidly than ever before (Taylor, 1998, p. iii. Emphasis added.).

Announcing these words in 1911, Frederick Winslow Taylor was implying a methodology named *scientific management* in industrial production. Scientific management is an attempt to apply scientific methods to labor management and to plant organization in industrial processes, aiming to raise the labor and production efficiency. Since it was firstly presented in an organized, clear manner by Frederick Winslow Taylor in 1880s, and since his attempts made it known and appreciated in USA and in Europe, it is known as Taylorism, as well. In 1911, Winslow Taylor wrote a monograph, in which he explained the necessity of the methods of scientific management. This monograph had been an important reference for management strategies in industry. Especially at the beginning of the 20th century, it had important impact on the production management, and labor and plant organization

strategies that followed (Braverman, 1974; Heskett, 1980; McLeod, 1983; Sparke, 1989).

The methods of scientific management consisted of plant organizations and *motion and time study*. With specific methods developed by Taylor and by his followers (such as the industrial engineers Frank and Lillian Gilbreth in the USA), plants, and production lines were designed according to mathematical analyses. Labour was timed with stopwatches, their movements were filmed and analyzed to eliminate the unnecessary movements and to decide on the efficient ones consistent with the production line rhythms (Figure 9).

Braverman (1974) indicates three principles of Taylorism, the first of which is the principle of "*the dissociation of the labor process from the skills of the workers*" (p.113). This means, the success of the process became dependent on the management, independent of workers. No worker was indispensable any more. The second principle is "*the separation of conception from execution*" (p.114) or with its common name "*the separation of mental and manual labor*" (p.114), through which the mental laborers, such as managers, engineers and designers became completely separated from unskilled workers and their work took more definitive forms. The third principle is "*the monopoly* [of management] *over knowledge to control each step of the labor process and its mode of execution*" (p.120) that made it difficult for workmen to understand the processes to which they attended as a part, and that created an alienation of worker. Braverman (1974) criticizes Taylorism to have the capitalist point of view instead of a humanitarian one, and says, "It investigates not labor in general, but the adaptation of labor to the needs of capital. It enters the workplace not as the representative of science, but as the representative of management masquerading in the trappings of science" (p.86). In a similar critical manner, McLeod (1983) discusses scientific management as an idea with capitalist intentions, and indicates one another point:

> The increased productivity would ultimately benefit all. With scarcity and constraint eliminated, there would no longer be bitter confrontation over the divisions of profit. In short, Taylorism […] offered an escape from ideological conflict and class divisions: *traditional politics would be subsumed by a rational technology of political*

> *and economic choice.* […] it was this political and social implication, more than Taylorism's strictly technical features that generated a European interest (p.133-134. Emphasis added).

Figure 9: Film study for defining 'efficient movements'.
Second row shows the more efficient movement sequence. (Source: http://www.making themodernworld.org.uk)

Consequently, it can be said that Taylorism with its methods created new conditions and relationships in the work life. Workers were controlled by the strict rules of scientific management and were treated as if 'machines'. Thus, Taylorism as an 'oppressive control tool' for labour encountered many protestations of the labor unions.

Scientific management had also significant consequences in social everyday life, as it was intended by its creator. In the introduction of his famous monograph, which was firstly presented to engineers and managers, Taylor (1998) marks out that,

> It is hoped, however, that it will be clear to other readers that the same principles can be applied with equal force to all social activities: to the management of our homes; the management of our farms; the management of the business of our tradesmen, large and small; of our churches, our philanthropic institutions, our universities, and our governmental departments (p.iv).

This intention of Taylor about applying the scientific management to different domains of life gained support of different people, especially of engineers, and brought important consequences for modern social life.

3.3. Impacts of Industrialization on Everyday Life

The industrialization that took the production from home to factories and the people from rural areas to urban spaces carried rapid changes in the society with itself. The social structures and everyday life both in private and public spheres started to change under the social and economic impacts of industrialization era.

3.3.1. Time, Space, and Organization of Daily Life

> It is obvious that factories are the result of the industrial revolution, but we rarely think of homes, as we know them today, as a creation of the same revolution. […] once productive work was removed to factories, offices or shops, the home became exclusively a place for eating, sleeping, raising children and enjoying leisure. It acquired a new and distinctive character, which was vividly represented in its decoration and the design of its contents (Forty, 1986, p.99-100).

The continuous changes during the industrialization era affected the private sphere in two ways. One was that, life inside the home was affected indirectly in relation with the new conditions outside the home. In other words, industrialization, by taking the production space outside the home and by providing a new working life, which required a new temporal and spatial organization of urban life, evoked a transformation in the private life and private sphere.

Prost (1991) reveals the paradigm, which caused a temporal reformation of private life in relation to the conditions of industrial working life, very clearly:

> When you worked in a factory, you knew when the day was over. The time not owed to the boss was completely your own, and that time increased steadily as the century progressed. The worker who worked outside the home could be truly at home during off hours. In this respect, the decline of home-based work reflects the growing insistence on the right to a private life (p.13).

Prost (1991) argues that, before the division of private and public realms as home and work, the "lack of differentiation in space led to lack of differentiation in time" (p.18). However, as Prost further explains, after these two are separated, working life and private life became two completely differentiated domains, both spatially and timely. In other words, life started to be organized as 'working time', 'leisure

time', 'home, as private and personal space', 'work, as the obligatory public space'. Hours in a day, or days in a week were distinctly separated, as well as the space in a city. In one sense, the perception of time and space was also separated as 'private' and 'public'. This separation and 'specialization' of space and time was visible in the formation of the urban landscape; factories started to be gathered in industrial zones, which were distinguished from the other side of city. Besides factories, living places were also separated and gathered in specific areas in the city.

Thus, private domain began to be perceived as the time spent outside the working hours and the space set apart from the common places especially from those of the working places. The identification of home as the place of non-production and non-work triggered the emergence of home as the domain of 'leisure'.

The second way in which industrialization affected the private sphere (with all domains of life), was in a much more direct and systematic way that was nourished from the ideologies of the industrial capitalism especially those arisen in the USA.

3.3.2. Social Management and Human Engineering

The idea of Taylor on applying scientific management to all social domains was an old perspective that emerged in relation with the growing reliance on reason and rationality in Enlightenment period (Ewen, 1984). The emergence of the perception of society consisting of equal individuals living within a democratic structure gave birth to the notion of common wealth together with individualism. These two notions together with rational perspective gave the idea that the individuals can be shaped through secular, rational education and can be freed of the past oppressive structures of life. This means, an individual could create her/his self as well as s/he could be created by outer manipulation. Thus, the individual or the human beings became an area of scientific study and manipulation. Especially, humans as 'soldiers' of national state, and after the birth of commercial capitalist structures, the humans

as workers and as consumers became a field of scientific examination and rational manipulation.

The rational perfection of individuals was accepted as a problem related to 'social management and scientific study of society' that constituted the idea termed as *social engineering*. Social engineering treated individuals (workers in factory, soldiers in army, prisoners in jail, patients in hospital, and at last, dwellers in the home, etc.) as if human machines, whose efficiency could be increased with scientific examination and with education. In different fields, the social engineering (or, human engineering) was applied for different purposes. For example, Henry Dreyfuss –an industrial designer in the USA-, for filling the gap between the machines and the human studied the human body and presented his results in a book named *Designing for People* in 1955. In this book, the three human figures, *Joe, Josephine*, *and Joe, Jr.* were used to show anthropometrical data of 'average' man, woman and child. Dreyfuss states his motto as,

> If the point of contact between the product and people becomes a point of friction, then the designer has failed. If, on the other hand people are made safer, more comfortable, more desirous of purchase, more efficient –or just plain happier- by contact with the product, then the designer has succeeded -Henry Dreyfuss, *Harvard Business Review*, November 1950- (cited as in Dreyfuss, 2003, p.8).

These representations, according to Ewen (1984), were "vibration-free, smoothly running machines, fit for integration into a totally automated system" (p.197). They were representing the perfect standards of modern human being (Figure 11).

3.3.2.1. Rationalization in the Home

Another application area of social engineering was the private home. In effect of doctrines of American Industrialization, the rational, standard private domain and the management of home appeared as the results of scientific studies conducted by engineers.

First tendencies to rationalize and organize the domestic space (mainly kitchen) and the housework appeared in the USA in the 1860s. The efforts of some female 'domestic reformers' such as, Catherine E. Beecher, who wrote *The American Women's Home* in 1869 and Mrs. Beeton, who wrote *Household Management* in 1861, initiated that movement (Giedion, 1969; Domosh and Seager, 2001).

The start of the 'organization of housework' idea was connected with two issues. The first one was related to a change that was related to the dynamics of the social and economic conditions. It was the emergence of servant problem, which means the growing fall in the number of servants for middle-class houses, resulted in the disappearance of them in houses, especially, starting from the end of the 19th century. As the factories and industrial production areas emerged, the main working sphere became these areas instead of the houses or the farms that were owned by the wealthy. Thus, the availability of cheap servants decreased. (Cowan, 1999; Giedion, 1969; Forty, 1986).

The other issue, which was more significant and more pervasively effective, was related to the political tendencies within the young national states. Especially, starting from the second half of the 19th century, the interest of state to home and family increased. This was related to the perception of family as the main domain of a powerful national state. This means, the home and family started to be approached as the sphere where citizens can adopt 'national identities'; and the childhood gained importance as the period when this identity can be best gained. Thus, the home environment, the family ties and the everyday life in the home became a field of investigation and reformation (Grier, 1988; Forty, 1986). A citation from an 1879 book that is discussing the domestic life can clarify the issue.

> Between the Home set up in Eden, and the Home before us in Eternity, stand the Homes of Earth in a long succession. It is therefore important that our Homes should be brought up to stand in harmony with their origin and destiny. Here are 'Empire's primal springs;' here are the Church and State in embryo; here all improvements and reform must rise. For national and social disasters, for moral and financial evils, the cure begins in the Household" (Wright as cited in Grier, 1988, p.4).

Grier (1988) states that the books written during the period about this issue included concepts like; "God's First Church", "A Miniature of Heaven", "the Eden of Home", "a Nursery for Heaven" (p.4). These texts contained mystic and spiritual emphasis in their interpretations of home. Home was visualized as the 'holly' domain that is the most important area of a 'holly' nation. This mythical content of family besides its strict separation from the working space of outside, gave it an 'overvaluation'. Family life was exhibited as the happy, peaceful domain of life where the spiritual needs can be satisfied and which should be saved from the dangers of outside world.

Around the same period, explains Grier (1988), there appeared a dramatic rise in the magazines and books dealing with home decoration and comfort. The background motivation behind this rise was the spreading belief in that a well-decorated and organized house with 'beautiful' furnishings that is reflecting the social class and the quality of taste (of course, of the woman) can deeply effect the formation of a good character and temper of people. The home decoration and furnishing were exhibited as the reflection and symbolization of a 'good' family life that constitutes the basis of the well-being of the larger family, which is the national state. A reflection (not necessarily a real presence) of comfort and an aesthetic quality through objects and their organization at home, and especially in parlor (living room) became an ideal. At the beginning, these ideals were only prevailing among Victorian families, since the standards of this ideal were not available to everybody. However, in time, home decoration and consumption according to the conditions of social class gained a general acceptance. This means, the working class families, with the ideal Victorian homes in mind, and through different ideological impacts, started to obey the standards of home furnishing and home comfort (Grier, 1988).

3.3.2.2. Reformation of Private Space

The spreading importance and overvaluation of home life with the ideological motivations of national state led also to the birth of the idea of the rational

investigation and reorganization of home life. Besides, the disappearance of servants from houses gave the responsibility of house and childcare to the women. Thus, the homework as the duty of woman started to be examined with 'rational' methods. The rationalization of housework and organization of house were thought to provide labour saving in the home. There were built plans such as 'efficient kitchen', 'efficient action sequences inside a home', and published woman magazines and books such as *Ladies' Home Journal*, *American Home*, *Good Housekeeping* and *Household Engineering: Scientific Management in the Home* (Cowan, 1999; Domosh and Seager, 1974).

As Giedion (1969) asserts, the ideas on rationalization of house in around the 1910s started to be affected from the 'scientific management' approach of Taylor that was reformed as 'house management' and sought for 'efficient house-keeping'. The motion studies in industry were applied to the domestic environment. Kitchen and bath plans were designed that could provide more efficient movement sequences (Figure10). After a short while, these notions expanded also to Europe.

Figure 10: *The Kitchen Practical* a model kitchen designed by Lillian Gilbreth, 1929
(Source: http://american history.si.edu/ontime/images/savet5.jpg)

After standard, efficient kitchen, a 'bathroom mania', as Cowan (1999) names it, exploded in the USA. Bathrooms were built in old houses, and the standard bath that also constitutes the baths of today appeared during this period. The reach of sewer system and the running water to houses gave acceleration to the expansion of standard bathrooms with sink, bathtub, warm water, toilets with flush tanks, etc. In the 1920s and 30s, there appeared the 'hygiene revolution' at home with the supports of government as well. Hygiene revolution accepted the kitchen and bathroom as its target places and women as its target interest.

Moreover, there appeared institutions and schools (such as *Good Housekeeping Institute* and *Better Homes in America*) for the education of women about household management and childcare (Forty, 1986; Prost, 1991; Cowan, 1999). The women education institutions quickly spread to Europe and later to other countries in the world, as well.[7] The hygienic keeping of kitchen and bathroom, healthy cooking, economic and efficient labour in the home and child rearing became important duties of women conveyed through the housekeeping institutions, schools, education programs and advertisements in media.[8]

The rationalization of the home had important consequences that led to a transformation of the domestic environment. Physically, the house, especially the bathroom and the kitchen gained their standard form, which is still in use. The Taylorist applications to domesticity, thus, the birth of home management, caused a new perception of home as a working place with some standards. Home management became a duty of women and sustained the association of female identity with the private sphere and the home. The ideal housekeeping became associated with the 'ideal female identity'.

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[7] E.g. during the modernization period of Ottomans and then of Turkey there were conducted similar applications. – See the book of Elif Ekin Akşit, *Kızların Sessizliği*.

[8] Forty (1986) also indicates the relationship between 'home' and nationalist ideologies that promoted home as a 'holly' sphere, which was discussed in Section 3.3.2.1. He references a statement of a general during the time that clearly reveals the idea: "the attention of women of a land should be mainly devoted to the three Ks- *Kinder, Küche, Kirche* [children, kitchen, church]" (Maurice cited in Forty, 1986, p.116).

Rationalization in the home strengthened a standard way of domestic life, which was born with the conditions of urban industrial society. Thus, the doctrines of industrialization solidified the criteria of an ideal life inside a home, which remained unchanged in principle until today.

3.4. Conclusion and Discussion on the Modern Private Sphere

In early modern period 'home' and familial domain started to be the most important domain for political and ideological aims of national state. The domestic sphere was exhibited as the reproduction sphere of the national identity under the control of state. Thus, home gained importance for governing powers and state shifted its attention to inside the home. Family-tie marriage and a child-based family life was manifested as a spiritual, natural and holly domain the 'well-being' of which would lead to the 'well-being' of the state. This mythical form of home and the ideas on 'good' home were promoted and people were led to apply some standard ways of living (physical and ideological) in the home, which structured a gendered, child-based, standard and mythical family life (Grier, 1988; Forty, 1986; Cowan, 1999; Domosh and Seager, 2001).

Industrialization era, motivated by early capitalism, was the era of the solidification and expansion of these ideologies and the application of them in a systematic way to the whole of the society. For the context of this study, the most important result of this era was the solidification of the public and private spheres as timely, spatially and gender-based separate domains. Thus, the activities conducted spontaneously before in different spaces and in different times were separated according to time and space.

Private domain, as the opposite of public sphere, became the main domain of free personal time and space. The main leisure time and space started to be associated with the private sphere. Private domain appeared as the sphere that had to be protected from public domain and privacy started to be accepted as a right of individuals and families.

The private domain that gained importance as the 'hearth' of national state was exposed to the control, rational identification and modification of state. Within the 'home management' programs, the methods of American industrialization were applied to the domestic sphere, and they defined the standards of domestic environment. The form and organization of space inside the home and the house keeping methods took standard forms, and were taught to women through social education programs.

It is important to discern that, in a sense, through the rationalization attempts, the main private domain became an area open to manipulation. After the working environment, the home and life inside the home became a problem area of management and engineering. In fact, the rationalization programs, which were mainly conducted by state, were a part of a more general ideological perspective within modern national states: the perspective of *social engineering*.

The machine house idea that is one of the research areas of this study was in close relation with these conditions of private domain during the early 20th century. The perception of home (besides other social domains) as a field of rational manipulation gained also acceptance among architects of the period and there appeared architectural attempts for social engineering, which will be discussed in the following chapter.

CHAPTER 4

HOUSE OF THE 20TH CENTURY: LEISURE, CONSUMPTION AND POWER

> The only perfect building must be the factory, because that is built to house machinery, not men (Waugh, as cited in Ewen, 1984, p.213).

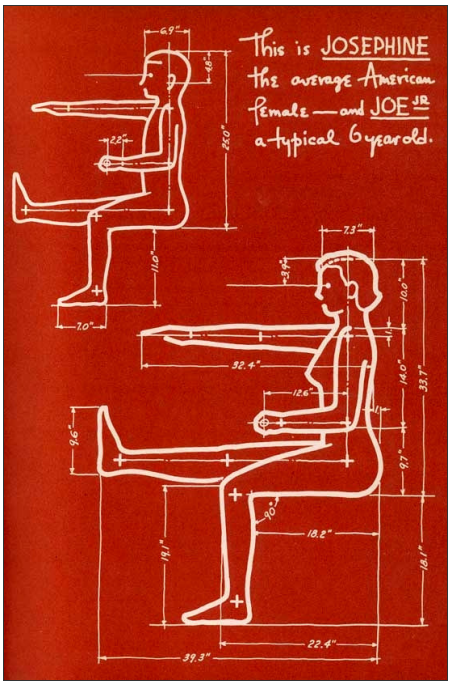

Figure 11: Josephine and Joe Jr. from *Designing for People*, Henry Dreyfuss, 1955
(Source: http://www.typophile.com/node/19613)

Throughout the 20th century, the reshaping of modern private sphere continued under the impacts of the social dynamics. At the beginning of the century, two developments significantly affected the meanings and conditions of domestic life that appeared through the social inducements: the emergence of modern architecture and the introduction of mass-produced appliances to home. These two

affairs created also new dynamics for the relationship of private and public spheres. In a sense, the strict borders of private sphere started to weaken starting from the turn of the 19th century.

4.1. Modern Architecture and Private Sphere

> By slow degrees the building sites will become industrialized, and the incorporation of machines into the building industry will lead to the introduction of standard components; house designs will change, a new economy will be established; the standard components will ensure unity of detail, and unity of detail is an indispensable condition of architectural beauty […] Our towns will lose the look of chaos which disfigures them today. Order will reign and the network of new roads, from an architectural point of view, will provide us with splendid views. Thanks to the machine, thanks to standard components, thanks to selectivity, a new style will assert itself. (Le Corbusier, *l'Esprit Nouveau*)

Modern architecture was a movement that appeared in the beginning of the 20th century and dominated the architectural approaches until the 1960s. It emerged as a 'social project' with the goal of changing the social structures for providing a developed, rational and well-functioning society through the tools of design and with the inspiration from the new technologies of the period, which is termed as the 'machine age'. As an architectural movement (together with modern art), it rejected the previous aesthetic qualifications in art and architecture and put the international style (or pure, abstract formal qualities) as its main tool for achieving the universally functional design qualities (Brain, 1997; McLeod, 1983; Ewen, 1984; Colomina, 1996; Corn and Horrigan, 1984).

Modern architecture as Colomina (1999, 1996) discussed, mainly dealt with the domestic sphere such that the masterpieces of modern architectural buildings were mainly the house designs. The architects of the period concentrated on home not only at a formal level, but made some ideological assumptions on how a family home should be and how the life should be conducted inside the home. The domestic architecture of the period had completely new aesthetic and formal qualities compared to the conventional house designs. Morley (2000) indicates that modern architecture of the 20th century took a side against the traditional architecture and the female-oriented domesticity. Morley (2000) reveals that the

modernist architects favoring the efficient and healthy houses, and believing that this is possible through a plain and functionally formed architecture, were against the ornamental, female-associated, family home. Thus, modern architecture was an invasion to (or at least, a rejection of) the modern private domain that is formed on the gendered division of public and private spheres.

Le Corbusier (or Charles-Edouard Jeanneret) was one of the key figures of modern architecture during the first half of the 20th century (Brain, 1997; McLeod, 1983; Ewen, 1984; Colomina, 1996; Corn and Horrigan, 1984). Beside his many important architectural designs, he became also important with his ideas on modern life and society that he declared in his writings, and in media. As it is visible from his writings, Le Corbusier was significantly inspired from industrial technology at the period (Figure 12). Affected by the conditions of his period, and regretting the classical styles, he suggested some architectural perspectives according to his analysis of the 'necessities' of the 'machine age'.[9]

Figure 12: *Villa Savoye*, designed by Le Corbusier, 1929
Villa Savoye is one of the masterpieces carrying key formal features of modern architecture (smooth surfaces, large windows, straight parallel lines, simple geometrical forms, a seamless unity, termed as 'machine aesthetics') on itself. (Source: http://figure-ground.com)

[9] The book *Vers une architecture* (Towards a New Architecture) was accepted as a manifesto of Le Corbusier. Moreover, in 1920 he founded with Ozenfant the review *L'Esprit Nouveau* (The New Spirit) that worked as a medium for presenting his ideas, where he wrote theoretical articles on architecture. Some other important books of Le Corbusier are *La maison des hommes* (The Home of Man, 1942); and *Quand les cathédrales étaient blanches* (When the Cathedrals Were White, 1947).

McLeod (1983) explains that the American industrial doctrines and technocratic visions started to gain enthusiasm of the French industrialists and politicians in France after World War I. In WWI, the destruction was huge in France. Dwelling areas as well as public buildings were collapsed in big numbers. Interestingly, as indicated by McLeod (1983), the devastation was not confronted by French technocrats with sorrow. On the contrary, they acknowledged that the war as an "enormous industrial revolution" (p.134) providing a chance for a new industrial and social construction in the country. In this era, Le Corbusier, announced that, "things are not revolutionized by making revolutions. The real revolution lies in the solution of existing problems" (as cited in McLeod, 1983, p.132), and became an important figure in architecture with his architectural solutions for the post-war France. [10]

According to McLeod (1983), even though Le Corbusier stated that, he is merely an architect and does not have any relation with politics, different criticisms -especially by postmodernists- have been made on the political and ideological position of Le Corbusier, which was reflected in his designs and writings. Analyzing the criticized ideological position of Le Corbusier, McLeod discusses the following:

> Words like "technical", "logical", "solution", and "expert" all associate him with a general ideological position current in postwar France that was predicated on American models of industrial rationalization and managerial reform. […] Far from being void of specific political and social implications, this vision –incorporating Taylorism, Fordism, and other models of so-called Scientific Management- […], all of which he conceived as essential components of *a foreseen social regeneration* […] *linking technology and social change* [...] was fundamental to Le Corbusier's architecture and theory during the postwar period (pp.132-133. Emphasis added).

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[10] The historian Charles S. Maier (1970), in his study on the relationship of Taylorism and Technocracy in Europe during 1920s, indicates that the implications of American way of industrialization on Europe were more effective in social and political aspects than in technical ones. He explains that, whereas in America, "the commitment to technological efficiency and productivity pervaded almost the entire culture, in Europe it appeared more selectively" (p.28). Yet, the "technocratic or engineering models of social management" (p.28) rooted in American industrial doctrines (i.e. Taylorism and Fordism) were confronted with more enthusiasm in Europe. Maier suggests that these technocratic approaches were obvious from among Italian and German nationalists' and conservatives' to among Soviet socialists' political endeavors, without any distinction between left and right wings of politics. Thus, the political and socio-cultural era of Europe was deeply affected by the ideological implications of 'Americanism'. European art and architecture were not excluded from the scope of these influences. As it was revealed by Mary McLeod (1983) in the case of Le Corbusier, 'the architect of the 20th century', the doctrines of American industrialization were important conceptual sources of the European modernist architects at the period.

Thus, McLeod reveals that Le Corbusier and other modernist architects were deeply affected by key ideologies of the period, such as standardization, technocracy and scientific management originated in American capitalist industrial society. The theoretical approach of Le Corbusier, which mainly accepted Taylorism, standardization and mass-production as "fundamental components of social renewal" (McLeod, 1983, p. 135), was a clear technocratic approach.

4.1.1. 'Machine House' Idea

> A great epoch has begun. […] The problem of the house is the problem of the epoch. The equilibrium of society to-day depends upon it […] Industry on the grand scale must occupy itself with building and establish the elements of the house on a mass-production basis. We must create the mass-production spirit. The spirit of constructing mass-production houses… The spirit of living in mass-production houses… The spirit of conceiving mass-production houses (Le Corbusier, 1946, p.210)…

'Machine house' or precisely, "machine for living in" (Le Corbusier, 1946, p. 10) was the famous concept announced by Le Corbusier in the 1920s, during the post-war era. Machine houses were proposed as the mass-production houses of the new epoch. Certainly, the idea of producing this house with mass production techniques was not the only notion of Le Corbusier's proposal.

Asserting that "All men have the same needs" (p.126), Le Corbusier (1946) imagined the mass-produced, standardized, cheap houses for the use of 'man' or 'everybody' that would be designed with considerations on a rational, efficient and modern domestic life. Moreover, Le Corbusier emphasized that it is essential to create "the right state of mind for living in mass-production houses" (Le Corbusier, 1946, p. 245). That is, his machine house concept was also including an ideological proposal for reforming the human mind for the sake of an 'ideal, standard life' in the emerging industrial modern society. As it was observable from his writings, Le

Corbusier had already some visions on what this ideal life was consisting of[11], and he designed many houses in the light of these visions.

Le Corbusier, as early as the 1910s, designed *Maison Domino,* which merely consisted of steel columns and concrete slabs (Figure 13). Maison Domino was a constructional method, which provided a skeleton for free arrangement of different designs on itself. The idea of standard, mass housing of Le Corbusier (1946) was not that of a cloned series of same buildings, but as he indicates in *Vers une architecture*, it was the principle of the "uniformity in detail, and variety in the general effect" (p.247). He suggested that this principle could be achieved through "a minute study of every detail connected with the house, and a close search for a standard, that is for a type" (pp. 246-247).

Bilgin (2002) in his paper, which provides a discussion on the idea of *free plan* of Le Corbusier, accounts that Maison Domino was a standard structure designed as an "abstract opportunity" that can provide the necessary space for inserting the "solid elements" defining a house (i.e. windows, doors, walls,…) in variable arrangements (para.6). Furthermore, Bilgin thinks that this idea may also be seen in his other designs, such as the *Maison Citrohan*, which is described by Colomina (1999) as "the idea of the *minimum house*, the standardization and Fordisation of house production" (p.349. Emphasis added).

Maison Citrohan was another mass-production house project of Le Corbusier designed in 1920. Le Corbusier (1946) explains Maison Citrohan as "'Citrohan' (not to say Citroën)… That is to say, a house like a motor-car conceived and carried out like an omnibus or a ship's cabin…" (p.222) (Figure 13).

Maison Citrohan and Maison Domino were two important designs that were reflecting the basic intentions of the "machine for living in" motto of Le Corbusier. Le Corbusier (1946) thinking that "The right state of mind does not exist" (p.211)

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[11] Le Corbusier (1946) defines the features of an ideal house and gives advises on how to 'use' this house in the *Manual of the Dwelling* in his book *Vers une architecture*.

for designing, producing and for living in the mass-production houses, tried to convince the people to his motto: "There is no shame in living in a house without a pointed roof, with walls as smooth as sheet iron, with windows like those of factories. And one can be proud of having a house as serviceable as a typewriter" (p. 223).

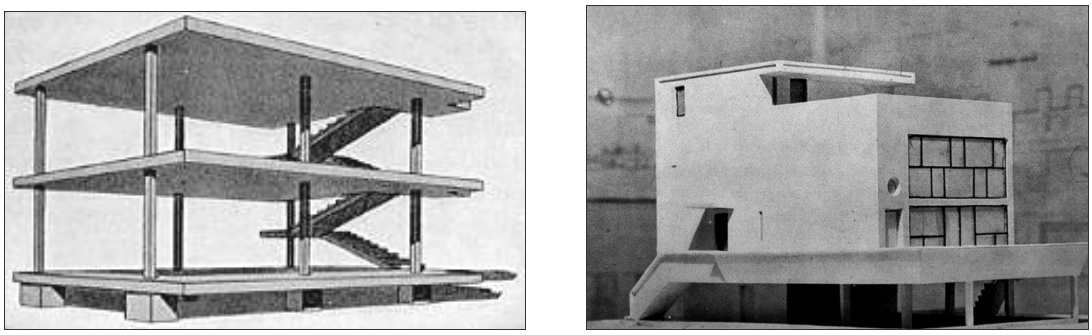

Figure 13: Early concepts for machine house by Le Corbusier.
Left: *Maison Domino*, 1914-1915 (Source: http://www.caed.kent.edu//History/Modern/LeCorbu/lecorbu_maisondomino.jpg). Right: *Maison Citrohan*, 1920 (Source: http://www.usc.edu /dept/architecture/slide/ghirardo/CD3/023-CD3.jpg).

Technocracy and Machine House

The machine house was a reflection of Le Corbusier's technocratic ideology. While announcing "Things are not revolutionized by making revolutions. The real revolution lies in the solution of existing problems" (as cited in McLeod, 1983, p.132), Le Corbusier was diminishing a social revolution and indicating the necessity of a mechanical and technological revolution, which would solve the social problems of the post-war industrialization era. The machine house idea was a technical proposal for the solution of the social problems, which were mainly the problems of labour class that emerged with the capitalist production.

McLeod (1983) explains the failure of technocratic visions in France in 1930s. She says that, especially the economic depression in America in the 1930s raised questions about the commitment on the American industrialization. Moreover, the technocratic visions on solving the problems of the era started to appear as failures. For example, the programs for constructing standardized houses in huge numbers and applying rational planning projects to cities were not achieved. Since the social

problems are rising within a large context in relation with other social conditions, and since technocracy avoids this context and attempts to solve the social problems merely through technical analysis, it was inevitable for technocracy to fail.

To discuss this view in the context of this study, it is important to discern that, domestic sphere, as an important part of modern social structure, cannot be thought of without relevance to the social conditions. Thus, ignoring this relevance, the technocratic vision behind the machine house idea led it to a failure. None of the designs of Le Corbusier was built in huge numbers, by mass-production methods. However, there appeared some other results of this commitment of Le Corbusier and other modernist architects to technology and machinery.

Le Corbusier and his conceptualization of house as a machine for living in have been criticized by many different critics until now. Le Corbusier has been a key figure among both modernists and critics of modernists, since he was one of the most radical defenders and ideologists of modern architecture. Therefore, the machine house gained a general acceptance as the idealization of modern architecture, moreover, the name 'machine house' started to be used as a synonym of modern architecture. Although the machine house was a type intended to be produced with mass-production methods, modern house designs of different modernists did not suit this criteria. However, the mass produced machine house was an ideal type for modernist architects, and this ideal was reflected (even by its creator, Le Corbusier) at a stylistic level (Horrigan, 1986; Ewen, 1990). Nevertheless, the ideological and political content behind the machine house was also reflected on these designs, which composed the core of criticisms on the modern architecture.

In this context, the investigation of ideological content of the machine house and its results on society calls for the investigation of modern architecture and its ideological content.

4.1.2. Social Change, Social Control and Modern Architecture

As clearly revealed by Ewen (1984), modernist architects believed that a social renewal can be stimulated by formal efforts of architecture and engineering, and the true 'mind' of the epoch that is in harmony with machine, could be constructed through the application of a technical program to society, where architecture and design would take an important role. These claims were clearly implying the notions of social engineering and management identical in the rationalization programs of house. In this sense, modern architecture was consciously taking part in the complex modern structures that concentrate on reshaping and controlling, in that sense, applying a power on the society. This means, the Taylorist idea suggesting to create the efficient man for the sake of the efficiency of industrial production, was gaining support now for the whole society, and architects were volunteers for being agents of it. According to Ewen (1984), "the idea that an orderly, rational structured environment would help to inculcate an orderly population was a commonly held faith" among modernist architects (pp.199-200)[12]. The factory as the functionally organized, rational design emerged as the perfect inspirational element. The factory space under continuous control through Taylorist methods was an oppressive power unit for a worker who was treated and controlled like a machine for maximum efficiency. This space of power is a *panoptic* unit, which has a history starting in the end of the 18th century.

4.1.2.1. Aesthetization of Power

Foucault (1980, 1994a, 1994b) explains that the roots of modernist architecture date back to the 18th century, when the social conditions necessitated a new form of government and policing of society. Around the same period, he indicates, a new form of power technology appeared, namely *panopticism*. At the end of the 18th

[12] Ewen (1984) indicates also that the idea of the formal elements of the environment can provide predictable and deliberate effects upon the people inside that environment, is originating from as early as the Enlightenment period. This idea was born for supplying control over society for the sake of public security and for the security of governing powers.

century, Jeremy Bentham suggested a design for the prisons that would provide a safe and easy control of prisoners (Foucault, 1980). This design, namely Panopticon, was a circular structure putting an observer in the middle and the prisoners, who were segregated from each other in their cells, in the circumference (Figure 14). Contrary to the older dark prisons or dungeons, through methods like back-and-front-lighting and formal unity, the person in the middle could observe all the prisoners in their cells. Although one person in the center could not observe all the people at a time, it was creating a feeling for prisoners to be under control and observation all the time, since there was always a possibility of it. This design would provide the prisoners an inner-control after a while, as the result of the constant feeling of power. What is successful in this system, for Bentham, is its ability to provide an economy of controlling (people), since it provides a control without a necessity of a continuous surveillance. Through this system, a constant discipline was provided in the prison (Foucault, 1980).

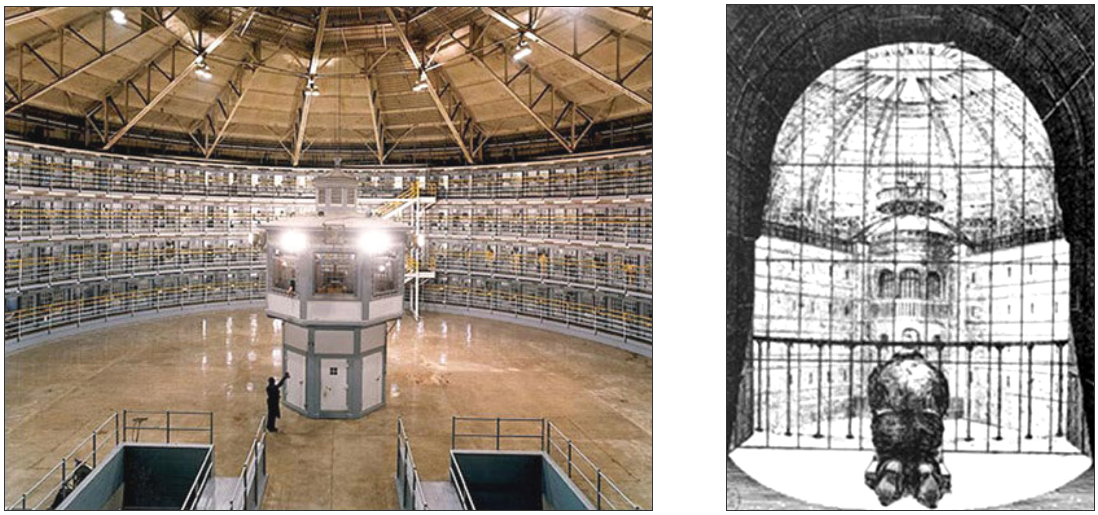

Figure 14: Panoptic prison.
Left: A modern version of panoptic prisons (Source: http://urbansemiotic.com/2006/11/27/the-nypd-panopticon-imprisons-harlem/). Right: View from the inside of a cell in a panoptic prison (Source: http://www.capitalism.co.il/wordpress-he/?p=137).

Foucault (1994a) explains elsewhere that, the Taylorist system depending on different methods of discipline was also a panoptic idea. The continuous supervision and comparison of workers through the analysis of their actions created a panoptic

structure. The workers after a pre-organization and education, which were determined by scientific studies, were separately put in their places and the quality and quantity of work done per time was controlled. Thus, the worker had to work to provide the expected result, which caused him to gain an inner control, discipline and organization. The panoptic system gained a general approval of the controlling and governing forces of modern society, and this system started to be applied in different institutions, i.e. schools, military institutions, hospitals, offices and factories.

Architecture played a key role in application of panoptic systems to society in different formats. It is interesting that the idea behind panopticism was originating from a Rousseauist notion. With the words of Foucault (1980),

> Bentham was the complement to Rousseau. What in fact was the Rousseauist dream that motivated many of the revolutionaries? It was the dream of a transparent society, visible and legible in each of its parts, the dream of there no longer existing any zones of darkness… […] It was the dream of that each individual, whatever position he occupied, might be able to see the whole of society, that men's heart should communicate, their vision be unobstructed by obstacles, and that opinion of all reign over each (p.152).

This Rousseauist idealization was also visible in the tendencies of modernists. They were dreaming of a rational, fully developed society living in peace, but this was thought to be able to appear by solving social problems with technical study, which would create a mechanical society working in harmony with its all the parts –even humans- (Ewen, 1984).

Ewen (1990) in his study on the political roots of 'style' accuses Le Corbusier and other modernists by proposing merely a style, contrary to their commitment on solving the existing social problems. Ewen supports that,

> Drawing from the social forms of industrialism, [Le Corbusier's] vision is thoroughly aesthetized, divorced from any overt association with coercion or conflict. Le Corbusier takes from the look of the factory, but ignores the oppressiveness of factory work. For him the factory is simply a part of 'the most noble quarters of our

> towns'. By separating the 'nobility' of form from the social content of the factory, surface is separated from its substance. (p.49) [13]

In other words, Le Corbusier, by converting the doctrines of industrialization to merely a style, presented the ideological content of these doctrines in a neutralized format, and instead of solving the conflicts of industrialization, he only obscured these conflicts within a style. In this sense, what modern architecture did was the "aesthetization of power" more than providing a 'technical revolution' (Ewen, 1984, p.213).

4.1.2.2. Machine House and Envisioning the Social Change

Different education programs (such as those applied to women about house management), followed by examining and recording of personal information by institutions of state, and construction of new urban geographies and house buildings in units were all part of a modern social engineering and social regeneration program of national state. Modern architecture and planning with panoptic roots took role in this social project (Bauman, 1998; Foucault, 1994a, 1994b; Ewen, 1984). The question of, whether the modern project for a social renewal did succeed in creating the perfectly-working society is an issue discussed by many scholars. It did not create for sure, a utopia when we look at the current world. However, it had important results for society.

The panoptic social systems (some of which entered to everyday life through their aesthetization) were carrying some dangers inside them. Bauman (1998) who studied panopticism and its reflections on current society indicates the results of this design for everyday life. He reveals that the intention of modernists was to create a transparent (visible with its all elements), legible and secure society, that would bring equal, undifferentiated individuals and a well-planned artificial space. However, its panoptic content led the system to the formation of a homogenous

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[13] Ewen (1990) also reveals the roots of the ideology of Le Corbusier in *panopticism*. The idea, which Ewen implies as the 'look of factory', contains links both to doctrines of industrialization –Fordism and Taylorism– and to panopticism.

society with "faceless monotony and clinical purity of the artificially constructed space deprived of the opportunity for meaning-negotiation and thus of the know-how needed to come to grips with that problem and to resolve it" (p.46). He discusses further that, in such a society the intolerance to and the fear from the 'other' was unavoidable. With his words;

> Uniformity breeds conformity, and conformity's other face is intolerance. In a homogenous locality it is exceedingly difficult to acquire the qualities of character and the skills needed to cope with human difference and situations of uncertainty; and in the absence of such skills and qualities, it is all too easy to fear the other, simply for reason of being an-other-bizarre and different perhaps, but first and foremost unfamiliar, not-readily-comprehensible, not-fully-fathomed, unpredictable (p.47).

For sure, the intention of modernists was not this; they predicted not these results, but more utopian ones. They aimed to provide liberating results for society, but things resulted in a constant contrary. Foucault (1994b) explains this situation:

> I think that it can never be inherent in the structure of things to guarantee the exercise of freedom. The guarantee of freedom is freedom. […] Men have dreamed of liberating machines. But there are no machines of freedom, by definition. This is not to say that the exercise of freedom is completely indifferent to spatial distribution, but it can only function when there is a certain *convergence*; in the case of divergence or distortion, it immediately becomes the opposite of that which had been intended (pp.355-356. Emphasis added).

The convergence here was the convergence of the time, of the era, of the people living in that specific era. Modernism with its characteristics of rejecting the past, cutting the historical continuity and putting instead an artificial structure was a certain divergence, which did not respect the social structures and their interrelated and non-predictable occurrence, which creates, at the end, the society as an independent and complex arrangement.

As it was discussed before, modern architecture intended a penetration to private domain, which was strictly formed outside the public domain and working space. This penetration was also originating from the same intentions on creating a utopian, transparent welfare society. Bauman (1998) discusses Panopticon in its relation with privacy, and suggests that; "Panopticon would allow for no private

space; at least for no opaque private space, no private space unsurveilled or worse still unsurveillable", and gives an example, "In the city described in Zamiatin's book *We*, everyone had a private home, but the walls of private homes were made of glass" (p.49).[14] Modern architecture, in this sense, besides its social impacts, was a threat for the impenetrable, secret, private sphere, tending to turn it into an organized, controllable, surveillable and disciplined sphere.

All of these modernist attempts prepared a ground for a 'surveillance society' that puts its members under control of a social gaze in deceptively 'free' spheres.

4.1.3. 'Home of Tomorrow' Concept in America

Modern architecture that originated from Europe started to affect American architecture in the 1930s. Colomina (1996) accepts that, the impacts of European modern architecture to American era started with the *Exhibition of Modern Architecture* in MoMA, curated by Henry Russell Hitchcock and Philip Johnson, and with the publishing of the book *The International Style* by the same men.

'Home of Tomorrow' idea in America arose in the wake of the emergence of the need for new housing projects for growing city populations after WWI. After the start of the influences of the modern movement and the mass-production housing ideas on American architects, new house designs with similar perspectives to those of Le Corbusier and other modernists started to emerge. Horrigan (1986) defines the homes of tomorrow in America to appear in three scenarios and states the following:

> In retrospect, we can discern three scenarios. In one version, architects led or inspired by the European avant-garde would transform the house into a paradigm of modern elegance. In another, engineers or would-be industrialists would clone thousands of cheap dwellings from a single prototype. In the third scenario, the

[14] Although an examination on the panoptic elements of modernist domestic architecture is an extensive issue that is out of the scope of this study, it could be useful to note that the features of modern architecture, such as the large windows viewing the outside, and making the inside easily observable, and a large open space with few elements inside, can be counted to have panoptic origins.

> efforts of both the architect and the engineer would be eclipsed by those of the purveyors of consumer goods and gadgets (p.138).

Spigel (2005) with a parallel notion to that of Horrigan's suggests that the first version of home of tomorrow idea was associated with Lovell House project of Richard Neutra and the second one was associated with Dymaxion House of Buckminster Fuller. The third scenario remarked by Horrigan necessitates an examination in a different context from the first two scenarios, which will be provided in a later section of the study.

The first of American archetypes of the home of tomorrows as "modern luxury" (Spigel, 2005, p.405) was designed by Richard Neutra. As Corn and Horrigan (1984) explain, Neutra was a German immigrant, who was seeking clients for his 'machine-age' architectural ideas. He designed the Lovell House for Dr. Philip Lovell. It finished in 1929, and became one of the first 'machines for living in' of the United States (Figure 15). As identified by Horrigan (1986), Lovell House was an elegant, "expensive, hand-crafted, machine-age mansion" (p.144). It was built with modern materials formed with 'modern style' (i.e. steel frame, concrete walls, ribbon windows, flat roof) (Corn and Horrigan, 1984).

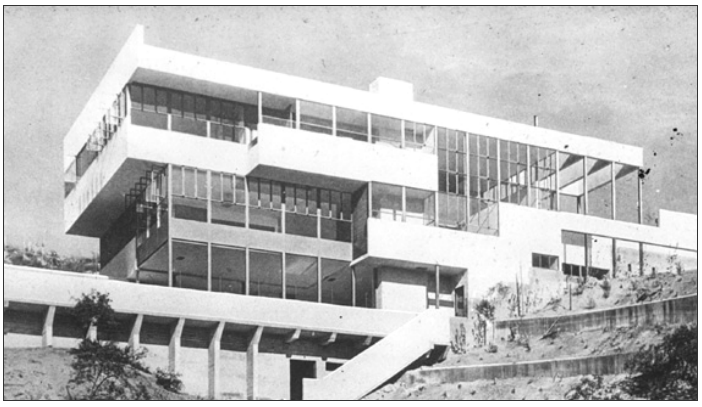

Figure 15: *Lovell House* designed by Richard Neutra, 1929
(Source: http://xroads.virginia. edu/~MA01/Lisle/30home/modern/images/exlovellage.jpg)

The second type of home of tomorrows emerged as cheap, mass-produced, futuristic, engineering 'prototypes' for the use of masses, the first of which was the

'Dymaxion House' designed by Buckminster Fuller in 1927 (Figure 16). Horrigan (1986) asserts that, Fuller used a central aluminum mast, glass walls, rubber flooring in Dymaxion House for providing a lightweight and demountable house. Dymaxion house contained,

> two bathrooms, a self-activating laundry unit that would deliver washed and dried clothes in 3 minutes, sewage disposal tanks, an electric generator, an air compressor, a humidifier, a kitchen with every conceivable appliance, two small bedrooms with pneumatic beds with neither sheets nor blankets, these being unnecessary in the perfectly climate-controlled house (Horrigan, 1986, p. 140).

Dymaxion House was appreciated as a 'real' machine for living in, in comparison to its modern precedents, since it was accepted as being able to envision the future needs and exploring technology accordingly. Corn and Horrigan (1984) account that, "Mass production, mass communications, decentralization, and mobility –these were what distinguished modern American society, and Fuller designed the Dymaxion House to reflect and incorporate these tendencies" (p.67)[15].

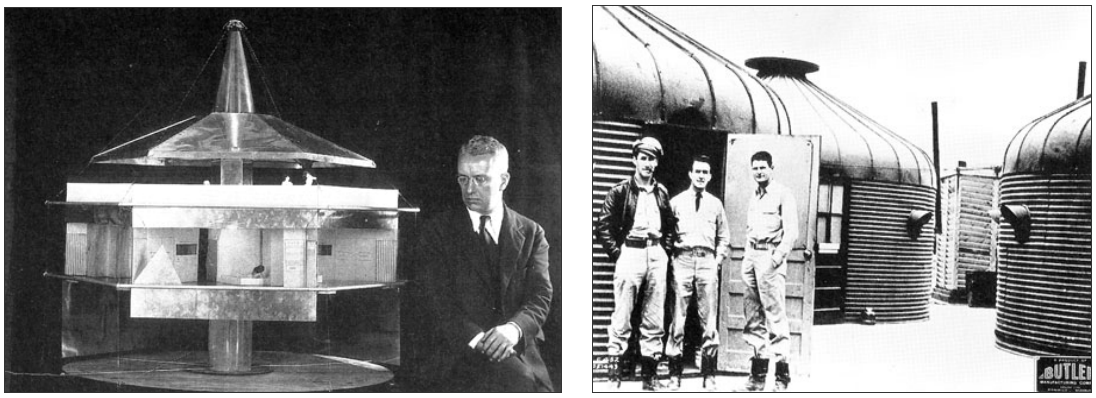

Figure 16: *Dymaxion House* designed by Buckminster Fuller, 1927.
Right: A version of Dymaxion House was used as emergency accommodation units during the WWII. (Source: http://www.designmuseum.org)

[15] Dymaxion House appeared in the media with words and titles : "The House of the Future", "House in Utopia", "Machine-made Family Life", "Modern Houses will be Built for $3,000", "Homes You Will Carry With You When You Move", "Bed sheets Unnecessary in House of the Future", "House of 1982 Built Like Ship", "Everyman's House", "The most Exciting Art Idea in Centuries" (Horrigan, 1986, p.141).

Fuller believed that, he provided the elimination of house drudgery by the technological arrangement inside the Dymaxion House, and asserted that, with the elimination of drudgery, "the real individualism of man and his family may be developed […] creation will set in as never before" (Fuller cited in Horrigan, 1986, p.140). As Horrigan discusses, Fuller with the idea of providing an area for 'individual creation' provided a "get-on-with-life [room]" in Dymaxion House that contained a typewriter, a calculator, a telephone, a dictation machine, a television, a radio, a phonograph, and a mimeograph machine (p. 140).

Dymaxion House was presented as a scaled model in its first appearance. However, the first full-scaled version of home of tomorrows for mass production was designed by George Fred Keck, and built as an exhibition house for Century of Progress Exposition in Chicago (CPEC) (Figure 17). Horrigan (1986) explains that *House of Tomorrow,* similar to Dymaxion House, contained a recreation and work room, a garage and a hangar for the family airplane, and it was built with new industrial materials.

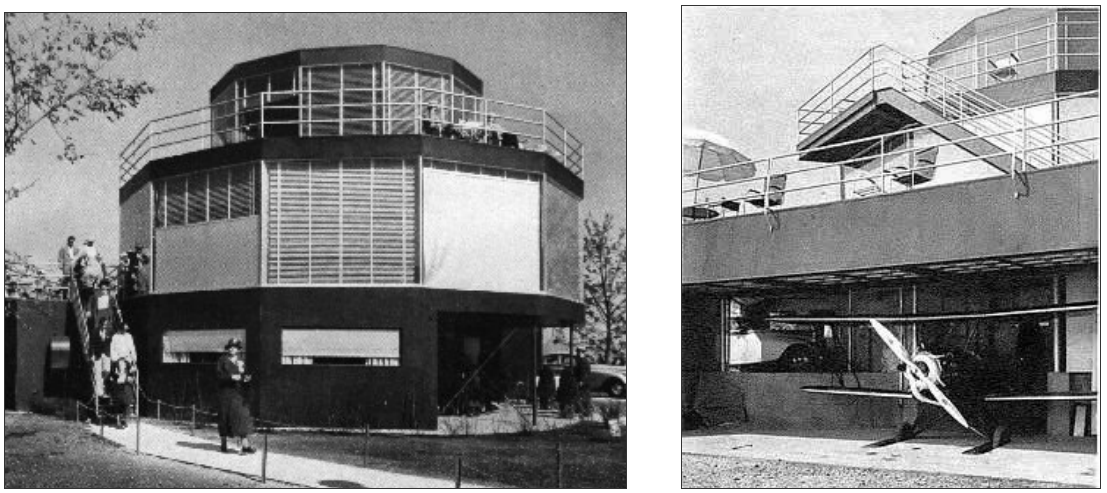

Figure 17: *House of Tomorrow* by George Fred Keck, 1933
(Source: http://www.nps.gov/archive/indu/History/HouseofTomorrow.htm)

The *Crystal House*, another house designed by Keck, was exhibited in the second year of the same exposition. Both of the designs of Keck and Dymaxion House were proposals as mass-production houses, and they took attention of big numbers of

people. They had important potentials for commercialization as they were creating a good imagery of 'happy' life at home for Americans, but they remained as exhibition houses even after becoming technologically (more) feasible.

Horrigan (1986) acknowledges that, during CPEC, in 1933 and 1934, the term *prefabrication* was used for naming the mass-production houses and after this exhibition, *prefabrication* became a generally used term replacing 'mass-production housing'.

Besides these futuristic homes of tomorrow, there appeared also more 'conventional' prefabricated house projects during the period. Some of these were house designs produced in small numbers on the contrary to their producer's claims of 'housing the masses'. Most of them remained as unrealized projects, in spite of many attempts on propagating the mass-production houses, and in spite of the belief that prefabricated houses will provide cheap, efficient houses to masses. Horrigan (1986) supports this idea by stating that, in the second half of 1930s prefabricated houses constituted less than 1 percent of all single-family houses. In other words, the anticipation for providing the masses with 'ideal', cheap houses through mass production techniques resulted in a failure. As Horrigan (1986) states, housing for poor masses started to be left to the control of governmental housing programs.

According to the investigation of Hoffman (1996), governmental public housing programs intended to build single-family houses between the two world wars, but the governmental attempts were not successful to fully solve the housing problem, as well. At the end, in the 1950s the high apartment buildings appeared as cheap housing alternatives. The apartment building programs encountered with many criticisms, since they were thought to be 'non-humanitarian'. However, mainly the economic considerations and the rising density of population in cities caused apartment building to remain as the most suitable alternative for housing problem of the poor masses.

4.1.4. Modern Utopianism and Commitment to Technology

The home of tomorrow concept was inspired from mainly two ideas, from the machine house idea, thus, from modern architecture, and from rising futurist approaches of the modern era (Horrigan, 1986; Corn and Horrigan, 1984).

After Victorian era, around the beginning of the 20th century, the future oriented interpretation of different issues -social and political aspects in general as well as design– appeared as an important tendency. These mainly contained the forecasts of a 'better future' (than present) through the new technological developments (Corn, 1986). As Corn and Horrigan (1984) state, at the end, the belief in a better future became so excessive that, "the future and progress seemed interchangeable" (p.xi).[16] According to Corn (1986), in America, the futurist progressive approach or "technological utopianism" (p.5) was a phenomenon of the utopian literature's rising popularity, of rapid mechanization in different domains and of the economic depression era in post-war America. Among those utopians, the works of H. G. Wells (*The Time Machine*, 1895; *The War of the Worlds*, 1898) and of Edward Bellamy (*Looking Backward*, 1888) became very popular and inspired many other fantasts to write other utopian stories.

Segal (1986), in his study on the utopians of the period, reveals some common points among their works. He names these utopians as "conservative utopians", since they "extrapolated from the present to the future rather than sharply distinguish the future from the present" (p.122). In other words, they did not have revolutionary perspectives rejecting the current situation and proposing or predicting a new one. With Segal's words, technological utopianism was "a movement seeking to alter the *speed* with which American society was moving, but

[16] In the beginning of the 20th century, the futurist tendencies in association with technocratic visions resulted with the birth of Futurist movement in Italy, which had important relations with political ideas especially with the nationalist visions. Futurism had important impacts on European arts and architecture during the period. The papers in a volume of *Art Journal* clearly reveal the relationship between the modern arts and architecture and political tendencies –esp. technocracy and nationalism- in Europe, during the period. See: *Art Journal*, Summer 1983, Vol. 43 (2), Revising Modernist History: The Architecture of the 1920s and 1930s.

not the *direction*" (p.120. Emphasis added). Moreover, Segal (1986) emphasizes the idea of "social evolution" (p.123) of the utopians, who thought that they were living in the mid of that evolution, which will end up in a perfect society. One other common feature in these utopian works was the interpretation of a kind of 'authoritarian and uniform' society, where self-controlled, formal and distant individuals -or more precisely; "the human machines" (Segal, 1986, p.128)- are taking role. It is necessary to mark out one final point about the utopian literary works during the period; these works also constituted the 'escapist endeavors' that provided nostalgia of 'the past good days' in 'the future' during the economic depression years. Corn and Horrigan (1984) clarify this idea by exemplifying the work of Bellamy:

> For the middle-class readers of the late Victorian era, *Looking Backward* and other utopian novels of the day allayed fears of imminent class warfare. Their escape into the future was, at the same time, a nostalgic glance backward to a past of simplicity and "common sense." Bellamy cast the future in the idealized mold of the past, a mythic age when the nation was peopled by "stately forms of men and women who had never known fear of a fellow man, or depended on his favor" (p.4).

The technological utopianism that started in literary works affected different realms of the period. In popular arts, media and different design fields, there appeared a 'futurist boom', which mainly produced works that envisioned the future society as a completely progressed utopia. Dominant architectural approaches were also sharing this vision. Thus, home of tomorrow was a reflection of these visions in architecture (Corn and Horrigan, 1984).

The common features of the utopian literary works were also present in the home of tomorrow designs of the period. That is, the homes of tomorrow were also envisioning a social evolution by relying on the technological developments. Moreover, although they envisioned a new life form, they can be accepted as 'conservative utopian' designs as well, since they were neither rejecting the current situation nor envisioning a new social structure. Rather, they were reproducing 'today' (if not, the past) in a technological context. At the end, as Colomina (1991), and Corn and Horrigan (1984) discussed these futuristic house designs turned into merely fantastic 'images', which were represented in media and in advertisements.

As discussed in the previous section, the home of tomorrow idea contained differences from the machine house idea; nonetheless, as it was the case for modern architecture, homes of tomorrow were also avoiding the social context. They were approaching a social phenomenon without considering the wider social context. Since the domestic sphere defines a social realm, and since it is not separable from other social (also, political and historical) contexts, it is not possible to change or to envision it outside of these contexts. The most important socio-historical context of domesticity, which was resistant to these utopian, futurist or technocratic visions, was its strong formation as the impenetrable private domain distinct from the reformable, and controllable as well as standardizable public domain that appeared in the conditions of the modern industrial society (See Chapter 3).

Nevertheless, it is important to indicate one final point. Even though the machine house and the home of tomorrow ideas failed to achieve their aims, it is clear that, they were successful in an ideological level. As discussed by Colomina (1999) generally for modern architecture, these houses created the 'ideal' house images that solidified in the 'public memory of the period'.

The Dymaxion House and houses of Keck, and some successors of these houses had important predictions about the future, some of which became realities after a while. The 'private family cars' as a part of home, the idea of home as a leisure and private creation space and home as a space filled with home gadgets were three of these predictions. While emerging as predictions, they also supported the imagination of home in such a format. Thus, these houses did not promote their selves, but promoted an imagination of home as a new technological space.

4.2. The Modern House with Products

The introduction of mass-produced products to domestic sphere started at the end of the 19th century, and gained impetus at the beginning of the 20th century. This created the market of domestic appliances, targeting mainly women consumers

(MacKenzie and Wajcman, 1999). The integration attempts of domestic appliances to home were mainly motivated by capitalist tendencies for enlarging the sales rates by entering to new markets and by stimulating the domestic consumption.

Forty (1986) reveals the history of sewing machine manufacturing, which started in the early 1850s. He explains that, at the beginning, sewing machines were produced with handcraft methods and sold for industrial use. These machines were expensive for domestic buyers. Moreover, the sewing machine market, which was embodied mainly by the textile manufacturers, was being rapidly saturated and the sewing machine producers soon started to seek for a new market to sell their products. The home appeared as a good potential market. In the mid 1850s, Singer and Wheeler & Wilson companies made first attempts to enter the market for the house.

Sewing machines were the first mass-produced products for domestic use (Riccini, 1998), but the histories of other home appliances were also not much different. Like the sewing machine, the mechanical and manually-working types of many other domestic appliances emerged at the end of the 19th century: "the vacuum cleaner in 1859; the dishwashing machine in 1865; the modern type of washing machine in 1869" (Giedion, 1969, p. 553). (For a survey on the emergence and on the milestones in the development of domestic appliances, see Appendix A.)

Sewing machine did not encounter with too much difficulty in its integration into the domestic sphere (Forty, 1986), most probably, since it was an appliance for 'production', as it is discussed by Prost (1991), and textile production was still surviving at home as a source of income. However, other domestic appliances, mainly those for 'labour saving in home' encountered with more resistance such that the production companies necessitated using different methods to integrate such appliances into home.

4.2.1. Challenges of Domestication of Products

The challenge of domestication of mass-produced products was mainly originating from the state of 'domestic sphere as the main private domain', which means that the integration of technology to home was an attempt for association of technology with 'modern privacy' that brought some inevitable challenges together.

One of the challenges of this integration was the emergence of many home appliances as domesticated (thus, mostly scaled) versions of the products for public use. Although it is not possible to support this idea for all the domestic appliances, the attempt of domesticating products was an attempt of 'privatization' of public appliances, thus, an intrusion of public sphere into private sphere. As in the example of the refrigeration given by Riccini (1998), the refrigerator trucks for transportation of foods were transformed to stable home refrigerators, which probably were perceived neither as necessary nor as perceptively consistent with the home. Moreover, besides these appliances, some other products for public use - but in the working places, such as factories or offices- did also face similar resistances. Technology, which was consisting of both mechanical and electronic systems during the period, was mainly used in factories. Thus, technological products (machines) were already carrying an identity associated with the factory, that is to say, with the working place, and in other words, with public sphere, which was already strictly separated from the private sphere. That is why, "a sewing machine seemed not only unnecessary but also undesirable at home: it was like having a machine tool in the living room" (p.96), as suggested by Forty (1986). Thus, one challenge of the integration of products into home was to overcome the identity of them associated with publicity and working space.

The challenges related with technology were not only on a semantic/perceptive level. Besides, new products were not designed from the beginning as appliances for domestic use. Meaning that, they were not suitable to the 'physical' conditions of a domestic life yet. Thus, they were already containing some difficulties and dangers for private use. These difficulties and dangers were not only coming from

the hazards of electricity, which was still (with its dangers, advantages and disadvantages) an unknown aspect for the masses, but also from the lack of a 'common mentality' for the use and services for maintenance of these products.[17]

Another challenge, as emphasized by Forty (1986) in the case of sewing machines, was 'persuading' the domestic buyers that they 'need' these products. In other words, there was already a way of life solidified inside the home, and the needs were already satisfied in traditional ways. Thus, new products were perceived as unnecessary or at least, 'more than necessary'. Producers had to 'create the need' for these products, physically or mentally.

4.2.2. The Integration Process: Commercializing Domestic Appliances

> Notions of what is proper, and therefore beautiful, in the home have shaped the design of articles for domestic use. However, the relationship also works in the other direction: as well as conforming to the consensus of taste, designs tell people what they ought to behave there (Forty, 1986, p.94).

In order to integrate new products to the home, producers tried to overcome the challenges of resistance and adoption with some attempts such as producing smaller products, using ornamental figures on the appliances, putting appliances (machines) inside boxes (Forty, 1986), which would look like an ornamental piece at home or would not 'disturb/blemish' the home environment. It was necessary to find a solution more than merely ornamenting or making the products 'invisible'.

4.2.2.1. Creating the 'Context'

The integration of the technological products to home necessitated a context, which was a physical and mental ground in the domestic sphere to make these products consistent inside the home. This context was provided through different ways.

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[17] To understand the point, it can help to think about the ergonomic considerations and misuses of the products.

First of all, it can be stated that, rationalization in the home constructed the main ground for domestic appliances. After the standardization within the domestic space, it became easier to insert appliances inside these defined parts of the house. That means, after a standard form of a kitchen appeared, the necessary space and context, for example, for refrigerator was provided. This was also the case for other parts of the home, especially for the bathroom.

Secondly, the architectural attempts, explained in Section 4.1., were also important. It was revealed that these attempts resulted as failures, since they could not achieve their technocratic or utopian aims. In spite of this, these attempts stimulated important ideological transformations of domestic sphere. The machine house in Europe, and the homes of tomorrow in America were presented as the 'houses of the new machine age'. As it was discussed by Colomina (1999; 1996), the houses of the modern architects were presented and reproduced in media, in public exhibitions and fairs so much that they constituted the "public memory of the 20th century" (1999, p.337) not by being lived in, but by being exhibited.

Colomina (1999) asserts that, "The discourse around the modern house is fundamentally linked to a commercialization of domestic life. In the end, all these different forms of exhibition were advertisements." (p.353). Thus, modern architecture and its exhibition houses, as the ideal houses of tomorrow, where the domestic appliances were in use, provided an important 'context' or 'image' for domestic appliances through media.

Another tool, and perhaps the most important one, for creating the necessary context for domestic appliances was advertising. According to Sparke (1989), "Advertising, organized by agencies, […] increased its strengths in the 1880s. There were signs between 1900 and 1914 that supply was beginning to outstrip demand in some industrial sectors and advertising expanded as a result" (p.14). In the 1930s, during the economic crisis in America, advertising gained more importance for stimulating the sales rates that were falling down.

Undoubtedly, advertising with its significant persuasiveness and with its important ability for neutralizing and distortion of 'reality' constructed the necessary context for domestic appliances strongly. Advertising was a good tool for overcoming the struggles of the 'impenetrability' of private domain (Sparke, 1989) without falling into a contradiction. The mythical content of advertising[18] provided the necessary perception of the machines as consistent, moreover, as indispensable pieces of domestic sphere. At the end, what advertising industry did to domestic appliances was the commercialization of them.

4.2.2.2. Creating the 'Need'

It was explained in Section 3.2.3., how the home became the main domain of woman who was loaded with responsibilities of housekeeping and child rearing after the disappearance of servants in the home in simultaneity with the division of private and public domains starting from the end of the 18th century. In such conditions, the mass produced home appliances were promoted as substitutions of home servants, with the promise of labour saving at home (Forty, 1986). This idea was used in different media, but mainly in advertisements of the domestic appliances. These gadgets, which were new technological home servants, would lighten the load of housework, and provide free time and comfort to women.

As it was mentioned before, ideas on 'labour saving at home' have two counter standpoints. As Cowan (1999) classifies it, one side constitutes the classical "functionalist sociological view" (p.181), which states that the rise of rational housekeeping and childcare systems and introduction of industrial appliances to home "eliminated or eased […] the former *functions of women* at home" (pp.181-182. Emphasis added). Giedion (1969) accepts this view while discussing about the era. Moreover, Sparke (1989) supports the idea that home appliances "minimized

[18] Barthes in his study *Mythologies first published in….* studies the 'myth' as a concept in semiology and explains the mythical content within design and advertising. He reveals the construction of 'myth' as a tool of signification that neutralizes and distorts the meaning and, thus provides a 'misinterpretation' of the 'real'.

the household labour" (p.26). However, on the counter side of the classical functionalist view, there have been many views (such as those of Cowan, 1999; Forty, 1986; and Oakley, 1974) suggesting that the household chores of the women, and especially those related to child rearing, increased after the rise of the rationalization in the home..

Moreover, Forty (1986) also criticizes the standard view that was also popularized by magazines and advertisements regarding "the myth of the mechanical servant - the idea that domestic appliances were replacements for servants" (p.209). He explains that,

> The myth that the work once done by servants has been taken over by gadgets and machines has been repeated so often that it has acquired the authenticity of historical truth. But persuasive though this line in advertising has been, it hardly needs to be said that appliances and servants are not interchangeable, since a large part of domestic work in cooking, cleaning and childcare consists of tasks that cannot be automated (p.209).

Furthermore, citing the statistical researches of Oakley, Forty suggests, "When domestic appliances became common in Britain, women spent not less but more time on housework" (70 hours per week spent in 1950 raised to 77 hours per week in 1970) (p.210). The reason behind this was that, through the risen standards of cleaning and through the machines' giving the possibility to make cleaning more often than before, the time spent with housework rose, which did not end up with a decrease in the housework for women. After all, this deceptive idea was used especially in advertisements so much that it gained a general agreement on that the women needed these appliances.

4.2.2.3. Providing a 'Domestic Identity'

> Now it was the turn of washing machines, furnaces, switchboards, and locomotives. Who was to design them? (A writer in *Fortune* Magazine, 1934, cited in Sparke, 1989, p. 96)

Taylorism in the home, the modern architecture, advertising and media provided the necessary context for integration (or commercialization) of domestic appliances into

home. Moreover, there appeared a new design field –industrial design- (or precisely, it appeared in a new context in the USA), which provided technological products with an identity. As Sparke (1989) states,

> [after] the market had been persuaded that it needed vacuum cleaners, the problem for the designer was one of finding an appropriate consumer symbolism and imagery for a machine which would not be out of place in a domestic setting but which looked, nonetheless, technically impressive, confidence-inspiring, efficient and easy to clean (p.27).

For providing an identity appropriate for domestic use, the companies produced lighter and smaller versions of manufacturing products and used ornaments, thinking that they could attract women who were their main clients and overcome the feeling of 'a factory machine at home'. Some forms and functions of electrical appliances were inspired by their old mechanical versions. However, the standard forms of domestic appliances appeared after the supply of the forms of appliances became the 'job' of industrial designers (Sparke, 1989; Heskett, 1980; Forty, 1986).

Although industrial design emerged in early periods of industrialization in Europe, the real boom of 'industrial design' happened in the 1930s during the economic crisis in America, when industrial design took a more defined form, and when the role of industrial designer was comprehended better. As it was asserted by an industrial designer of the 1930s, Van Doren, the task of design became to "enhance the product's desirability in the eyes of the purchaser" (Van Doren cited in Sparke, 1989, p.97). The crisis and the fall of market demand helped the rise of 'consultant designers' as a necessity for stimulating the demands. The designers of the era became 'public heroes' popularized by magazines. To sell a product designed by a famous designer became more important than to sell a well-designed product.

The real success of industrial design in commercializing domestic appliances appeared with the *streamlining style*. As industrial design became a commercialization tool, and after it became important for providing visual imageries of products, industrial design also started to be accepted as a profession of 'styling'. The critical point of Ewen (1990) on modern architecture, as creating merely a 'style', was now valid for industrial design at the beginning of the 20th century.

Giedion (1969) explains that streamline "in hydrodynamics, is a curve whose tangent at any point gives the direction of the flow of a particle of the fluid at a given point. Streamline is thus the graphical representation of a movement." (p.607). In the 1930s, during the economic depression era, streamlining appeared as a style in industrial design, and aimed at stimulating the sales. After being applied to submarines and airships with technical consideration in engineering, streamlining took the attention of automobile and railway transportation industries (Figure 18). However, streamlining as a visual style was also used in different products, especially, in domestic appliances.

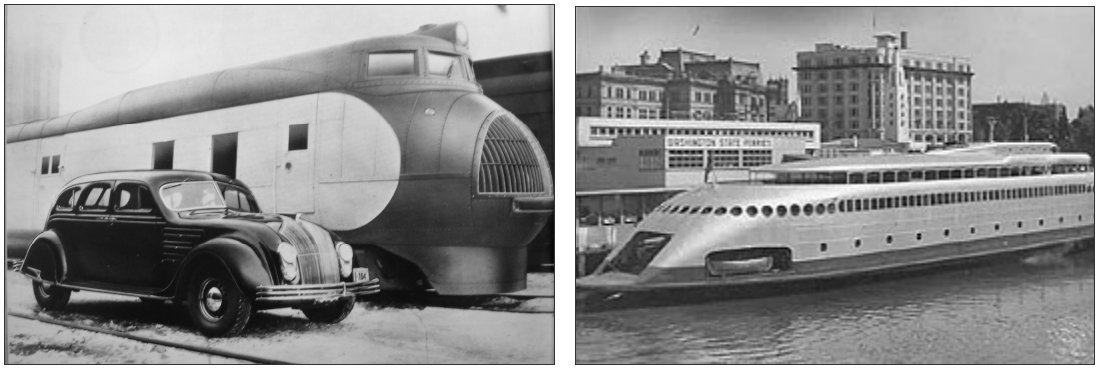

Figure 18: Streamlining in transportation vehicle design.
Left: *Airflow*, Chrysler Corporation, 1934 and *City of Salina*, Pullman Car and Manufacturing Company, 1934 (Source: Corn & Horrigan, 1984, p.136). Right: *Kalakala*, ferry of Puget Sound Navigation Company, produced by Moore Shipbuilding Company in 1927, used from 1935 to 1960s between Seattle and Bremerton (Source: http://www.historylink.org /essays/output.cfm?file_id=312)

In the period of the 'boom of industrial design' in the 1930s, streamlining became the style of the era. All kinds of products were redesigned with streamlining style from simple hand tools to huge passenger ships, since the designers believed that, they found the 'style of the machine age' (Figure 19).

While criticizing streamlining as a 'style', Giedion reveals one important aspect:

> Streamline form […] unfortunately […] is used inconsistently with its meaning. Streamline form in the scientific sense aims at the utmost economy of form, at a minimum volume. The exploitation of the streamline form in the objects of daily use aims to produce an artificial swelling of volumes (pp. 610-611).

Streamlining, as well as appreciated, has been also criticized with its different implications since its emergence. However, it was so successful in terms of commercial considerations that it affected many designers in America and Europe and streamlined products entered to many homes of the era.

Figure 19: Streamlined domestic products.
Left: Airflow Table Fan designed by Robert Heller, 1937 (Source: http://www.wilsonart.com/design/statement/printarticle.asp?articleID=219). Right: Hoover *Constellation* vacuum cleaner, designed by Henry Dreyfuss, ad from 1954 (Source: http://www.hoover.si/media/images/200610/constellationad.jpg)

What industrial design and streamlining style did was domestication of products or 'machines' that were identified with working space until that time. However, the domestication did not follow an ornamentation strategy, by merely trying to give these products a feminine identity. Instead, it was done by creating a mixed imagery associated with 'future', 'mobility', 'speed' and 'power' through a 'shell' covering the products' 'produced-in-factory-ness', breaking its identity associated with oppressive production and factory space, and providing it a technical 'perfectness' (Ewen, 1984; Sparke, 1989). Ewen (1984) calls this process 'aesthetization of power', in the same way that he uses the term for modern architecture.

Barthes (1972) asserts that, "We must not forget that an object is the best messenger of a world above that of nature: one can easily see in an object at once a perfection and an absence of origin, a closure and a brilliance, a transformation of life into a matter" (p.88), and argues further the reason behind this: "It is well

known that smoothness is always an attribute of perfection because its opposite reveals a technical and typically human operation of assembling: Christ's robe was seamless, just as the airships of science-fiction are made of unbroken metal" (p.88).

The argument of Barthes can explain the perfect-ness and power of a product, which, with its smooth surface, perfect proportions and technical look carrying the impression of 'power' on itself was what made it desirable. As Ewen (1984) indicates, "the look of factory", or panoptic elements were "aestheticized, divorced from any overt association with the coercive discipline or social conflict that were encompassed by factory life" (p.213). The "iconography of mastery" (Ewen, 1984, p.215) was transmitted by creating a perfect unity that belongs not to the nature or to the world, but coming from "another universe" (Barthes, 1972, p.88).

In the discussion of Ewen (1984) on modern architecture and design, one citation gives important clues about Europe-centered modernist visions and American design. It is explained that,

> Walter Gropius, in discussing the Bauhaus approach to design, spoke of the need to elevate the principle of standardization as an aesthetic ideal. To achieve this, he argued, it was necessary to suppress "the designer's personal mark," [which would give a 'worldly' impression, for sure] to create an image that appears to have sprung forth, as if by magic, out of the mechanical process itself (p.212).

The universality and a standard form (that includes endless varieties in itself) was an idea observable in modern architecture. In fact, this was the idea, which created the 'style'. Streamlining in America was one of these varieties. While, modern architecture being inspired by factory, hid the panoptic, oppressive elements inside it, and aesthetized these elements within a style (named mostly the international style), industrial design used streamlining in the same manner. Style, which is a perfect tool of mystification and distortion of meaning, provided the success of industrial design during the era (Ewen, 1990, 1984) (See Section 4.1.2.1.). Thus, industrial design also created an 'illusion', a 'style', which convinced people on the power of machinery and on a good life and future achievable through machinery, which constructed the 'technological determinist' vision in design.

4.2.2.4. Technological Determinism in Design

In the 1930s, industrial design, as an important profession of industry, and streamlining as the main style of products, gained a big success and became popular issues of the period. The designers with futuristic visions covering a technological deterministic perspective, designed different streamlined products of future, especially transportation products, which were thought to constitute the 'main' products of the future, since their vision of future was connoted with the concept of 'speed' and 'movement' (Figure 18).

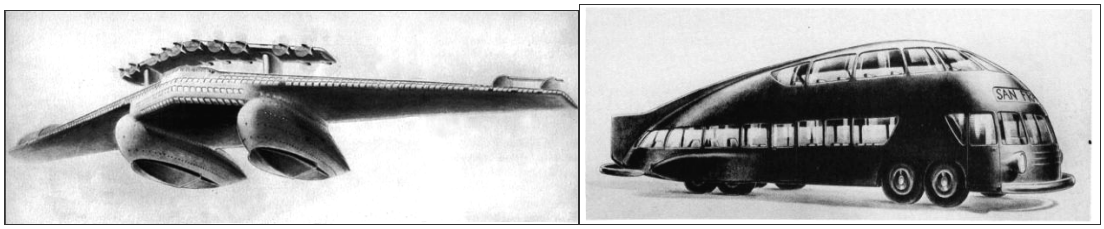

Figure 20: Futuristic designs by Norman Bel Geddes.
Left: *Air Liner no.4*, 1929. Right: *Motor coach no. 2*, 1931 (Source: http://shl.stanford.edu/Bucky/dymaxion/belgeddes .htm)

In the 1930s, which constituted the economic depression period in America, there appeared many attempts for stimulating sales rates through media, advertisements, futuristic exhibitions and fairs. One of the important fairs of the period was the New York World's Fair (NYWF) in 1939-1940, in the first years of World War II.

NYWF had the main title 'the world of tomorrow' and contained different showcases of various industries (medicine, automobile, building, textile, cosmetics, domestic goods, etc.) from different countries. However, the biggest interest of visitors was on the exhibitions designed by the famous industrial designers. In the pavilion of the General Motors (GM), the *Democracity*, future city model by Dreyfuss and the section named *Futurama* designed by Geddes, took the attention of thousands of visitors with their attractive, futurist concepts. Democracity was a scaled model of a city that could be observed from a revolving platform on the top of the model. Besides these, the photographs of different workers in factories were projected on the ceiling, for implying that these people will bring this future. Obviously, the name

of the city was giving a clear idea about the utopian view of Dreyfuss. In the exhibition of GM, not only the cars of GM were exhibited, but also the wondrous future cities, future houses, future life that, 'the cars of GM would bring', were exhibited (Corn and Horrigan, 1984; Burgess, 2004; Kihlstedt, 1986) (Figure 21).

This short history of the futuristic designs of the designers in the 1930s and 1940s and of the NYWF, which was the most important presentation of this vision during the era, can help to visualize the technological deterministic approaches in design during the 1930s. These designs, exhibited in major fairs and covered in uncounted numbers in media constructed a vision of technology, which would eventually provide a utopian welfare state in the near future. Of course, this idea was a delusion. As it was the case for the homes of tomorrow, futurist design perspectives could not achieve solving social problems. The democratic, well-developed utopias did not emerge with streamlined automobiles, irons, and sewing machines. However, these products with images of such utopias on themselves were sold successfully. The idea of 'home of tomorrow' found its place not in domestic architecture, but 'on' the streamlined domestic appliances, yet, just as an 'image'. Technology entered the private sphere through these images.

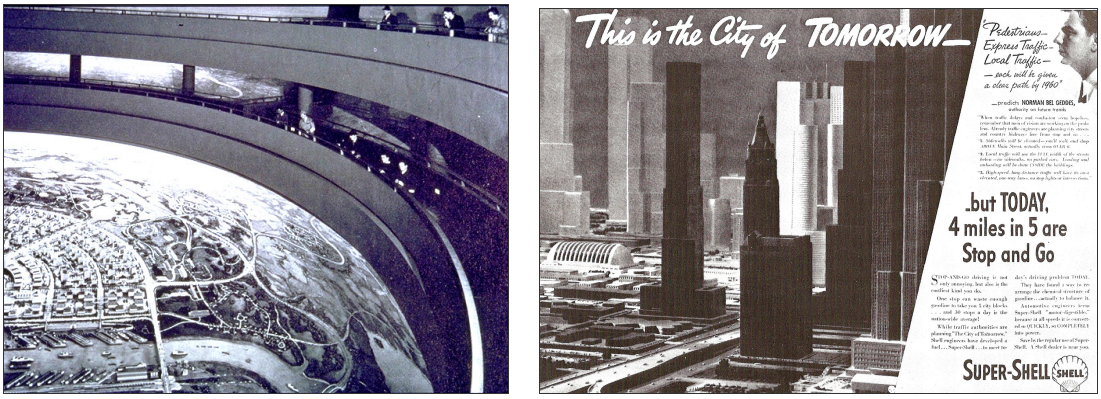

Figure 21: Cities of future in NYWF, 1939
Left: *Democracity* – American city of the 2039, designed by Henry Dreyfuss, in NYWF, 1939. Right: An ad of Shell Company using an image of the *Futuristic City* of 1960 designed for *Futurama* exhibition, by Norman Bel Geddes, NYWF, 1939. On the left of Geddes' photo, it is written: " 'Pedestrians, express traffic, local traffic' predicts Norman Bel Geddes - authority on future trends-. (Source: http://www.morrischia.com/david/portfolio/boozy/research/futurama. html)

Figure 22: Label pin given to the visitors in NYWF, 1939-1940
Visitors of the GM pavilion in NYWF left the fair area wearing a lapel pin, stating "I Have Seen the Future". (Source: Burgess, 2004)

4.3. Discussions on the House of the 20th Century

In this chapter, the first attempts in architecture and design for the integration of technology into domestic sphere in the 20th century were discussed. These attempts in architecture and industrial design seem to have encountered with a 'social' resistance of private sphere.

The machine house and home of tomorrow ideas in architecture, labour saving domestic appliances, and the futuristic designs of American industrial designers were not successful in the expected way when looked at from one viewpoint. To make it clear, machine houses and homes of tomorrow could not achieve their aims as to be built in huge numbers for masses; on the contrary, they merely remained as exhibition houses. This was also the case for futuristic designs. They also remained merely as exhibition designs in expositions and in media. The producers, the designers or the ideologists of these attempts could not discern (or perhaps, did not want to discern) that the society is a dynamic structure consisting of different social substructures, which are always affecting each other, and none of which act independently from others. The Taylorist, technocratic and technological determinist visions in these attempts led to this lack of discernment.

However, these ideas stimulated significant results as well. The commitment of modernist visions to technology, and their utopian vision of a 'perfect' society,

together with the effects of panoptic reformation of society, ended up with an ideology, which was disguised as a style, and tried to participate to the modernist social project. Panoptic institutions and their oppressive enactments did not end after critical approaches appeared at the period, and survived -moreover, progressed- in different formats, which will be discussed in Chapter 5.

Considering the discussions in Chapter 4, the failure of modern design and early household products to achieve becoming a part of private life can be attributed to the modernists' avoidance of the private domain's socio-historical context. Private domain, being a social phenomenon, was also a part of the social structures and would not associate with a perspective avoiding the social and historical conditions. Home, in the society of the period was carrying meanings associated with a 'refuge' providing an escape from the oppressive conditions of working life. It was associated with 'femininity', which certainly would not permit a 'penetration'. It was a child-based domain, which had to be a fenced 'garden'. In such conditions, not only the factory-associated boringness of modern design, but also -and more than that- its panoptic features, not giving a chance to privacy, was what made it unconvincing. Even though it is not possible to explain the appearance of a social situation in relation to one factor, this factor was the most important one within the scope of the investigation of this study.

There seems to be one question left unanswered. If modern architecture was not successful in penetrating into the private domain, and if products had similar ideological origins with modern architecture, what made them successful in being accepted by society on the contrary to the machine house? First of all, the aim of modern architecture was a social regeneration, a constant change in space and in mind. However, industrial design was mainly motivated by commodification intentions, by a market, which was seeking for a rapid solution (This, of course, does not mean that modern architecture and design are deprived from intentions of the capitalist market.) Thus, streamlining together with advertising were the tools of the 'integration' of products into the home. The products gained an imagery of technical perfection and quality, without permitting the negative impressions of this

'technical-ness'. Moreover, as supported by Ewen (1984), technology became an "essential feature of middle-class identity" (p.217). It was promoted that everybody had the chance of achieving these perfect products in reasonable prices. Thus, to own a product (this thing from out of the world) gave the feeling of power and status, in agreement with the system. 'Style' and at the end, 'personal style' and representation of this style through products (thus, a symbolism), more than their functionalities, became a general rule creating the demand of the market.

Horrigan (1986), in his study examining the reasons behind the failure of the machine house, states that "Americans did not want machines to live in; they wanted machines to live with" (p.157). This statement maybe far too simple to grasp the entire situation, but was true in a sense. The products were domesticated, but modern masterpieces of architecture stayed as exhibition houses. However, according to Ewen (1984), after a modification in the machine house, people, while believing that they rejected oppressive modern houses, started to live in machine houses in the suburban accommodation areas. These suburban houses, as modern structures in 'origin', but differentiated, individual homes in 'surface'[19], gained the approval of middle-class, white Americans.

Ewen (1984) highlights a significant feature about suburban housing. In fact, suburban life was an escape from the power-relations of industrial cities; it was a turn to the mythical homely and private life, away from the routines of a panoptic city life. The comfortable, private suburban home surrounded with gardens, but filled with technological appliances and united with a family car became the ideal form of home among middle class. This life was dependent on the city, and this life on the contrary to its ideological resemblance to Victorian private home, did not have connections to the traditional life of the pre-industrial era. It was a life, freed from a history and tradition. Moreover, it was a mechanical structure. There was

[19] Through simple modifications not on main structure, but on surface details or in sub-elements, the variation was created in a similar way with the General Motor's annually changing car designs. It is important here to remember the suggestion of Le Corbusier (1946) in 1920s, for machine houses with a standard skeleton, on which different formations would be possible. Thus, he was talking about a house, which would provide the "uniformity in detail, and variety in the general effect" (p.247).

applied a standard way of private living in suburbs, in which consumption took an important role. Henderson explains that, in suburbs "Outwardly, there are neither rich nor poor, and initially there were no older people, teen-agers, inlaws, family doctors, "big shots," churches, organizations, schools, or local governments" (Henderson, as cited in Ewen, 1984, p.225).

The appearance of domestic sphere as the main domain of consumption can be counted as the most important result of the integration of technological products to home. In this sense, as it was defined by Silverstone (2006), the domestication of technology was the commodification of it, which turned domesticity into the main sphere of consumption. The commodified products, while carrying new meanings and conditions of life, penetrated into the 'saved' private domain and created a system, which made them indispensable for domestic life. After all, the 'machine house' of modernity found its form in this structure of suburban, consumption-based, panoptic, single family units (Figure 23). The ideal 'machine house' became the suburban house.

Figure 23: Ideal home of 'American dream', a scene from the movie *American Thrift*, 1962 Father reads newspaper in his leisure time, children play with toys and mother sews clothes for 'saving to spend'. (Source: http://www.archive.org/details/American1962)

CHAPTER 5

MEDIA AND COMMUNICATION: MOBILIZATION THROUGH INFORMATION

Defining the smart home as a 'communication center', some social studies have a tendency in accepting it to be rooted in the era of the spread of media and communication technologies in everyday life. In Western societies, the years after WWI until about the 1970s saw a rapid filling of homes with domestic appliances that already started around the 1930s in USA. Media and communication technologies constituted a group, which were welcomed by society almost without any resistance. (See Appendix B for a review between 1945 and 1965 in Britain. Pay attention on TV.)

OED defines *mobilization* as "The action or process of moving or changing place". The term *mobilization* (and the words –mobile, mobility, mobilize- sharing the same semantic root that is *mobile*) is used commonly in media and communication studies for indicating the change in the perception of time and space through media technologies (Such as in Morley, 2000; Williams, 1990; Spigel 2001a, 2001b, 2005; Sheller and Urry, 2003). This means, for example, the availability of communication independent of spatial or timely restrictions, on the contrary to physical communication in the most basic sense.

In the context of this study, the mobilization era defines a similar perspective to those of some media and communication studies. However, considering the changes in the conditions and meanings of private and public spheres –that is important for the context of this study-, this study also places the spread of transportation in the same era. Thus, for us, mobilization defines the period starting

from the expansion of the physical mobilization to society as a part of daily life, until the physical and virtual mobilization era of today.

Although it is not possible to draw a linear history of the mobilization according to the technological developments, it is possible to state that the physical mobilization (through transportation) played a motivational role for the evolvement of virtual mobilization (through communication technologies).

5.1. Emergence of Physical Mobilization

> New roads and railway branch lines opened up the French countryside to outside influences, to 'civilization', to new possibilities for marketing agricultural produce, to new consumption patterns (Weber as cited in Bessel, 1989, p.164).
>
> This not only locked the countryside more closely into the market economy; it also facilitated movement in and out of the village. The railway carried the occupants of the village to new jobs in the town (Blackbourn as cited in Bessel, 1989, p.164).

Transportation, besides the imperial goals of Western societies, was mainly stimulated after the rise of industrial capitalism by the need for transportation of raw materials and products. Thus, the search of new markets, and after that, the necessity of new workers in industrial zones were important in stimulating transportation, which provided a new era of migration and travel. Transportation in the industrial period gained new meanings and became a common issue within life, and there emerged different transportation vehicles suitable for different places. After steam power was found, this technology started to be used in different domains one of which was transportation. First version of steam powered locomotives appeared as early as the 1830s in Britain and then in America. However, the versions similar to today's types were first established in the 1860s. At the end of the 19th century, railways were used for mainly long-distance or intercity transportation. These early versions of public transportation were very important in the urbanization process in Europe and America. However, urban transportation appeared not until the 1870s and the major impacts of it on everyday city life only took place at the beginning of the 20th century (Bessel, 1989; Cowan, 1997; Giedion, 1969).

Bessel (1989) names the cities of the 19th century as "walking cities" (p.613), which were growing in regard to the number of their citizens but not to their areal size. He adds that "in many of the early industrial nations – Britain, France, Belgium, Germany – the basic outlines of the railway system already were in place by 1870" (p.163). However, the rates of transportation with a device were very low in comparison to walking until the 1910s. He reveals the growth of public transportation in the 1910s with some numerical examples:

> In Britain – the pioneer of railway development – railway passenger traffic was roughly four times in 1910 what it had been in 1870; in Germany, passenger traffic on the railways in 1913 was more than nine times the 1870 figure, and goods traffic in 1913 was more than ten times what it had been in 1870 (p.163).

The first examples of urban transportation were horse-drawn streetcars and horse trams. Steam powered trams and cable trams were used as alternatives to animal power, but they could not stay for long time in the streets. The real success in urban transportation was achieved with the electric traction (or electric trams) in the late 19th century. In the mid-1890s, the invention of 'multiple-unit control' allowed the trains to be lengthened or shortened according to the needs. After a short while, the streets of European and American capitals were electrified for electric trams. Transportation companies, realizing the high profits of electrical urban transportation, extended the railways to longer distances and promoted urban transportation. The extension of railways also stimulated the expansion of the cities. New settlement areas were built, the cities started to be reshaped around the tramlines. The suburban life, which was explained in the previous chapter, became also possible through transportation. The working and living areas were separated and transportation gained big importance for city life. As cities expanded, municipal governments sponsored the building of new railways, and, elevated and underground railways flourished in the cities at the turn of the century (Bessel, 1989; Cowan, 1997).

The growth of electric trams in urban transportation was very rapid, but the fall of their popularity was as well. The reason was mainly the rising popularity of motor cars, especially after Ford's Model T. "By 1920 the automobile was used for half of

the journeys made by Americans" (Bessel, 1989, p.174). Electric trams were still commonly used, but the car started to replace the tram in urban transportation.

5.1.1. Emergence of Private Transportation

At the beginning, transportation was fundamentally a public issue. Private transportation was motivated more by market intentions of companies than the social needs. The emergence of the 'family car' with Ford Model T affected also the perception of privacy that is mainly a home-related issue, in a new way. In a sense, privacy was mobilized through private cars.

Early motor cars were only accessible for the wealthy until the standard and cheap production principle of Ford for Model T. After cheap cars of Ford, there happened a dramatic rise in the number of car owners. In 1920, about half of the 8 million cars in America were Model Ts. In the same years, another car company General Motors appeared with a market strategy completely opposite to Ford: the 'constant style changes' strategy that became annual changes in 1923. The strategy of General Motors was so successful that other automobile companies -even Ford- had to adapt same strategy in production (Sparke, 1989; Bessel, 1989; Heskett, 1980).

Bessel (1989) emphasizes that, automobiles had important distinctions from trains and trams. Technically, they were providing flexibility in the route and time of the movement. Thus, car owners could go privately where they wanted without any time restriction on the contrary to public transportation. As it was mentioned before, private transportation had a big market success and replaced the success of public transportation, but this was not only because of the explained advantages of it. The building of roads that were supported by governments –especially in US and Germany- preceded the automobile boom. In other words, the road building that was used as a political tool provided a big stimulation for the automobile market. As a result, the number of cars in American streets raised from 8 million in 1920 to 23 million in 1930 (Bessel, 1989).

5.1.2. Private Transportation and Public Space

The rise of private cars had important results in not only the planning and shaping of the cities, but also the formation of the city life. Sheller and Urry (2003) name private mobility through automobiles as the "'quasi-private' mobility that subordinates other 'public' mobilities" and indicate three important consequences of it. Firstly, they discuss about a positive result, which is the automobile's supply of a personal freedom of movement and leisure. However, they mark out the 'negative' effects for publicity, also. Secondly, they argue that with the emergence of private cars, the private could move inside the public. Thus, the "automobility" caused "the mobile transformation of once public space into road space, coercing, constraining and unfolding an awesome domination, such that nearly half of the land in LA, for example, is devoted to car-only environments" (p.115). This point reveals a spatial intrusion of private into public. The third issue is on a more perceptive level. Sheller and Urry (2003) explain that,

> *Dwelling at* speed, drivers lose the ability to perceive local detail, to talk to strangers, to learn of local ways of life, to stop and sense the particularity of place. The sights, sounds, tastes, temperatures and smells of public spaces are reduced to the two-dimensional view through the car windscreen (p. 116. Emphasis added).

In this way, the outside world, the public space turned into an 'image', where the isolated individual in her/his car, experiences it only as a space for looking. Moreover, the possibility of building social relations in transitional spaces was replaced by isolation inside a "mobile capsule" (Sheller and Urry, 2000, p. 115). Thus, private car caused a degradation of public space, as it is indicated by Freund, "Modernist urban landscapes were built to facilitate automobility and to discourage other forms of human movement […] [Movement between] private worlds is through *dead public spaces* by car" (Freund as cited in Sheller and Urry, 2000, p.746. Emphasis added).

Transportation, as the industrial designers predicted in the 1930s gained importance in modern life. However, as Sheller and Urry (2000) state, private transportation has so extended among societies that, one billion private cars were produced in the 20th

century. Currently 500 million cars are in use in the world and it is predicted that this number will be doubled in 2015.

5.2. Virtual Mobilization

Both public and private transportation were important in providing individuals (and all the things that can be carried, like commodities) with mobility. Private transportation, yet, had a special significance in the relationship between public and private. The mobilization of privacy would mean the (spatial) intrusion of privacy into public sphere, thus an intermingling of modern public and private. However, the start of this intermingling cannot be limited to private transportation. Silverstone (2006) points out the role of the domestication of technological products in the public-private intermingle, or better to state, in the negotiation between them. He, revealing the domestication of technology as mainly commodification of it with a technological determinist vision[20], adds that,

> Domestication as a process of bringing things home – machines and ideas, values and information - which always involves the crossing of boundaries: above all those between the public and the private, and between proximity and distance, is a process which also involves their constant renegotiation. […] while [domestication] can be analyzed in the negotiations of ownership and control of both new old machines and the consumption of content, […] the concept is, in its essence, dependent on the juxtaposition of inside and outside, and its continuous negotiation (p.233).

From this point of view, both 'privatization' of transportation and 'privatization' of industrial products were tools of a public-private negotiation, a start of confusion or of a modification in their meanings. Moreover, it is possible go back in the history, when the rationalization in the home attempts started. These attempts were also clearly an intrusion of public into private sphere, not only because they were conducted by governmental agents, but also because of the background idea, which was approaching to home as 'working space' and seeking efficiency in it.

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[20] That means, designers, engineers, governments, business and general public approach to technology, that perceives it merely with its 'potentials' for solving different problems and for providing a progress in health, work, wealth or general well-being, and deprives it from a social context, which makes them unable to see the 'big pictures'.

However, there was another era that strengthened this negotiation by mobilizing the timely and spatial, as well as ideological perceptions of public and private in a virtual way, that is, not in a way that constitutes a physical mobilization such as in the transportation or in the entrance of products to home. It was the domestication of communication technologies and their becoming tools of both media (that is, 'public communication') and private communication.

5.2.1. Domestication of Communication Technologies

The development of communication technologies dates back to the last decades of the 19th century. The telephone, thus, long distance private communication emerged in the 1870s, and first long distance wireless communication appeared just some years later. At the beginning, the uses of these technologies were very limited. The phone did not enter houses, but commercial phone centers were established. On the other hand, the results of wireless communication had been more extensively significant. The first wireless communication device, a wireless telegraph, was firstly used for communication with and between transportation ships carrying different products between long distances and for communication, and soon, for militaristic needs. Thus, the emergence of early communication technologies was a response to militaristic needs and to the needs of far-away trade (Cowan, 1997; Williams, 1990; Moore, 1989).

Williams (1990) names this early period of communication technologies as 'operational communication', since in this period, the communication devices were used person to person as operators. The second period, on the contrary, assured a public communication or, as Williams defines it, a 'social communication'. Cowan (1997) explains that the first wireless communication with real voice, unlike telegraphy using Morse code, was initially not appreciated as a necessary discovery for long distance shipping, whose needs were already supplied by telegraphy. On the other hand, after some period this technology found its place in another field: in broadcasting. The motivations behind the appearance of social communication were very similar to those of behind the birth of press, or media. As Williams (1990)

explains, these were much related to the social conditions and the political conditions of the period. The centralization of governance and control and rising capitalism and trading (need of commercial news and ads) were main reasons for the rise of newspapers.[21]

The radio also emerged with similar motivations. The social institutions of control and education, such as schools, churches and different assemblies were good tools for transmission of ideologies. However, after a while, these tools became not enough for transmission of news and political messages. In a rapidly changing, continuously mobilizing social structure, radio responded to the need of rapid informing of the public. Moreover, the growing political competitions made broadcasting a useful tool for politics and for influencing big populations. After that, states Williams (1990), "the press became not only a new communication system but, certainly, a new social institution" (p.15).

The development of radio necessitated different preceding inventions of technologies, such as electricity. Moreover, the development of television, which was a more complex broadcasting tool, necessitated the discovery and development of much more complex technologies: besides those necessary for auditory communication, developments such as photography, motion pictures. The boom of television appeared after WWII. During this period, the boom of TV superseded the use of radio (See Appendix B). As a visual and auditory public communication tool, television became an indispensable piece of the home after this period and evolved continuously until today.

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[21] Williams (1990) explains the social conditions that motivated the emergence of press: "It was at once a response to the development of an extended social, economic and political system and a response to crisis within that system. The centralization of political power led to a need for messages from that centre along other than of official lines. Early newspapers were a combination of that kind of message –political and social information– and the specific messages –classified advertising and general commercial news– of an expanding system of trade. In Britain, the development of the press went through its major formative stages in periods of crisis: the Civil War and Commonwealth, when the newspaper form was defined; the Industrial Revolution, when new forms of popular journalism were successively established; the major wars of the twentieth century, when the newspaper became a universal social form" (p.14).

As Prost (1991) illustrates, the use of early radios and early televisions had a more public context. Meaning that, either in public places or at home, listening to radio or watching TV were social activities, to which the neighbors or at least all family members were attending. TV became the 'family hearth'[22], where family gathered around. After a while, watching TV took a much more private form (Figure 24).

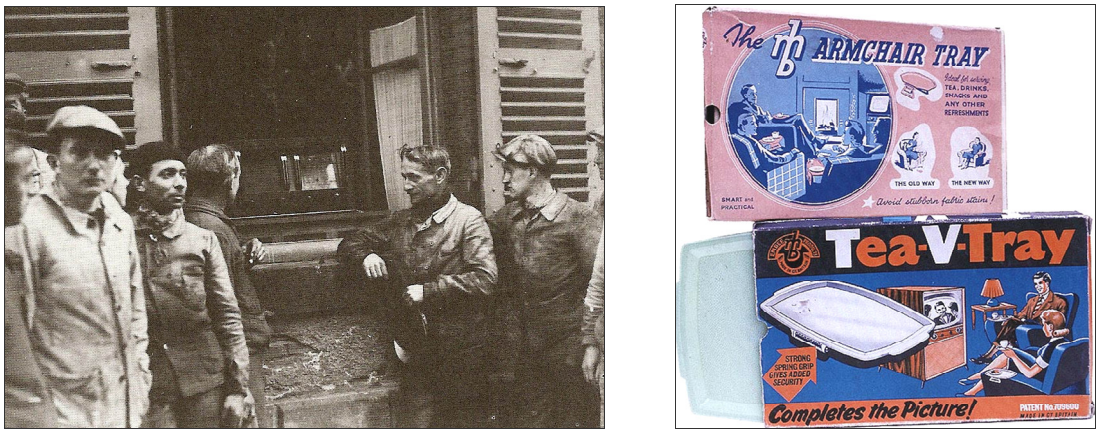

Figure 24: Listening to the radio and watching TV as social activities.
Left: A group of people in the street, gathered around a radio, 1930s (Source: Prost, 1991, p.134). Right: An advertisement of an armchair tray for enabling eating in front of TV, 1950s. Watching TV became the most popular social leisure activity for evenings at home, and eating and drinking while watching TV became so popular that it created a commercial potential. (Source: http://www. adclassix.com)

Williams (1990) explains that the word 'mass communication' for broadcasting has been used in a false way starting from the 19th century. Broadcasting that entered into the individual homes, was not experienced in public. Only during Nazi German period, big numbers of people were obliged to listen to the propaganda of Nazi Party in public in the streets. The use of mass communication by the Nazis can be perhaps considered as an extreme example. However, it is a well-known fact that media or mass communication has an important power in effecting the masses politically and ideologically, although the people are not 'obliged' to follow the media.

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[22] This can mislead one to the idea that TV supported a socialization area. On the contrary, as discussed by Morley and Silverstone (1990) the existence of 'hearth' in the home was a precondition of TV. This means, gathering of family members in a part of home was already a condition, but TV carried this place around itself.

Following the success of the domestication of broadcasting technologies, these technologies developed in time. TV and radio, which were mainly considered as news giving tools, became in time leisure products. The rising number of radio and TV channels, the emergence of color TV, growing number of different programs targeting different social groups or interest groups, the birth of concepts like *prime-time* and *rating*, all these improvements in audio-visual media stimulated different social consequences, as studies about media have revealed and discussed. Especially, watching TV as a 'leisure' activity, together with other visual media, created a visual culture. The visual media as a reproduction tool has been criticized with imposing different ideological and political positions, reproducing the traditional ideologies of patriarchal family and imposing standard ways of living that promote consumerism and popular culture, etc. through a 'quasi-real' stance.[23]

The birth of video technology, firstly with VCRs, turned into complex audio-visual systems (currently, digital home-theater systems) in time. As Morley and Silverstone (1990) indicate, television has become "the potential pivot of a video/entertainment/computer facility for the home" (p.31). These technical changes were integrated to TV watching behavior as the main social leisure activity at home. These systems, although provided more control and choice to people in audio-visual entertainment, continued to work as social reproduction tools, which conditioned in earlier broadcasting technologies (Morley and Silverstone, 1990).

5.2.2. Personal Computers and the Internet

In 1833, Babbage developed a device called Analytical Engine during his studies to design a device for astronomic calculations. This was a "program-controlled, automatic, mechanic digital computer", which is accepted as the first computer, with its distinct features compared to the period's calculators ("Computer", 2007). This device had the ability of working through the inserted data according to the pre-inserted instruction cards, which means in current terms the ability of processing

[23] The literature discussing these issues is a huge one, *Family Television: Cultural Power and Domestic Leisure* by David Morley and *Television and Everyday Life* by Roger Silverstone are two of them.

data according to a program.[24] Throughout the 19th century and in the early decades of the 20th century, different versions of calculators (but not computers) were developed and they were used mainly in business. There appeared calculator companies, one of which was IBM, established in the 1920s ("Computer", 2007).

The first versions of modern computers could appear after almost 100 years later than the emergence of the Analytical Engine, in the 1930s and 1940s, which were huge (more than 15 meters long, weighing about five tons, and consisting of about 750,000 separate parts) analog machines at the beginning. WWII motivated the studies on computers for solving military codes. First computers for business use and in colleges appeared at the end of the 1950s, when the first versions with transistors appeared. The works on the programming language gained depth during the same years. Until the 1970s, the computers were still huge machines operated by several people at a time, and they were still available only to very few people in companies. In the 1970s the first personal computers appeared, not with the efforts of big companies like IBM, but by computer hobbyists. These did not have desktops, and needed a good deal and time to be operated. In the 1980s, however, deciphering the market potential for personal computers, IBM entered the personal computer market and started to use the software developed by two young computer engineers, who had established Microsoft at the end of the 1970s. In the 1980s, there appeared several companies in the PC market, such as Apple, Compaq and Hewlett-Packard. However, IBM contracted with Microsoft for software and with Intel for CPU of its PCs, and started to achieve a big market success against its competitors. Early PCs were mostly used by business; however, especially after the availability of the Internet in the home, the domestic use of PCs became very common. The first network component for computers, ARPANET emerged in 1969. In 1980, some governmental, academic and industrial research labs were connected

[24] It was also containing the basic parts of a computer such as a reader-input device, a printer-output device, a mill-CPU and a store-memory. The first person who could understand the difference and important characteristics of this device was Augusta Ada King. She conceived that Analytical Engine could process data in an abstract level through symbols (50-digit numbers) instead of numbers in the 1840s. She was accepted as the first computer programmer in the world, the next ones that could conceive this system appeared almost a hundred years later.

through different networks. In 1991, World Wide Web was created for providing links between user-produced pages. Netscape browsing program made easier the communication in the Internet during these years. Thus, the 1990s faced the explosion of PC sales for domestic users with the emergence of the Internet (Computer History Museum, 2007; "Computer", 2007).

The next development in computing technologies is the emergence of ubiquitous technologies. It has a different system in the application of the computing technology, then the previous computing technologies. The sensor technology (that is a developed electronic switching system) together with different computing systems construct mainly the current studies on ubicomp technology. Ubicomp is accepted mostly to constitute the future of computing (See Chapter 2).

Moreover, products with computing technologies such as mobile phones, portable music players, digital cameras, or different products combining the functions of these or other different information technologies, more currently, PDAs, and new computerized versions of domestic products, created a complex structure of a network through the technology inside these products. Computer's ability of transforming the data to abstract, mathematical codes and processing, storing and mobilizing it in very short periods of time, in a virtual sphere created social consequences similar to those of audio-visual media and communication. However, while media was mobilizing public information, PCs were tools of mobilization of both public and private information, in both public and private spheres. Thus, early media and communication devices and later computer-based systems (new media) created a virtual, mobile, 'public' sphere of information, which connected both public and private spheres and provided the *mobilization of information* between them.

5.3. Mobilization and Domestic Architecture and Design

> Somehow, we must find again our sense of individual values, lost in this century of enormous technological advance. This very freedom that mechanical aids are giving us has welded us into unmanageable megalopolises, where people are anonymous members and where communication with our fellow man seems a minus quantity. We must restore the warmth and spirit we had in the smaller community. I hope

> that, in our leisure time we will once again know our neighbor – and if everyone knows his neighbor and learns to live with him, the entire world will be at peace -Henry Dreyfuss, 1967- (as cited in Dreyfuss, 2003, p. 9).

The words above can give one the feeling of that Dreyfuss changed his perspective as a modern guru and started to criticize himself, but it seems that he could not grasp the problem within the modern project itself, and perhaps, he even was believing that he did not play a role in the loss of 'what we had once'. This can provide an example of the designer's inability to see the 'real' results of what s/he does with a deterministic approach or an example of his/her inescapability from 'ideology'.

The approaches appeared in architecture and design after the era of modern 'architectural revolutionaries' criticized the modernists, and their ideals and announced a new motto in a harmony with their period: Free movement and free choice, rejecting the modernism's 'indifferent one type', and wanted to provide 'an architecture freed from architecture', as Sadler (2000) uses the term.

5.3.1. Mobile Architecture

The effects of mobilization era were also visible in the approaches of architects and designers of the era. For example, *Dymaxion House* of Fuller was a demountable, mobile house, which was designed to be transportable with airships, if the family wanted to change their locations. Again, in the same period, there appeared ideas on (re)mountable prefabricated house designs. Prefabrication and mass-produced houses, houses like automobiles (the machine house, discussed in Chapter 4) all were influenced from the era of a continuous 'progress', 'speed', 'mobility' and 'futurism'. Not only architecture, but also industrial design showed a tendency in 'styling' these concepts. Streamlining was not a functional form for 'speeding up' the things, but a clear representation of 'speed' and 'mobility'. This style, also called, the style of the machine-age, was the tool of inserting the images of speed to home (See Chapter 4).

The idea of mobility continued to affect architecture and design after modernists, as well. Designers, identified as (early) post-modernists, criticized modern design and architecture, but, indeed, did not follow a much different route. After all, some produced designs representing speed and mobility with a much more evidently visible futurist perspective than modern conventions. The group Archigram was perhaps, the best example of these postmodernists. Archigram was a group of young architects who designed very creative, futurist, technology-inspired, conceptual designs rejecting the doctrines of modern architecture. Their vision of future was dominantly identified with 'mobility'. They designed houses that were in such ways mobile that they could be carried on the body, or by car to anywhere (Figure 25). The Living Pod's capsule-like shape defined a space providing a person all its minimum needs to survive, and it could travel even in space. Drive-in House, on the other hand, was a 'minimum' house mountable to a car. Thus, the car was becoming a part of the house. They designed also mobile cities, with (de)mountable, flexible parts, like a machine, or cities that can move in whole like a robot (Hejduk, 2006; Sadler, 2005; Jencks, 2000).

Archigram was not the only group of architects that provided works inspired from technology and mobilization. As Hejduk (2006) explains, the approach of Archigram reflected a general tendency during the period, when a counterculture -especially among youth- calling for liberation, freedom and peace (remember that, the era was the post-war era) emerged and strictly criticized the modernity and the repressive results of the modernist thought. Archigram and many other groups such as Utopie, Archizoom and Superstudio and different individual architects appeared during this era, in the 1960s. Hejduk (2006) states that these architects, instead of modern gurus of architecture such as Le Corbusier or Mies van der Rohe, approved the ideas of designers such as Buckminster Fuller, who concentrated on transportable, mobile house designs. These architects blamed modernists for not exploring the opportunities of technology and leading it to a dangerous route. Thus, these postmodern attempts in architecture insisted on an architecture, which would reject the oppressing ideologies and forms of modernism, and explore the opportunities –i.e. new materials and structures- of technology for architecture.

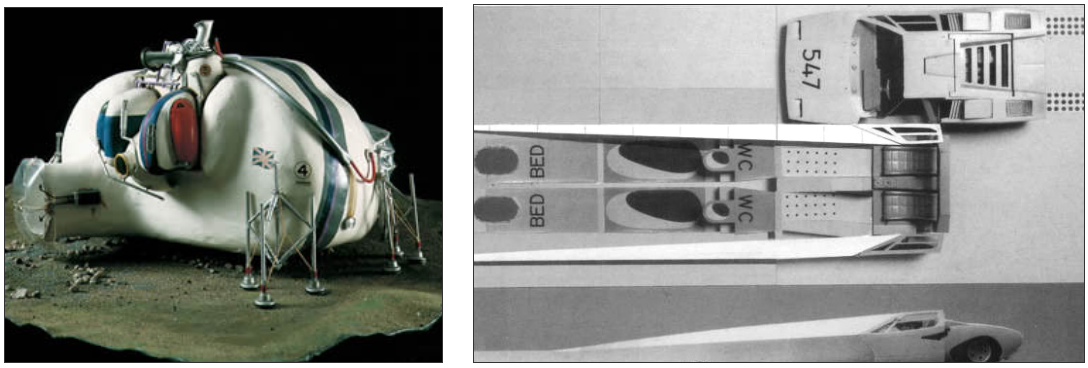

Figure 25: House designs by Archigram.
Left: Living Pod by David Greene, 1966 (Source: http://www.designmuseum.org/design/).
Right: Drive-in House by Michael Webb, 1980s (Source: Colomina, 1991, p.41)

These tendencies were, as clearly discernable (especially from the works of Archigram), technological determinist and futurist, in that they obeyed technology and predicted 'fantastic' houses, cities and lives. Of course, these architects were not proposing an oppressive social reshaping and human engineering project like modernists, but they were in the belief that, technology can lead to a better architecture and much more mobile (thus, liberated) life, where it would be possible to move across landscapes without considering the boundaries of states and being freed from the oppression of family, state and other hegemonies (Sadler, 2005). In the era of free movement, their aim was, as Hejduk (2006) states it, to explore the "emancipatory function of architecture" (p.44). However, Archigram was, as Sadler (20005) and Jencks (2000) state, also the group that formalized in a new shape, which was commercialization of architecture, since Archigram created 'images' more than buildings to realize. They explored the opportunities of media very well, more than merely designing buildings, they designed images of future, escaping from the periodical social annoyances. The image used this 'need' of escape.

5.3.2. Mobile Architecture and Publicity in the Form of 'Image'

These domestic architecture designs of mobility era, with their futurist approaches can be accepted as the 'homes of tomorrow' of the period. Thus, the ideas on future during this period concentrated on mobilization provided by technology. Following the war era, this fresh period, in a sense, equated the freedom with free movement.

They failed to grasp that, if it is talked about society, as Foucault argued formerly for modernist approaches, the tools (like technology) can only work for 'good aims' if there is a convergence. In the state of divergence, the result can be completely contrasting, as it was the case for the second half the 20th century with the capitalist, 'mobile', consumer society.

Brain (1997) in his study on design and public-private spheres, indicates to important points in these relationships. He accuses modern architecture with dissolving the house's stance as the public expression of private judgment, which also lead to the dissolution of public and private distinction. This issue was discussed in relation with the panoptic ideologies within modern architecture. The next movements in architecture and design, even followed a 'different' (but not distinct) route, could not solve the problem, but reproduced it, in the form of suburban architecture.

Suburban life of encounters rather than neighborhoods was the result of the architectural project as reducing architectural problems to functionality and technology, thus the people to the 'users' that are mainly interacting with products not with other people. The efficient space of suburban town encountered with another reduction; the reduction of public, but at home now. According to Brain (1997) public realm reduced to "form, meaning and representation" (p.264) introduced to home by postmodern design. Rather than the public, a visual representation of it within varieties (in time and space) -that made it impossible to discern it in a consistency-, was submitted to the private sphere.

This idea of Brain can be clarified by thinking on the products. The products, as also was discussed by Silverstone (2006), were tools for intrusion into private -that was the segregated panoptic private as the suburban house-. What intruded was the mentioned various representational forms of public sphere, which were unbound from their social or historical ties, became the objects for choosing or for consuming. Thus, in a sense, postmodern design and architecture rejecting the 'unique' obligation provided instead obligations of 'variety' for free choice. While, the

modern panopticism segregated the space and destroyed the possibilities of public, the postmodern has broken the public from its context and reduced it to representations or images, thus, destroyed the possibilities of it in another way. Consuming the style that is the uncontextualized bits of public destroyed both the public and the private, whether by constituting a new public and private, as defined by Brain, or by causing the disappearance of them, as supported by Baudrillard (1983).

The mobile architecture constituted the first step in the emergence of the new publicity and privacy. That's why both Jencks (2000) and Sadler (2005) discuss Archigram and similar attempts in architecture as processes where happened the creation of the 'image' of architecture, or better to say, as an attempt that reformed architecture as the creator/user of imagery. At the end, what Archigram did for architecture was its commercialization, as stated by Sadler.

5.4. Communication, Media and Reformation of Modern Private-Public Distinction

In his study published in 1974, Williams (1990), describes a phase in industrial capitalism, which appeared throughout the complex developments in technology and its domestication (considering motorcar, motorcycle, domestic appliances, the box camera, etc.). He states that, this phase

> …is characterized by the two apparently paradoxical yet deeply connected tendencies of modern urban industrial living: on the one hand mobility, on the other hand the more apparently self-sufficient family home. […] that which served an at-once mobile and home-centered way of living: a form of *mobile privatization*. Broadcasting in its applied form was a social product of this distinctive tendency (p.19).

Moreover, Williams (1990) states that "The contradictory pressures of this phase of industrial capitalist society were indeed resolved, at a certain level, by the institution of broadcasting" (p.20). Thus, broadcasting and the emergence of TV as "both domestic and national (and international), […] both private and public" (Morley and

Silverstone, 1990, p.32) medium appeared in the period of the conflicting togetherness of mobility and privacy.

The concept of mobile privatization can be explained simply with the characteristics of TV and other domestic tools of media. The idea is the mobilization of information (which is public in the case of media) within the private domain. This idea created - on the contrary to private automobiles- an idea of intrusion of public into private domain.

Spigel (2001a, 2005), and Sheller and Urry (2003) discuss that, it is also possible to talk about a "private mobilization", the term as used by Spigel. Spigel gives the example of portable TV, which is carried outside the home to the public space, but the example of walkman can explain the point better. Listening to music with earphones can be accepted as a private action in terms of creating an isolated area only available to one individual as listener. This private action can be carried out in public space, and thus the walkman can be thought of as a product providing mobility to privacy within public. As another example, both mobile privatization and private mobilization can be created by mobile phones. However, when considered again, computers with internet technology create perhaps the most complex situation in the mobilization of private or public within public or private.[25] In literature, this situation is mostly defined as the 'blurring of the boundaries of public and private' through communication technologies.

Moreover, as Morley (2006) reveals, the media is not only a matter of 'public in private'. This means, as it is getting more and more common, media is present everywhere. The advertisements constitute the main part of this omnipresence of media, from the 'public' streets-busses-buildings, to 'private' mobile phones. Additionally, with the presence of big screen TVs or radios in 'public' squares or in

[25] Compare and think on, for example, the internet use in an internet café, and in the home. For a discussion about these issues see the studies: Bakardjieva, M. and Smith, R. (2001). The Internet in Everyday Life: Computer Networking from the Standpoint of the Domestic User. *New Media and Society*, 3 (1), 67-83. ; Lee, S. (1999). Private Uses in Public Spaces: A Study of an Internet Café. *New Media and Society*, 1 (3), 331-350.

bars, restaurants and cafés during for example a private meeting of lovers, every kind of media -besides private communication tools- all are inescapable for anybody (Morley, 2006). Media and communication follow individuals everywhere and it is always there in the 'background' of life. This means, turning the TV off, or unplugging the phone do not count for a way to escape from the media-bombardment anymore. Then, there seems to be present, something more than a blurring of public and private distinction.

Baudrillard (1983) in one study on communication technologies defines this era of continuous and inescapable mediation of life, as the era of 'screen and network'. He suggests that the previous society that had dichotomies such as public-private, object-subject disappeared, which is a consequence of the communication technologies. He finds the relationship of object and subject in the previous era of commodity consumption, resembling to the relationship of mirror and scene. He states that, in that period, the object was the mirror of the subject, when objects reflected the scene that is the private sphere of subject. However, in the era of the 'ecstasy of communication', there is no more object-subject, mirror-scene, thus, no more private and public sphere –at least not in their true forms-. The old subject as the actor or dominator of object, he says, is now "at the controls of a micro-satellite, in orbit […] as a terminal of multiple networks" (p.128). Thus, the person is now a terminal (receiver, processor and distributor) in the middle of a continuous flow of information.

The old public space was the spectacle, and the old private space was the secret, but now both have disappeared and a new form of 'obscenity' displaced both of them. He means that, the communication and media technologies transformed everything –every scene, subject, object, domain- into pure form of information. Everything as exposed to the light of information and communication became 'obscene' rather than scene or spectacle[26]. Obscenity of this kind is a "more-visible-

[26] The difference and analogy between spectacle/scene and obscenity can be resembled to the difference and analogy between the space/place and location. As space is thought to evoke a physical essence –as opposed to a spiritual one- , location is more like a deprived and abstract 'representation'

than-the-visible" (p.131) form. Everything has become transparent; everything is reduced to the form of information (Baudrillard, 1983).

What is significant in the discussion of Baudrillard in the context of the study is, Baudrillard, instead of a simple mobilization of public in private or vice versa, marks out the birth of a new sphere, which is neither public nor private, or merely mobile. He talks about a third form dissolving the public and private in it self and putting it in a non-stop flow. Thus, the idea of Baudrillard (1983), even though can be criticized with being deterministic, reveals the idea that the mobilized publicity and privacy are not 'true' privacy-and-publicities anymore. Thus, it is not possible to talk about a mere blurring of public and private boundaries, but the reduction of public and private into a form of information and the mobilization of it in a boundless empty space.

Moreover, this new form of life, as the sphere of flowing information is also the sphere where everything is reduced into the pure form of 'function'. This means, in its simplest interpretation, everything transformed to a form of information that is flowing within different domains of life for performing functions has also created a life experienced in the form functions. In a sense, the life has turned from its oldest form as 'experience-oriented interaction of everything (subjects-and-objects)' into 'function-oriented flow of obscenities' between satellites in the era of communication and information. Thus, the older modernist motto of 'form follows function' seems to be transformed into 'data follows function' within the current communication and information systems.

Baudrillard asserted these ideas in 1983, when the computers and internet were not domesticated yet, and when the idea of ubiquitous computing was only known by a small group of computer engineers. However, the metaphoric comparison of human

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of the essence of both physical and spiritual, as the 'virtual' form. Similarly, as the spectacle evokes a stance that contains a material or active presence of the subject –as opposed to the object-, the obscenity evokes, rather, a state, where both the subject and the object became 'virtual'. Both location and obscenity shifts the state into the information for processing certain tasks, but the space and the spectacle provide a state for experiencing of the subject.

to the terminal in the middle of a continuous flow of information and comparison of home to the satellite within this flow seems to be analogous to the case of interacting with the whole world through internet from home, or much better, to the case of a person in the middle of a smart home controlling, processing, receiving and distributing information from-and-to the whole world. At this point, Baudrillard seems to achieve to discern the growingly effective, but still blurred at that time, logic behind the communication technologies, in an early period. Nevertheless, as it was stated, the idea exhibited by Baudrillard can be questioned whether to be technological deterministic or not, or better to state, whether only to consider the technological dimension in discussing the social issue of publicity and privacy. Thus, for now, the idea both of blurring boundaries of public and private and of the disappearance of them needs to stay as two conceptualizations of the current relation of public and private domains, which will take a more clear form after the following discussions.

5.5. Change in the Perception of Time and Space

The arguments on 'mixing' public and private spheres by those such as Williams, Spigel, Urry, or even the 'disappearance' of them by Baudrillard caused the rise of complex questions. Considering there is a blurring of boundaries of public and private, is it not possible to think about separate public and private spheres anymore? Does this virtual blurring cause a spatial, timely, and mental blurring, and therefore, a blurring in a spatial or timely perception?

This new relationship of public and private spheres has new consequences in the perception of time and space, as well, but the discussions on the issue have two parts. The first idea is as the following. As the mobility of both public and private provided them the ability of occurrence in any time at any sphere, publicity and privacy freed from the timely and spatial limits. As it was discussed in Chapter 3, once the public time and space was associated with work hours and workspace, and the private time and space with home. But, through the freeing of both spheres from limits of time and space through virtual mobilization, there is a loss in the

sense of geography or space and time. In his book *No Sense of Place*, Meyrowitz (1985) discusses different issues in the relationship of society and electronic media, and asserts basically that through the decreasing presence of physical communication motivated by media the social place has been separated from the physical space. With the availability of 'public' information to everybody, the information sphere has become the social sharing sphere displacing the previous physical sphere. Thus, a new 'placeless' society, which lost the sense of geography, has emerged. This society can be compared to the nomadic hunter and gatherers, yet, who share the information sphere through media instead of a physical sphere.
However, the second tendency in discussions on the change of time and space perception rejects this idea. Morley (2006), giving some examples, insists that, the sense of physical sphere, or geography did not disappear. He illustrates the use of internet and phone and states that, one of the first questions in conversations through these mediums is still 'where are you?', or 'where do you live?'. Morley defines the mobile phone, for example, as "a device for dealing with our anxieties about the problems of distance created by our newly mobile lifestyles and with the emotional 'disconnectedness' that this geographical distance symbolizes for us" (p.35). Thus, for him, mobile phone provides one to sense the geographically stable and secure home everywhere "amidst a culture of flow and deterritorialization" (p.35).

Supporting Morley, one can think also about the time perception today. Certainly, it is now possible, to talk about a timely blurring -for example conducting a private chat during the working hours at office, or to do work in the night at home- on the contrary to the beginning of the 20th century when factory and home were constantly distinguished. However, it is still dominantly valid that the time between 8 am- 6 pm is working time, and the night is private time at home. Thus, as in the example given by Morley, the mobile phone or online chatting provides an escape from the compulsory and 'repressive' working time, which was similar to the feeling of the factory workers of the modern period.

At this point, this does not mean that nothing has changed in the perception of time and space. On the contrary, there are important changes, but it is to say, the technology, the communication and media as discussed in this part of the study, are not the tools of constant changes, but they are reproducers (thus, changers) of the social structure.[27]

To turn back to the changes in time and space or in the 'time-space' as Lyon (2001) names it, media and communication technologies provided a mobilization among the private and public time-space. The idea of 'blurring' public and private spheres mainly originates from the mobilization in time-space, which was constantly segregated in early modern industrial society. Surely, this stimulated confusion in separating the private and public behaviors, as well. Although these behaviors are different in different cultures, a private action that never can be thought to be discussed or conducted in publicity started to be accepted as 'normal' in public, or vice versa.

A common criticism within the discussions on the new relationship between public and private spheres is that the modern social structures and the evolution of them weakened and degraded the public life and public social structures. These criticisms included revealments of the relations of this situation with the birth and empowering of different modern institutions, with the philosophical discussions in the early modern period, with the birth of modern national state and with the industrial capitalist society (Sennett, 1992; Slater, 1998; Weintraub, 1997; Brain, 1997; Bauman, 1998; Foucault, 1994a, 1994b). Thus, it is important to state that, when talking about a loss of distinction between public and private, it cannot be

[27] To clarify this point, Morley (2006) gives the example of Turkish migrants in Europe who have some web pages to arrange marriages among suitable families considering their traditional origins. In fact, this is a common case for different immigrants or minority groups: as another example, Armenians that migrated from Turkey to different parts of the world have contact with other Anatolian Armenians in Turkey or in other places, to meet and arrange marriages. Thus, in this case, the internet works as an imperfect tool for providing the feeling of the traditional, original locality –*home*land- and a tool for seeking the ways of continuing the traditional. Even the young Turkish or Armenians who never lived in –or, even never seen- Turkey can marry the 'other' fundamentally considering her/his location of traditional 'home' –home, as the national and religious identity-.

attributed to the emergence of new technologies, but it is necessary to understand it within a social history. This does not mean that technology did not play any role (and was neutral) in the topic of discussion or generally, in social changes. Instead, technology and social conditions mutually 'co-constructed' each other, as discussed in Chapter 1 with reference to Lyon (2003) and Misa (2003). When the 'blurring' of the public and private domains is considered in relation with not merely technological, but also with the 'constructive' and 'constructed' social dynamics, a question inevitably is raised. Can this blurring be attributed merely to the car, phone, TV, radio, PC, etc.? In other words, it is necessary to investigate the socio-historical trigger of the so-called blurring of the public and private spheres.

5.6. From Panopticon to Surveillance Technology

The idea of the blurring of the boundaries or the disappearance of public and private spheres seems like a conflicting phenomenon with the history of the solidification of the distinction of public and private spheres in modern period (Chapter 3). In spite of this, the current situation, more than a turning point, is a result prepared by modern social structures since the very early stages of the modern period. This issue needs a much deeper discussion, which would necessitate understanding the relationship of the early modern era and current society, in the context of the study, which necessitates to be sought for in the visions of control and panopticism of modern institutions.

As it is discussed before, modernity had the ideology of the reshaping of society, by social engineering that contained different methods of measuring, recording, educating of people, and rationalization of all domains of life, thus, by the controlling of society with the vision nourished by panopticism.

Foucault while discussing the institutionalization of panopticism in modern society discusses the media as an important tool of this process. He states that, first the press, then radio, cinema and television under the control of economic and political

institutions of capitalism appeared as a tool of control. Ewen (1984) in the same manner argues that,

> In television, a powerful tool of reintegration was emerging, one that unified an increasingly individuated population around similar images, similar information, similar celebrities, and similar products. In this sense, television was the cornerstone of suburban panopticism; it organized an individuated population around the hub of a relatively centralized source of authority (p.231).

If Taylorism in the home and modern architecture were tools of standardization and panopticism in the beginning of the 20th century, the intrusion of media into home with all of its fanciful images served as another tool of the same ideology. Mobile privatization, which took complex forms in time, became a powerful political and economic tool for controlling society. The 'consumer' individuals were exposed to the 'quasi-genuinity' of moving image deformed with ideological content. The television, which became family hearth, became also hearth of social control. The improvement of media parallel with the growth in the power of national state and market 'proposed' a new life in comfort of home. The social institutions of 'social agreement' for wellbeing and security reached to each individual, who was already recorded through hospital records, bank accounts, schools, municipal controls etc., in a more direct and effective way. The birth of computer, and computerized technological systems added a more complex system of control to service, which led the birth of *surveillance* that is the novel panoptic system of the contemporary consumer society.

"Surveillance is a distinctive product of the modern world. Indeed, surveillance helps to constitute the world as modern", says Lyon (2003), while explaining the postmodern panopticism. This means, modern panopticism evolved into the surveillance society by gaining a systematic structure, by the empowerment of capitalist state and by the help of technology. Personal information in the banks, on the forms filled for different organizations, use of credit cards, tests in hospitals, fingerprints in police departments, and more currently the use of internet, or merely walking in the street –with street cameras-, all turned into recorded data, which follow one in every step. This complex, but 'invisible' system, rooted from the

deepest ideologies of modernity, put the individual inside a global cage, where s/he can move 'freely'.

In the section titled 'Is there Life after Panopticon?' Bauman (1998) reveals that, even though surveillance society is a product of panoptic modernism, surveillance technology has an important distinction, which is also the reason behind the 'passivism' of individuals against such a huge control and power system. He significantly emphasizes that Panopticon was a system of discipline, uniformity, and indifference, which was not giving chance to choice or variety.

Current surveillance technology, on the other hand, is "quite the opposite" (p.50), he asserts. The database collection conducted by credit and market companies, provides credibility to clients, who have many options for purchasing. Through the 'creditworthiness' gained by hanging in personal data, the client can access the options. Moreover, in Panopticon, the power was watching the subjects, who were in the position of the 'watched'. However, through the media and visual culture the individuals are watching the power; or as Mathiesen terms it, "the many watch the few" (as cited in Bauman, 1998, p.52), which resembles a football stadium case, where the power still in the middle is watched by the controlled ones in the circumference as indicated by Fiske (as cited in Elmer, 2003). Thus, a *synoptic* surveillance replaced the old *panoptic* surveillance, as discussed in current studies on surveillance (Elmer, 2003). Mathiesen uses the term *synopticon* for this new version of surveillance, in which, on the contrary to Panopticon, the automatic or self generated discipline and control is much more invisible (Mathiesen as cited in Elmer, 2003). This means, through television and internet, for example, people are more unconsciously in control of power by watching the 'celebrities' from different domains such as politics, sport, arts, science, show business, from official institutions, or academy. What all these celebrities convey is a way of living, by simply being watched. The few in media is certainly those, who are acceptable by governing powers, if not promoted by them.

5.6.1. Invisible Consequences of Surveillance

Lyon (2001) indicates a common attitude of people on being watched or better to say surveilled: People mostly think that, it is no problem to be followed and recorded in each action, if one does not break the rules and does not participate in a crime. However, this is a misunderstanding of the surveillance technology, believes Lyon, since there are direct consequences of surveillance also for any ordinary, 'unguilty' individual, yet, which are not visible at first glance.

One invisible aspect of surveillance is a political one. Surveillance is gaining the acceptance of society by the help of an imposed and promoted idea, which is that the world is not safe anymore. This means, the state gains conceivably the right of gathering information, assuming that the safety and security of individuals can be provided by an 'objective' gaze by gathering information on everyone. Thus, the state provides a freedom of movement to people by supplying the security, which, in fact, allows only movement to those, who are not (willing to be) outside the system, or who are content with the system. Lyon (2003) explains, for example, after September 11, surveillance gained more agreement among society, which is induced by the feeling of 'being in danger'.

Moreover, Bauman (1998) reveals that the function of surveillance conducted through information technology is not actually providing security and the opportunity for socialization or privacy, (thus, it is not for the sake of public or private spheres), but it is mainly supplying security for free trade and consumption. The topic can be clarified when one can discern that the public space in a city is actually a 'private' public space, full of shopping malls, cafés, bars, cinemas, and restaurants, all of which are spaces of consumption instead of real social sharing spaces. Moreover, this space cannot be limited to the city centers anymore. In a global mobilization era, where there is a growing dominancy of global market on local market, the whole world is the target of industry. Then, the whole globe should be 'secure' enough for consumption, or better to state, should be under control. The world, as the space of free movement is a necessity for globalization,

and the need of its security (security of commodity, more than the persons) emerges correlatively.

In addition to all these invisible backgrounds of the idea of the surveillance society, there are some more direct consequences of surveillance for individuals, which also directly influence the social and personal relationships, and the life conditions-and-chances of people. It is the function of surveillance as creating a 'social contest and social division' appearing in relation with the 'risk management' and 'risk generation' models derived from insurance companies (Lyon, 2003). This model as used in current forms depends on analysis of data through computerized systems. Lyon indicates that, through information gathering and recording of people, there appears a data history of everybody. This invisibly gathered data through systemic monitoring of lives of people ranges from the TV channels that one watches to the genetic codes that reveals one as a potential criminal. The risk management applications use these data histories and segregate society according to different risk potentialities. This information is used in different cases for making decisions about the individuals that certainly affect the life chances of people. For example, data about one's health can be used by business while deciding on employing this person. The information about an early pregnancy, previous drug use or as it started to be applied in Britain, the database of one's family that defines him/her as a genetically potential criminal, which is a part of biometric and genetic surveillance, can influence the life of any individual from the background. Not only, biogenetic surveillance, but also surveillance of taste, choices, ethnicities, life styles, ideas, etc. provides a database about any individual, which are faced as problems –or, stay as unknown causes of the problem[28]- in different conditions.

In current societies, indicates Lyon (2003) the most rapidly growing and most systematically affective surveillance is the commercial surveillance that spreads

[28] Think, for example, a commonly faced situation: not being allowed –even though you are not an old criminal- to get the visa for traveling to another country. In these cases, the reason is mostly unknown, but means, actually, that the person is not sufficiently suitable to the rules of free movement of global surveillance.

outside the national boundaries. It is so expansive that even the state started to use the data about individuals gathered by commercial sources through i.e. credit card records, telephone calls, visual data from security controls of private companies. This complex and systematical structure of surveillance, at the end, constitutes a 'surveillant assemblage'.

At this point, if one returns to the discussion in the previous section, panoptic control, information recording, and current complex surveillance technologies should be counted also as one of the most significant paradigms that influenced the relationship of public and private spheres. The communication and information technologies, which developed continuously throughout the 20th century should be placed within this context as well. Thus, the current situation in relationships of public and private domains of life, which is argued mostly in relation with communication technologies, is in fact a consequence of the ideologies within the modern governmental structures. In other words, the so-called blurring of public and private domains, or as a better description, the disappearance of them, as Baudrillard (1983) defined it, is more related to the modern ideologies and their approach to society. Panoptic technology –technology of control and discipline-, which was applied in social structures, i.e. to city life through urban planning, and to domestic life through architecture, was actually a tool for the application and transmission of ideologies solidified in modern capitalist nationalist power structures to society. These structures and ideologies were co-constructed by communication and information technologies –technology of mobilization, control and surveillance-, while defining the form and development directions of these technologies within a mutual relationship.

5.6.2. Surveillance and Public-Private Spheres

If one can remember the discussions on the meanings and differences of private and public at the beginning of the thesis, one of the main features of privacy is its 'hiddenness' or 'inaccessibility', which gives it an autonomy, an originality and distinction (from the whole). Moreover, publicity that has a 'collectivity and equal

accessibility' on the contrary to privacy, contains also an autonomy and originality, which is created by different interaction combinations of the distinct individuals or privacies. This means, if the formation, direction or control of private sphere would dissolve the necessary conditions of privacy -the conditions of originality and autonomy-, it is also valid for public sphere. What a public sphere defines is also an originality, difference and unpredictability in each simple or complex interaction of autonomic privacies. This is what makes society something unpredictable, dynamic, as it is discussed by Foucault, Arendt, Habermas and others. Thus, control, formation, and surveillance of both would lead the dissolution and disappearance of both spheres in their true forms. The continuous blurring throughout the 20th century and, at the end, the (approaching) disappearance of them revealed by Baudrillard is, hence, a consequence of these ideologies behind modern capitalist structures.

Although the current situation seems to be completely destructive and unhumanitarian, and although the system that conducts this situations secures also itself so well, it seems that there is nothing for individuals to do, perhaps, this situation is not something that should be confronted with delirium and grief. However, the reason behind is not one similar to Baudrillard's[29], but one that, with a Foucauldian perspective, confronts more on the features of society, as a dynamic, 'organic' and unpredictable structure. This means, despite the invisible control, inescapable shaping of individuals, and their unbreakable ties to system, society still carries unpredictable, 'uncountable' potentials within self, which can appear in unpredictable situations, as well.

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[29] Baudrillard (1983) states that the new condition under the impact of ecstasy of communication would lead a situation of "no more expenditure, consumption, performance, but instead regulation, well-tempered functionality, solidarity among all the elements of the same system, control and global management of an ensemble" (p.127), and believes that, although it is still not predictable, this era would define a constant transparency where one would not need intimacy and private protection. In one sense, Baudrillard confronts this era not with hesitation, but believes that the individual who does not need to produce himself and reflect himself through objects, would be freed from such oppression, and this can lead to positive results, as well. Surely, this idea is open to negotiation, even when only one issue of today 'the consumption of information and software' is considered.

Considering all these discussions, surveillance originating from very early modernist panoptic visions of control can be summarized as a complex technology that controls and shapes society by hiding behind the scene everywhere in the global world. This perspective can help one to approach the smart home concept –that is a continuously surveilled domestic sphere- and its relation with the machine house – that is the declaration of modern architecture on domestic sphere- idea from a different viewpoint, which constitutes a socio-historical context.

5.7. Home and Family Today

The roots of private sphere of today date back to the rise of modern privacy, as indicated earlier. The notion of 'home' that is still associated with family and femininity dates back to the 18th century as discussed in Chapter 2. The main private domain is still the home with the standards, which especially took their form through the attempts of rationalization of the home starting from the mid-19th century to the mid-20th century. When thought about private domain, it is still possible (at least in its idealizations) to think on the patterns similar to those of the early 20th century. However, there appeared also important social changes in the notions of family, domesticity and privacy, which especially rose in the second half of the 20th century.

5.7.1. Crisis in the Traditional Family

Technological changes throughout the 20th century deeply influenced private life, as discussed in previous sections, but the main dynamics in the social reshaping of family and home life were other important social changes, which affected all domains of society. Early modernism, which motivated the separation of private and public spheres and the formation of private domain as a child-centered, gendered, reproduction area, motivated also the changes in this structure in later periods. The emergence of social engineering and rationalization of home were initial motivators.

Prost (1991) in his historical study about the private domain during the era reveals that the empowering of public authorities led to empowering of modern institutions, such as schools, health agencies and agencies of economy. The modern state started to share the education, control and bearing of child with family. Nurses visited houses for health controls and records; children started to go schools -which turned into more disciplinary and panoptic institutions- in bigger percentages; social workers started to control family budgets and give economic advises, through woman education institutions, child rearing started to be applied according to advises of state. In short, the child became a field of responsibility of national state.

As a result, with a decrease in the authority and responsibility of family with the rising authority of state, the child-based family started to loose an important part of its ground of existence. At least, as Prost (1991) points out for France, "parents are now only partially responsible for their children's upbringing, and whatever they do, is done under the watchful eye of the state" (p.77).

Moreover, with privatization of family, and after the changes in physical conditions of home life, individualism that appeared in the early periods of modernism, intruded into the private domain. This means, privacy, which was available only to bourgeoisie, spread to other social classes, and ideas on 'individual privacy' separate from the familial privacy started to affect the family life. In the second half of the 20th century, individual privacy became prior to the family, this was just the reverse of this state half a century ago. Thus, privacy and free choice of individual became an important issue, which caused the weakening of family and marriage. After growing rates of divorce, "the bond between mother and child has tended to become the only stable and durable family tie" (Prost, 1991, p.84).

In current Western societies, the ideas on the loss of function of family, and on family's oppressive impacts on individuality, are gaining acceptance mostly among young population. However, there are also yearnings for the old, spiritual family life, and a fear of social deterioration caused by the decline of family is also discernable.

Morley (2000) claims in the UK this is also evident from the obsessive popularity of TV programs on family life, home decoration, domestic life style.

Beck and Beck Gernsheim (2002) shed light on the current situation of family home and answer questions related to these positive and negative arguments. They discuss that there are two main tendencies about the discussions on family. The first one accepts that "the future belongs to the family" (p.85), and the other one, on the contrary, believes in the "end of family" (p.85), which would lead to pluralism. Beck and Beck-Gernsheim take a different position, stating that it is necessary to look at "many different shades in the niches inside and outside the traditional family network" (p.85). Starting in the second half of the 20th century, they reveal some changes in the traditional family: There is a rise in the tendency for the families without children, or in the number of children born out of wedlock. There is a tendency to live alone in a house and build temporary (marital or non-marital) partnerships, which have different durations. There is new shift after the development of welfare state that provided the individuals with less dependence on the familial ties for they can get economic support from state instead of family members. The changes for women concentrated on the obligation for sustaining some social and economic security by their own, not relying on a familial or male support. Moreover, the members of a family carry more and more a divorced identity, which at the end creates a 'negotiation family', meaning that it is always necessary to discuss different perspectives to take the familial decisions and to perform a family life.

Beck and Beck-Gernsheim cite an idea of Rerrich to explain this opinion: "The need to plan, organize and delegate is thus growing all the time as the family becomes a kind of small business. 'Elements of rationalization and calculation are marching into private life' " (p.91). It is for sure, a new kind of rationalization in private life is considered here, which mainly rises on the discussions for organizing a family life according to the individual priorities of family members. Especially in an era, in which one started to talk about multi-cultural (not necessarily cultures of different localities) families, these discussions are becoming more and more a part of private

life. Divorce has become a common issue within society, and children started to grow with non-biological parents. As a result of this review, on the current conditions of new familial structures, Beck and Beck-Gernsheim (2002) state that,

> This does not mean that the traditional family is simply disappearing. But it is losing the monopoly it had for so long. Its quantitative significance is declining as new forms of living appear and spread – forms which (at least generally) aim not at living alone but at relationships of a different kind: for example, without a formal marriage or without children; single parenting, conjugal succession, or same-sex partnerships; part-time relationships and companionships lasting for some period in life; living between more than one home or between different towns. These in all their intermediary and secondary and floating forms represent the future of families or what I call the contours of the 'post-familial family' (p. 91).

Thus, family life transformed from a need into a choice, the forms of which are changing according to the individuals belonging to it. Individual choices or individual priorities started to form the private sphere more and more affectively. Individuals started to connect with people or groups outside the family or outside the close realm of private sphere. Individuals started to build social identities (also) tied to the outside of the familial structures.

The review above brings discussions on the general structures of the current private sphere. It is necessary to emphasize that it is for such a familial realm that the smart home concept is proposed.

5.7.2. Home Today

Home is still, in most cases, defined with a family, despite its loss of power. However, it is not only in the familial realm anymore where home can take existence. It is no longer possible to think mainly about a traditional family life when home or private sphere is mentioned. Additionally, whether or not it is possible to place the home within a standard house, limited by a space with boundaries is questionable.

Morley (2000) discussing the impacts of the mobilization and globalization era on home indicates an important point. He draws attention to the idea that the effects

of globalization mainly appear through physical mobilization through traveling away from home, is a misleading claim. He explains the issue by giving some examples from different studies. Dickens, as appeared in Morley's study, states that "geographical mobility in the UK actually declined in the 1970s and 1980s, as compared with the so-called 'stable' times of the 1950s and 1960s" (Dickens, as cited in Morley, 2000, p.14). Moreover, Morley supports Tomlinson, who considers local life as still constituting the main part of the social existence of individuals, who experience the change of local position in special times and for not long periods. This means, individuals still have local homes where they spend the majority of their times. In addition to this condition, which can be accepted as relevant for a percentage of people in Western societies, the much bigger majority is still living in their local and spatial homes for all of their lives. The very commonly idealized mobility related with travel is only the case for a rather small number of privileged people.

Thus, it is still possible, and even necessary, to talk about a physically –as well as spiritually- stable home. This does not mean that the effects of a global life under continuous surveillance are exaggerated. The discussions about mobilization or effects of technologies should concentrate more on the inside of the home, thinks Morley, and cites the argument of Tomlinson stating, "for most people, most of the time the impact of globalization is felt not in travel but in staying at home" (Tomlinson, as cited in Morley, 2000, p. 14). This means, through the media and communication technologies, and especially through visual media, the images of the world, of the places far from the home, or generally, the information about these places are 'consumed' mostly in the comfort of the home. This kind of experiencing global world is merely a kind of displacement (Morley, 2000).[30] Considering the point of Morley and Tomlinson, it can be stated that, mobilization is mainly experienced in a 'stable' state (also excluding virtual mobilization during physical

[30] One can consider that the physical mobilization of today is mostly in a touristic kind of action. In other words, the traveler is mainly experiencing the new place as 'imagery' like s/he experiences at home. The interaction with place and the social life is mostly reduced to a limited experience of examining the place visually and getting basic information about it, which is mostly the same for a documentary movie, for example.

mobility), the center of which is fundamentally the home. Thus, the home today - whether a family or individual home- constitutes a kind of media and communication center, where a virtual globalization is experienced.

It is necessary to add that, the home as a media center, is still sharing some features of the previous private spheres. To state clearly, the home today is still the main domain of consumption. Furthermore, since the emergence of phone-shopping and online-shopping through the internet, it is also possible to consume without going to shopping malls or markets that are 'private-public places'. Moreover, it is for sure that, through the domestication of communication technologies, surveillance is another issue for home, which clearly is in contrast with the 'privateness' of the home.

Home today is characterized more clearly as a space of leisure. However, it is significant that the leisure activities, even possible to do alone, have mainly an audio-visual content, provided by TV, PC, or audio-visual media players. Watching movies or family videos, etc., are mostly the main activities done together with families. Nevertheless, work, which appears as the opposite of leisure, is also possible to be conducted through the same technologies. As a result, home-based work is becoming more and more common within Western societies. Information retrievable and transmittable from everywhere has created this situation. Thus, home has become a local place, where one can live without having to leave it, throughout almost the entire life.

CHAPTER 6

CONCLUSION

As it was discussed in Chapter 1: Introduction, although the technology behind smart home systems is a new and still-developing one, and although the smart home is promoted as the future home, the argument behind this study was that the smart home is not a novel concept. It was thought that this argument could be investigated by posing the question of whether there is a relation between the machine house idea of the early 20th century and the current smart home concept, considering the parallelism between the machine house and the smart home in their being design concepts related to private sphere and technology. To achieve an answer, both concepts were investigated within the socio-historical contexts of their periods. Moreover, an investigation of the period between them to understand their contextual links was conducted.

In order to seek the roots of the smart home idea -in the 20th century-, important technical and conceptual features of the current smart home concepts developed by different research groups in academy and in industrial companies were revealed. The envisaged private sphere was exhibited by investigating the proposals of the smart home concepts. An investigation within relevant histories since the industrialization era was conducted that pursued the constructive roots of the smart home considering the highlighted insights in Chapter 2.

In the light of the conducted investigation with these considerations, this chapter answers the research questions posed at the beginning of the study. The main research question was:

- What is the relation between the 'machine house' idea of modern architecture and the 'smart home' concept?

6.1. Machine House

Based on the assumption that the 'machine house' is an architectural concept formed under the impacts of technological and social issues of its period, the following research questions were asked:

- What are the social and technological conditions that led to the development of the machine house idea?
- What is the context in which the machine house idea takes place in the relationship between technology and domestic sphere?
- What are the impacts of the machine house idea on the domestic sphere?

The machine house is accepted as the motto of modern architecture, considering that the main concentration of modern architecture was, as also revealed by Colomina (1999), on the house design, and that the ideas behind the machine house reflected the main approaches of modernist architects. In this sense, questioning the machine house means questioning modern architecture, as well.

The machine house emerged within the complex structures of the modern society, as a response to and as an attempt for a social change that rejected the 'old' and aimed for a 'rationally-designed' social, political and economic structure. Modern architecture that has been criticized with aiming to create a mechanical and oppressive social life was under the impacts of the leading ideologies of the period, such as Taylorism, Fordism, technocracy, and rationalism. These ideologies were part of the visions of modern capitalist national states that concentrated on the application of 'power' to control the society that had a decentralized arrangement. The social engineering and control that took place through the social institutions of state were the main tools of application of power, which intruded into the whole social life, which, as indicated by Lyon (2001, 2003), constituted the early steps of the information society of today.

As manifested by Foucault (1980, 1994a, 1994b), modern architecture was affected by technology of panoptic control and by the ideologies behind it. This effect was visible in both the formal and ideological approaches of modern architecture. Moreover, modern architecture constituted a technological determinist, technocratic vision that supported the possibility of analysis and reformation of society through scientific study.

The machine house or the 'machine for living in' was the ideal house proposed by the modernist architects, to become the house of masses as part of the social/human engineering project. However, machine houses could not achieve their aims. Similarly, homes of tomorrow in the USA, even though carrying a commodification potential instead of designs of European architects, also could not achieve to be houses of masses, fundamentally because of their technological determinist and futurist approach avoiding the socially-formed, contextual existence of the domestic sphere, similar to the technocratic visions' avoidance of the contextual and unpredictable structure of society.

However, these ideas found their acceptable forms through 'style'. Style, that mythified an idea of 'free choice' and 'individual expression' concealed the oppressive ideological content of 'things' -commodities of any kind- under the cover of variable imagery for free choice. The machine house achieved being 'lived in' in the form of the suburban house, thus provided the intrusion of the panoptic control into the private sphere. The panoptic suburban house of panoptic cities, filled with domestic commodities, keeping its contact with 'life' through the media -the family hearth-, and mobilized with the car, became the 'ideal' home life.

6.2. Communication Technologies in the Social Context

Believing that the concept of the smart home emerged significantly with influences of the developments in communication and information technologies, the following research questions were posed:

- What were the motivations behind the domestication of communication and information technologies?
- What are the effects of these technologies on the private sphere?

Early communication technologies were used by military and by transportation companies for transportation of products and raw materials between distant places. However, the emergence of more developed versions of communication technologies was motivated by the need of information transmission that could make easier the control of the decentralized state over the whole geography. The expansion of social communication, media, served as a perfect tool for intrusion into the social life and for the control of society in a much more convenient way. The consumption and market economy supported the evolvement of media technologies, since they also served as motivators of consumption, thus, providers of another kind of social control (See Chapter 5).

The media affected the private sphere in different ways, all of which had relationships with each other and created a new kind of power technology; the technology of synoptic control. The synoptic control compared to the panoptic one was a more 'efficient' technology in supplying the function of power, since its existence was less recognizable behind its form as 'entertainment'. Moreover, it was providing the power to access a much more extensive area and much bigger numbers of people at a time. In this form, people, by watching the power, and being exposed to ideological transmission whether in the form of news or talk shows, became controllable from the central in their houses.

The history of power, nourished by the ideologies of modern national capitalism, gained its most complex structure with the birth of information society and globalization, which constitutes the present era. This era is the era of the possibility of reduction of all social life -or all the 'screens', in Baudrillard's (1983) terms- to coded information that is continuously flowing within all domains of life. In this era, the panoptic ideologies reproduced throughout the 20th century provided the embodiment of this constant movement of information as a tool of power through

its surveillance supply. Information technology that exceeded the audiovisual one-way transmission of information of earlier media, together with the deeply diffused ideologies of control in modern structures, created the surveillance society. A society, where each of its members can freely move and freely choose among the suggested commodities and consumer systems has become more controllable, as the power has moved more to the background of life, where it has got stronger and became much less visible. After the media turned the home to a synoptic power unit, where the 'public' was a part of it as merely fragmented, unconnected visual imageries, the domestication of computing technologies turned the private domain into a surveilled domain like the other domains.

In this era, where an omnipresence of technology takes place, the idea of smart home, which constitutes a continuous surveillance of the private sphere and turning the life inside it continuously into movable data, has become plausible to be the house for 'living in'.

6.3. Private Sphere within the Smart Home Concept: Technological Determinism and Technology as a Tool of Social Reproduction

As the smart home idea is a technological design proposal for the private sphere, the following questions were posed:

- How is the private sphere conceptualized within the smart home concept?
- What are the socio-historical roots of the private sphere conceptualized within the smart home idea in the history of private sphere?

It can be seen from different smart home scenarios presented in the thesis that the common characteristics of current smart home concepts with ubicomp technologies concentrate on several issues that also envisage a private sphere. These issues are home comfort, leisure at home, consumption for-and-in the home, home-based work, home security, and communication within and outside the home (See Chapter2). They are predicted as to become the needs of the future families, for

supporting family life and providing more time and space for socialization and communication, and for supporting the elderly and disabled.

Considering the history of private sphere discussed throughout Chapters 3, 4 and 5, these features seem to be constructed as the 'need' or as a 'part' of home life within a history starting as early as the 18th century. As mentioned, the ideals of private life of bourgeoisie, together with the imposed 'holiness' of home and family nourished with nationalist visions, were transmitted to the whole society starting from the Victorian era. This created the perception of home as an area that has to be 'spiritualized', 'maintained', and 'formed' by women according to some standards for supplying the needs of men and children who are the (future) 'keepers' of the national state. This patriarchal (certainly, not only because of these features) sphere, intruded by religious and national ideologies, was exposed to other formal and ideological intrusions through the rationalization attempts of it sponsored by the state. Thus, the promise within the smart home as providing a *comfortable* and *secured* home for a 'happy' family life was already formed as an ideal in early periods of modern society.

Domestic products were not considered as needs at the beginning, similar to the current state of the smart home, as stated by Greeson (Broadband House Magazine, 2001). In spite of this big challenge, domestic appliances have become indispensable pieces of home life; *consumption* has become indispensable, as well. Domestication of products necessitated overcoming some challenges, in which industrial design and advertising played important roles. Thus, a need, context, and identity creation process was conducted. Consuming for keeping the family home was promoted through the ideas on labor saving. Moreover, after the expansion of communication and information technologies, consumption has become available even without moving from the home-communication center. This has been promoted as a comfort. The smart homes seem to provide an over-comfort in purchasing that the system by scanning the house can detect missing 'things' and order them from the market and pay money automatically. This can cause a

question to appear in one's mind that contains the answer in itself: what is the comfort here, the one of the buyer or the seller?

Moreover, the home, which already started to take form as the main space of *leisure* in contrast to oppressive working life in early periods of industrialization era, became the domain of leisure around the same period as well. The family car supported this idealization by giving the opportunity of mobilization 'in privacy' for leisure activities. However, the introduction of electronic media, especially of TV, to the home, supplied the 'leisuring' of family members in their living room, comfortably and secured from outside.

Besides the leisuring sphere imagery of home, starting with as early as the first home of tomorrow concepts, the home became also perceivable as the workspace. With computing technologies, this idea gained support and there emerged home-workers. However, as stated by Greeson (2001), home-based work brought also some problems, such as causing confusion in the time of entertainment and work. Working at the main domain of leisure, within a continuous information flow undistinguished in their contexts, was also a challenge by causing a time loss within this confusion. In this sense, current smart home scenarios that are envisioning the home as the working place 'in the comfort of home' can be accused, with being a mythification that uses a feeling of 'escape from work'.

Considering the claims of the developers of the smart home about supporting the familial communication and relationships, the smart home can be stated to have a suggestion to create the conditions of a 'home'. That means; it contains a promise in itself, which is 'turning a house into a home' through communication and entertainment. Perhaps, it is why its name is smart home rather than smart house. (Remember the discussion on the distinctions between house and home in Chapter 1.) However, the promotion of communication tools as providers of communication and as supporters of relationships of family members and loved-ones has been used since early periods of electronic communication and has become almost a cliché. Remembering the discussion on home and family today, there seems to be a

'misperception', as, throughout the years of technological progress and its rapidly growing popularity, the family and home life, or its traditional form visualized by the promoters of products and reproduced by the media, did not strengthen. On the contrary, it is possible to observe a growing reduction in the numbers of marriages –or, at least in the number of the traditional families-, a growing problem of communication within families that became the 'negotiation families' as termed by Beck and Beck-Gernsheim (2002). Thus, the smart home concept shares a similar vision with the technological deterministic conceptualizations of ICTs that avoids the fact that the private sphere as a social domain is tied with other social aspects in continuous relationship of mutual reformation. Thus, predicting the smart home as a provider of stronger family relationships does not comply with a socio-historical perspective.

Moreover, the smart home constitutes a futurist perspective, by being 'an escape to the past' in the conceptualization of future, which is one typical conflict within futurist perspectives as it was the case for the futurist designs and houses of the early 20th century. As it was clearly observable from the scenarios, the families conceived within the smart home were the 'ideal' types of a mythical past, mostly a nuclear family with two children, happily interacting with smart screens, where the mother cooks easily, or decides what to cook by checking the smart screen in the kitchen, the father in front of the smart TV-PC-Phone with his children. These images clearly reveal the smart home's reproduction of the traditional gendered, comfort and leisure space, without considering the current, real conditions of private sphere. Thus, the smart home reproduces this mythical content of the home of yesterday as also discussed by Spigel (2001b, 2005). In other words, the smart home is a concept that uses novel technologies, but reproduces the past within the imagery of the future with a futurist and technological determinist approach.

6.4. Smart Home and Machine House

The machine house and the smart home, which were constructed within complex social structures of two different historical periods and which took their shapes in

relation to these structures, have become conceivable through the opportunities provided by the framework of the socio-historical contexts of their periods. To this extent, questioning the relation of them needs an examination of the historical links between these two concepts, rather than merely seeking for their resemblances or differences or making an analogy between them through separate investigation. Questioning the smart home and the machine house with such an approach supplies a wide perspective to discern the conceptual and ideological transmission between them in addition to a framework for tracing the points of convergence and divergence of these two design concepts.

The smart home is mostly considered as having emerged as a result of technological developments in computing, within a deterministic perspective. The technologies of communication, information and ubicomp provided the technical possibility of it. However, considering the social history of the relationship of technology and private sphere, it can be asserted that the smart home has been shaped by and within the social structures that evolved in the 20th century. That is why its concepts were conceivable long before its necessary technology. Nonetheless, this does not mean that the smart home appeared as a 'need' within the social life. Rather than that, similar to the history of the domestic appliances (Chapter 4), the smart home has become conceivable as a potential commercial 'product' of the future, the need of it is still not created, yet, additionally, the necessary mental or physical context for it within life is still in progress.

'Designing for People' and 'Human-Centered' Design

The machine house, the main concept of modern architecture, considered the living environment as a field of scientific analysis and study following a similar route with the modernist ideologies of social engineering. The ideologists of the machine house who were 'engineer-kind' architects, such as Le Corbusier, envisaged the private sphere as if a machine that has an architectural form, which found its best symbolization with the factory building. This factory-house necessitated the properly working machines within self that can provide a seamlessly working living machine consistent and harmonic with all of its constituents. The criticism of Ewen (1984) on

the 'designs' of Dreyfuss, Joe- Josephine-and-Joe Jr., was dealing with this idea within modern architecture and design. However, the idea for designing for people, thus depending on their physical 'needs' by giving the priority to them and their measures, constructed unavoidably an ideological statement that envisions the 'human' in certain physical forms, with certain behavioral abilities, acting in certain ways. This preconception of the 'user' (they were users, not merely humans anymore) in the search of achieving some 'functions' through products, was a tool of power that inevitably took a role in design's perception of the human.

The 'user' identity of the human that appeared within the perspectives of modern design and architecture additionally gained a 'consumer' identity, especially within the postmodern/late-modern version of capitalist society (Brain, 1997). Design started to investigate or predict the 'desirable' for human, unavoidably reproduced the 'desirable' and transmitted the 'desirable' to her/him. In the current era, where people consume images, services, systems and information, as well as products, the considerations about 'designing for people' has necessitated a more complex study of human-user-consumers, such as in the case of the smart home studies.

Smart home laboratories are built for scientific study of potential users of smart homes (See Chapter 2). Following the same ideology deeply inserted within design, architecture and within the modern social structures, designers, engineers, market researchers and companies are studying people, their behavior, their perceptual and psychological responses, to design for them with a vision similar to that of commonly-stated 'oppressive' modern architecture and design. Thus, the claims of smart home researchers in developing systems and products with a human-centered and responsive manner to the needs[31] of people, in contrast to the previous 'oppressive' visions in design, follow in fact the same route with the proposers of the machine house. The exception or the difference is in the expansion of the area of scientific study. Joe and Josephine were studied with their corporeal features by

[31] This claim can be followed from almost all of the resources from engineering sciences and from different webpages of research institutions listed in the bibliography of this study.

modernist architects and designers, but now they are investigated as deeply as to their 'minds', beliefs, perceptions, psychologies, down to their deepest 'privacies'.

From Panoptic House to Surveillance Home

As discussed in Chapter 2, one of the most important challenges within the domestication of intelligent interactive systems is the concerns about the interruption of privacy through continuous surveillance within the smart home.

As the roots of public surveillance appeared within the panoptic visions of the modern period, the plausibility of a surveilled home took its roots from panopticism, as well. As revealed in Chapter 3, the ideological invasion of 'outside' to home is an old phenomenon that appeared almost simultaneously with the spread of privacy from bourgeoisie to lower classes. However, although this invasion, starting with the mythifications of family with nationalist ideologies, constituted an application of power and control to the private sphere, the current versions of it constitute a much more complex, comprehensive and penetrating applications of power, that are much less coercive and perceivable. To this extent, the smart home concept seems to carry the 'surveillent assemblage' -the most systematical version of surveillance until now- to the private domain that was already a domain of surveillance through communication technologies carrying data into-and-from the home, especially after the domestication of the internet.

The history of the intrusion of power into the home that started with panopticism, which became a synoptic one within the suburban house (Elmer, 2003; Bauman, 1998) seems to take a shape of decentralized omnipresence within the smart home systems. The predecessor of the smart home is the home today that is connected to the globe through not 'automated', but already invisible, thus, unrecognizably-surveilling systems of information technologies.

Technological Determinism

The modernist architects envisioning a social progress through the developments in technology approached the private sphere in the same way. This point was

discussed as the main reason behind their 'failure' in satisfying the need of housing at the period. A similar vision can lead one easily to assert that the smart home may become a 'failure', since as it was revealed in the previous section, the smart home concept includes technological deterministic visions. But, it is important to discern the meaning of 'failure' here.

The suburban house as the acceptable version of panoptic house achieved being domesticated/commercialized/conceptualized as the ideal home, by creating a delusion. If one looks at the history of domestication of products, whether for labor saving or for communication, a similar route is observable. These 'machines' were also domesticated through a 'delusion' that covered and reproduced their 'machine-being', through 'style'. Thus, the failure of providing solutions to social problems was not a limitation for being commercialized for these designs, but it was necessary to cover their background that makes them undesirable.

In this sense, the smart home, if it can cover its undesirable features, such as disturbing the privacy, with some delusions[32], can be commercialized, but considering the communication technologies, it seems for it to achieve its aim as creating an active and social home is unrealizable not only because the 'home of the past' is merely a myth, but mainly because the private sphere that is a domain of society cannot be envisioned/historicized with visions that avoid the socio-historically constructed and contextualized existence of it.

Thus, it seems that it is not possible for a 'properly smart' home to become the home of all society -not even for the Western societies, remembering the state of the suburban house as the house of the white, middle class-. However, the plausible products and systems developed within the conceptual studies can be domesticated,

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[32]The studies on how to make 'users' feel more privately comfortable have already started. Developing multimodal interaction systems seem to be one of the main options for this aim. Reducing the visual monitoring and using other sensitive technologies (such as tangible or auditory sensors) and through providing "sketchual" ("Oxygen", 2002; Philips Research, 2004b) versions (which means, not directly visual or auditory, but those that give merely the information -through a light turning on, for example- with one's presence at a certain place) of communication are some of the strategies for a feeling of conserved privacy.

if they can achieve to create the feeling (not to say delusion) of 'preserving privacy', or the feeling of an 'innocent' surveillance. Additionally, considering the history of the domestication of products, to be domesticated, the smart home would necessitate passing a process, in which the context, the need/desire, and the identity of the smart home would be created. If this process would be achieved to completion, the private domain of the future most probably will be the happy, spiritual home, even if it would be, the determinant of this would be not technology, but currently-unpredictable social changes.

Points of Divergence of the Machine House and the Smart Home

As it was discussed in Chapter 1: Introduction and detailed in different parts of the thesis, technology has a co-constructive relationship with the social structures. Thus, the relationship of technology and society is a transformative one that constitutes the reproduction of them by each other. Considering this point, there is inevitably a divergence between the machine house and the smart home concepts that belong to two different periods, between which there appeared different social dynamics.

One of the main divergences of the machine house and the smart home is in their main motivations of emergence. The machine house, as revealed within the discussions in Chapter 4, appeared as part of a social project. On the other hand, the smart home is a concept that emerged with commercial motivations. The smart home as the domestic sphere where the intelligent technologies are applied can be accepted as an attempt for domestication of intelligent technologies. Moreover, as revealed by Silverstone (2006), as domestication means commercialization since the emergence of the domestic appliances, the smart home can also be considered as the attempt of commercialization of ICTs. From this point of view, in the point where the smart home constitutes a divergence with the early form of the machine house (not with the suburban house), it also constitutes points of convergence with domestic appliances and communication and information products and systems. This gives more confidence to the claim that the smart home would need a process of need and context creation similar to that of domestic products.

Form the Interaction of Subject and Object to the Interaction of Subject and System/Interface

Communication technologies brought a new interaction area for humans within self, the interaction with information through interfaces with control buttons, screens, icons and 'black-boxes' since the early versions of communication products, which we still use. This interface still constitutes tangibility, thus an element of materiality. However, the technologies within the smart home idea propose a new kind of interaction, a multimodal one.

It can only be a futurist prediction, to state whether the fully developed kind of such interaction (not merely visual and auditory) that provides the ideal form of the smart home concept would take place in the future, or not. To such an extent that, for example, whether a person would smell the phone call of her son, 'taste' the good wishes of a friend, or not. However, even the most convenient forms of the multimodal interaction such as controlling lighting by voice, turning the TV on by moving an object from one place to another place, seem still to create a new kind of interaction, which also brings important questions. How would these interactions be decided upon, what kind of a context would provide the form of interaction with the system embedded into the space? Would these interactions 'really' not necessitate a learning process for using the system? Some of these questions are answered within the claims of the companies or institutions, but they do not yet take place within a context. Thus, they seem to be still merely predictive ideas (not meaning technically unfeasible), the realization of any kind of which would stir new co-constructive and reproductive consequences for both society and technology. This feature of the smart home or generally of smart technologies seem to constitute the main distinctive (even though the flow of information and the interaction with it is an older issue) characteristic of the socio-historically constructed smart home concept. This distinction carries both the potentials of the commercialization of it and an important part of the challenges within it.

The promoters of the smart home, stating that the smart home is the realized fantasy of yesterday's future houses, clearly exhibit a technological determinist

vision. Not only considering that the technical feasibility of a design would not mean its guarantee for becoming domesticated, but also considering the material conditions of such complex systems –infrastructure, expenses, energy, production, maintenance-, it is not easy to state that the smart home can be a commonly used type of house in the future. One cannot help considering, at this point, that the awaited emergence of previous futurist designs, houses and cities did not take place, even though the necessary technology has been available for some time. In addition to that, since as it is discussed, if the smart home or some systems in its current scenarios could appear, it would work as a reproduction area that would take the ideology of the past to home by adding new elements to it, thus creating new consequences for home.

The conditions of current societies do not make it easy to imagine a future of more social, active and happy life, but on the contrary, it seems that people are getting more and more like virtually-mobile-prisons in their homes. However, it is necessary to indicate that, neither can a negative futurist approach help to understand the possible future state and the consequences of the smart home, since, and to state once more, it is always necessary to keep in mind the unpredictable and dynamic structures of society, as put forth by Foucault.

6.5. Suggestions for Further Study

As stated in Section 6.4, new interaction opportunities provided by intelligent technologies create a new type of object-subject relationship, which has important differences from the conventional types of object-subject interaction. In some forms, the interface of the system or the product is merely the space, which means the control is provided by bodily movements or by voice. In other forms, the interface has a tangible form, but a separated one, which resembles a remote control that is inserted in daily products. This feature of the smart home that creates completely new kinds of interactions deserves a separate investigation that can shed light on the possible social and psychic consequences of these systems' uses.

Secondly, while following different histories on design architecture and technology, one of the important insights was that on the evolvement of the industrial design profession. Industrial design in the early period of industrialization, in the American industrialization, during the mobilization era, and in the current era seems to have concentrated on different issues. Whether while conceptualizing the human as 'user' and designing the 'function' or as 'consumer' and designing 'desire', design seems to have had different considerations. Moreover, industrial design, designing products, skins, interfaces, and currently 'interactions' whether through objects or not, seem to constitute different contexts. As these contexts seem to follow a route in relation with the developments in technology, they can be questioned on their relation with technology. Technology seems to prevent the design to follow a route determined within its own disciplinary considerations, and makes it merely a technology-dependent discipline, not a 'shaper' of technology, but a 'server' of it.

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APPENDIX A

HOME APPLIANCES MILESTONES IN THE BEGINNING OF THE 20TH CENTURY

1883	The Chicago World's Fair of 1893 saw the introduction of the first motor-powered dishwasher.
1908	The electric range and the electric dishwasher made their first appearance.
1910	George Hughes introduced the "electrified gas stove" at the National Electric Light Association convention.
1914	The electric refrigerator was introduced
1921	1921 saw the development of the automatic ironer.
1922	Air conditioning was being installed in department stores, theaters and industrial plants.
1924	The all white fully enameled electric range was introduced.
1926	The agitator, spinner-type clothes washer was introduced in.
1927	John Hannes invented the food waste disposer.
1929	Room-sized air conditioner units for homes were introduced.
1930	In 1930, electric ranges with calrod surface units appeared and J. Ross Moore built the first electronic drying device for clothes.
1937	The automatic clothes washer was introduced.
1940	Microwave energy's effect on food was discovered in the 1940s.
1944	By 1944, over 85% of American households owned a refrigerator.
1954	The introduction of color choices in appliances

(Source: www.aham.org - official website of Association of Home Appliance Manufacturers)

APPENDIX B

PERCENTAGES OF HOUSEHOLDS IN THE UK WITH ELECTRICAL APPLIANCES IN 1945 AND 1965

	1945	1965
Electric light	80	97
Mains radio	69	44
Vacuum cleaner	32	81
Electric iron	65	94
Electric cooker	16	36
Telephone	21	35
Television	0.25	85
Refridgerator	2.1	46
Deep freezer	0	3
Microwave cooker	0	1
Washing machine	3	58
Dishwasher	0.01	1.5
Food mixer	0.1	11
Electric fire	57	70
Immersion water heater	12	45

(Source: http://www.makingthemodernworld.org.uk, official website of Science Museum)