A Study On Adaptable Kitchen Design In The Context Of Standardization And Individualism

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ABSTRACT

This study demonstrates the paradoxical cycle of modern life, which has simultaneously obliged to standardize the objects and individualize subjects. Under the impact of mechanistic look, conceptions of mobility and modularity emerge as affixed part of this paradoxical cycle.

In the context of standardization and individualism, this study focuses on the birth of modern kitchen conceptions relating to the standardization of modern housing and the work process. Then the study addresses the transformation process of modern kitchen from stable architectural space into independent standardized mobile furniture. Thus, it gains great capacity by being in motion and possibility to separate itself from home and its context in order to encounter the sense of freedom, changeability and individuality.

This study also focuses on modularized kitchen, which is standardized as much as it is divided into parts enriched by various sliding, rotating, folding and joining elements. So, the mobility has emerged as a conception that increased the possibilities of variations and changeability of modularized kitchen. Consequently, each moveable component has prepared the conditions of kitchen-in-motion that look for new directions towards transformable kitchen design.

ÖZ

Bu çalışma, objeleri standartlastırdığı ölçüde özneleri bireyselleştirmeye zorlayan modern yaşamın paradoksal döngüsü üzerine kurulmuştur. Mekanistik düşünme biçiminin etkisi altında, mobilite ve modülerlik kavramları bu paradoksal döngünün, değişmez parçalarını olusturmaktadır.

Bu paradoksal döngü bağlamında, modern konutun standartlaşması sonucu modern mutfak konsepsiyonlarının doğuşuna ve modern mutfağın statik mimari bir mekan olmaktan bağımsız bir endüstri nesnesine bir mobilyaya dönüşmesine odaklanılmıştır. Bu mutfaklar kendilerini evden ve evin bağlamından bağımsız kılarak değişebilme ve bireyselleşebilme olasılıklarına sahip olabilmişlerdir.

Ayrıca bu calışmada, modern mutfağın kendi içinde parçalanarak modüllere ve her bir modülün de kendi bağlamında komponentlerine ayrılabilmesi sonucunda çeşitlenebilme olasılıklarına vurgu yapılmaktadır. Bu komponentler çeşitli hareket tipleri ile (kayma, dönme, katlanma gibi) hareketlendirilip daha da çeşitlendirilerek varyasyon olasılıklarını arttırabilmektedirler. Böylece mobilite kavramı modüler mutfağın varyasyon ve değişebilme olasılıklarını arttıran bir kavram olarak ortaya çıkar. Sonuç olarak her hareketli parça hareketli, dönüşebilen mutfak konsepsiyonları için hazırlayıcı nitelikte görünmektedir.

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INTRODUCTION

1.1. PROBLEM DEFINITION

One of the fears in our society is standardization. The greater part of the societies considers standardization as the cause of loss of individuality. Ironically, in modern life, individualism has also been standardized as well as the others. Standardized products offer illusions of possibilities to people in order to individualize themselves in modern life.

Modern life has great impact on objects and subjects. The more objects are obliged to be standardized or same, the more subjects are obliged to be differentiated or individualized. This paradox constantly circles the modern life. Consequently, modernization founded on provocations of these two contrast tendencies over each other.

This paradox is the main energy source of modern world that has been dominated from the industrial capitalism. If everything was same in the world, the world would destroy itself rapidly after making whole existent things same. So the world could not have been broadened. The idea of prototyping has made serial production possible. Thus, incalculably producing of the same product has been realized. Actually the main of this problem depend on the nature of the capital that needs to broaden without limitations. Calculation in determination of production limitations and the questions of what reason are made invisible behind the circulation platform of goods and market conditions. Since people are directed to the consumption individualism is emerged as a solution, underlining the problem. Consumption is provoked with the promise of identity, the promise of becoming himself. In the beginning of modernization, production has been implied more than consumption. In that period, such sectors as commercial, video clip that study generally on images, were not serving regularly. Approximately one hundred years later, with the effect of modern techniques (commercials, video clips etc.), being individual is indicated the main way in order to have a connection with the modern life. Simultaneously, modern life is converted into the ground of differentiation of individuals. The more people wanted to differentiate, the more objects are needed to

become various, variable and quantitative. The more variety is produced, the more thinness is needed in the degree of differentiation.

How can objects be standardized and individualized, simultaneously? Possibilities of variations and capacity of changeability are the simple answers for the question, in the context of flexibility, adaptability, modularity, and mobility.

In order to circle this paradox, two conditions are needed for prototyping of objects. On the one hand, objects are divided into parts, according to functions, in order to be standardized. On the other, parts are either standardized or standards of parts are determined with scientific methods, scientific calculation, ergonomics and time-motion studies etc. So with these conditions, objects could be produced as variations, which offer standardization and individualization, possibilities simultaneously.

This process effects the production of dwelling, as well. The spaces and process of production are both divided and standardized. As one of spaces of dwelling, kitchen is rationalized, too. Kitchen is divided into parts, in order to be standardized.

Production and working, which are the dynamics of modern life, affect kitchen in the dwelling. The logic of assembly line of mechanization is reflected to both dwelling and kitchen. In this concept modern kitchen is differentiated and converted into a factory in dwelling. As standardized every kind of modern objects of sameness, differentiation and individualization of kitchen is enabled with the concepts of modularity and mobility.

Modern kitchen is the good place and sampling where the problem or the paradox is reflected on it characteristically. Kitchen is a place, where is wanted to be standardized, converting into a mini factory as a center of production of home. In modern life, modern kitchens, as a part of homes, are the only private places, where people want to express themselves as an individual. Therefore, kitchen is an industrialized working space of modernization and individualized private space of home, where it is favored as being standardized and individualized.

Especially contemporary kitchen conceptions underline the main problem of the study. In these kitchens, the paradox of standardization and individualism has been experienced in maximum degree. Because of the fact that, today, consumption that means life style, has become the medium of broadening of industrial capital. In

connection with this, according to one hundred years ago, today is more suitable ground for duality of standardization and individualism. According to this reality, in the historical background of the modern kitchen design particularly contemporary kitchen conceptions reflect this duality.

In the context of historical background, examples are chosen from United States of America, Germany and Austria. From the beginning of industrialization to World War I, Some women had developed domestic science projects, in America. They used the method of Taylorism in private home; performed time-and-motion experiments that had great impact in Europe and America. The avant-garde architects in Europe across Germany and Austria, search the standards of living in minimum space with maximum efficiency through the scientific method of Taylorism. Searching the domestic life of the proletarian dwelling, 'The Gemeinde-Wien Type' is developed as a concept of proletarian dwelling in Austria and transformed into Germany through the Weimar Housing Program with the help of social democrats. Thus, in conditions of serious housing problem, these projects become the first steps of modernist movement of housing and kitchen, during the interwar years. Therefore examples are selected from these countries.

1.2. AIMS OF THE STUDY

Initially, this study is aimed to demonstrate the duality of standardization and individualism in the evolution of modern kitchen that is indicated as sampling. This study aims to show how standardization and individualism work together? Which conceptions underpin and allow the existence of this duality and which pre-conditions exist in the historical background of modernization.

Second, the study aims to show the evolution of modern kitchen in this context. How does the kitchen transform from stable space into independent industrial object or furniture?

Such conceptions as mobility and modularity are pointed out as affixed conceptions of this duality. So, this study aims to search how mobility and modularity serve this paradox. Simultaneously, the study intends to analyze various meanings of these conceptions in kitchen sampling… Mobility reflects itself in the context of entire kitchen as a factor of economy, in the context of production process as a factor of

efficiency, adaptability and variability, in the context of product as a factor of space and labor saving solutions, in the context of pairing elements or joints as a factor of basic motion types that are sliding, rotating, and folding. In the contemporary examples, there are new directions which expand the content of mobility as motion, transformation, discontextualising… In the transformation process of modern kitchen from stable architectural space into independent standardized mobile furniture, mobility serves in order to encounter the sense of freedom, changeability and individuality.

Third, the study can be utilized as a guide, being historical analysis of kitchen designs of today.

1.3. METHOD OF THE STUDY

The study is developed from the general idea of modernity, which has a deep impact on ways of life, daily habits, and individuals, to the evolution of more individual attitudes. While on the one hand this study demonstrates the evolution of modern kitchen in the historical process of modernity, on the other, it pointed out the conditions of modernity and conceptions of it such as mobility and modularity.

This study could have been done with many different methods. But the evolution of modern kitchen in the history of modern architecture, according to the duality of standardization and individualization, has not been studied before in existing literature. As a result this study can be accepted as the re-reading and re-evolution of the scholarship of the modern architectural history. Every historical period can be written over again because of the fact that interpretations always need re-interpretations. Departing from that this study is re-interpretations of existing phenomenon. Kitchen has been analyzed as sampling and this reading method can be applied in the other facts of modern architecture and art. Consequently, the main subject of the study is the duality of standardization and individualization and kitchen is the only sampling of the study.

The study had been operated on two levels. First, it contains a historical discussion of the relation among dwelling, kitchen, and modernity. Second, this historical discussion is underpinned by the examples of kitchen. Examples are utilized to define the various meanings of mobility, in this historical process. There is a line, spanning the whole study, which is structured according to four chapters.

Second chapter “The evolution of modern kitchen” expresses the problem: How does modern kitchen relate to the idea of standardization and interchangeability, which aims using the time, space, material in maximum efficiency trying to stretch their capacity?

Third chapter “Adaptability conceptions in modern kitchen” gives the answer of the question of the second chapter. Modern kitchen establishes relationship with the standardization and interchangeability with the conceptions of modularity and mobility. For efficiency, mobility flexibly maximizes space, especially in storage area and converts dynamic, flexible and constantly changing needs into design. The other focal point of mobility is to decrease local labor in complicated uses. The modularity as supporting concept of mobility enables a flexible variety and interchangeability between parts. Modules can be easily added, reconfigured and mobilized.

Fourth chapter “New attitudes and directions in modern kitchens in the context of modern spatial conceptions: from mobility to kitchen in motion” which discusses position of contemporary kitchens that become entirely moveable and independent from its context, in the direction of transformable conceptions. This chapter can be considered the synthesis in which reconsideration of paradox of our age; standardization and individualism, which lead more balanced answers on the problem stated in the beginning.

CHAPTER 2

THE EVOLUTION OF MODERN KITCHENS

With industrial revolution, mechanization changed radically the history of design and our century. With mass production, mechanization brought new politics, new aesthetic, new psychology and created modernist, populist, and rationalized new society.

As study, under the umbrella of standardization, and interchangeability the structure of evolution of modern kitchens established on mechanization, which aimed continuous rotation and mobility for efficiency... These conceptions, which underpinned each other, on the one hand served on efficiency and rationality, on the other created dilemmas that effect society deeply, like range of twin ideas; continuity and change, flexibility and determinacy, standardization and individuality…

So, from industrialization to today, the evolution of modern kitchen in production, conception and realization were linked and coordinated by mechanization through the concept of standardization, rationalization and interchangeability that surrounded throughout the daily conditions of modern man.

2.THE IDEA OF STANDARDIZATION, RATIONALIZATION AND INTERCHANGEABILITY

The sphere of mechanization and all the techniques build up the life today. Although the mechanization seems complicated and hard to grasp, the method that forms the basis of all mechanization is astonishingly simple.

> "The human hand is a prehensile tool, a grasping instrument. It can seize, hold, press, pull, mold with ease. It can search and feel. Flexibility and articulation are its key words.
>
> The triple-articulated fingers, the wrist, the elbow, the shoulders, and, on occasion, the trunk and legs heighten the flexibility and adaptability of the hand. Muscles and tendons determine how it will seize and hold the object. Its sensitive skin feels and recognizes materials. The eye steers its movement. But vital to all this integrated work is the mind that governs and the feelings that lend it life. The kneading of bread; the folding of a cloth; the moving of brush over canvas: each movement has its root in the mind. For all the complicated tasks to which this organic tool may rise, to one thing it is poorly suited: automatization. In its very way of performing movement, the hand is ill-fitted to work with mathematical precision and without pause. Each movement depends on an order that the brain must constantly repeat. It wholly contradicts the organic, based on growth and change, to suffer automatization". (Giedion 1948, p.46.)

Frank W. Gilbreth, who is the master of motion studies, searched so deeply the nature of manual activity, and stressed with his study that name is A Fourth Dimension/or

Measuring Skill (1924). He implied in his essay that no movement could exactly repeat another.

> "The hand can be trained to a degree of automatic facility. But one power is denied it: to remain unvaryingly active. It must always be grasping, holding, manipulating. It cannot continue a movement in endless rotation. That is precisely what mechanization entails: endless rotation. The difference between walking and rolling, between the legs and the wheel, is basic to all mechanization." (Giedion 1948 , p.47.)

The first phase of mechanization concerns continuous rotation consists in transforming the pushing, pulling, pressing of the hand into process. Second phase as meaning of mechanization relates to the procedures of reproducing of objects. As early as the first decades of the nineteenth century, in 1832 Charles Babbage or in 1836 Peter Barlow described stamping, pressing, embossing, and other methods in diverse ways. Mechanical reproduction was effectuated by these methods.[1] Pressing, stamping, casting connected with the interchangeability of parts. Since the beginning of the nineteenth century, interchangeable parts for small articles like pistols, guns, clocks had been in use. [2] (Giedion 1948)

America was a productive ground for the standardization and interchangeability of parts. In small articles, skilled workmanship was needed for repair and the interchanging of parts. But in larger machines interchangeability becomes an interesting question. The idea of interchangeability applied to larger machines, independently of skilled labor. Interchangeability of larger parts were advanced in various spheres at the beginning of the 'fifties. The idea of saws with interchangeable teeth arose in a California sawmill extremely remote from any factory where damaged teeth could have been repaired. (Figure 2.1) In New York, the innovative designer Hoosick Falls, while the working in Walter A. Wood Mowing and Reaping Machine Company in 1867, shows a broad range of replaceable large parts in farming machines. Walter A. Wood Machine Company was the first to institute the interchanging without technical help of parts for large machines. Company publishes this catalogue in 1867 for his mower and Handrake Reaper. (Figure 2.2) Each part illustrated and numbered simply, so that the

[1] The stamping of coins and the pressing of metal lifeboat halves achieved in 1850's. Until the fulfillment of mechanization in automobile industry, these methods were not utilized in large scale.

[2] For instance; Eli Whitney, who is the inventor of the cotton gin, is shown the first in gun manufacture that presented interchangeability of parts at his Whitneyville factory; Simeon North, the pistol maker who worked on the same principle at his workshop in near-by Middletown. In France, Thomas Jefferson detected that a mechanic for manufacturing guns from interchangeable parts (1782). However they all had insufficient knowledge, and systematic research was still needed.

farmer could choose the necessary part only by writing its number. So, farmer was adapted to assemble the machines himself. Catalogue provides more space to the representation of interchangeable parts than to the machines themselves. This was half a century before Henry Ford brought standardization to the automobile industry familiarized the broader public with the same principle. In the same period as the elimination of skilled labor, the advent of interchangeable parts for the larger machines achieved in the meat packing industry as the beginnings of the modern assembly line.

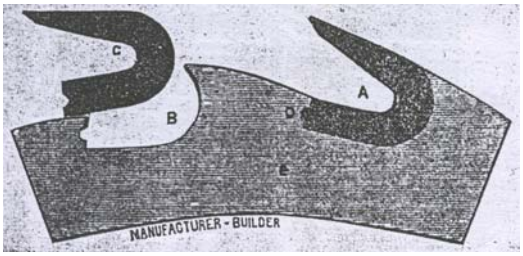

Figure 2.1 Interchangeable Parts: Replaceable Saw-teeth. 1852.

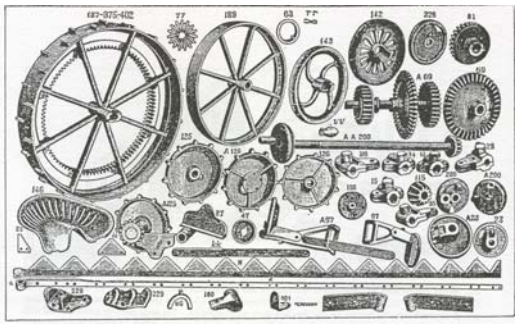

Figure 2.2 Early Uses of Interchangeable Parts for Large Machines: Reaper Parts, 1867.

In the early stages of industrialization, there was confusion in producing parts, fittings, and types of connections. Each firm aimed to preserve users in order to keep a huge stock of replacements and, in order to cover the different formats. Sir Joseph Whitworth's system of standardized thread-measurements for nuts, bolts and screws was a pioneering attempt to introduce order into the confusion. Although Whitworth's system required a high degree of craft skill in production to achieve the necessary accuracy, and this system was generally adopted in Britain successfully in the l870's. In the United States William Sellars improved a different system. Sellars' system was mass-produced precisely, cheaply and by unskilled labour using automatic machinery.

In order to be effective on a national scale, the adoption of these systems of technical standards was necessary for the interchangeability, which means primary rationale of large-scale production. This was to be made very clear to the Prussian government in the route of the war with France in 1870—1. A mixture of public and private enterprise, with nine state and numerous private companies, had established the Prussian railway

system.[3] So, the first standard locomotive came into view in 1877; and after that each following type produced in large numbers, with significant advantages in cost, manufacture and operation, in order to increase interchangeability, standardized components were utilized for several types.

Consequently, most notably the large electrical good firms that concern the advantages of standardization came out in the late nineteenth century, such as Siemens and the Allgemeine Elektrizitats Gesellschaft (AEG).

In 1907 Peter Behrens, a leading architect and designer, was appointed artistic adviser to AEG where products designed for domestic use. AEG gave him responsibility for the company's buildings, graphics and product-design. The forms of his product designs were not very innovatory.[4] Behrens designed his kettles according to the basis of standardized elements so that he could be combined flexibly in order to give over eighty variations. (Although in fact only thirty were offered for sale). For variation there were three kettle-forms, and two each of lids, handles and plinths. Three materials, brass, nickel-plate and copper-plate. Behrens offered each with three surface finishes, smooth, hammered and waved. Each of them was proposed with choice of three different sizes. The plugs and heating elements were ordinary to all. It was the innovatory side of Behrens' work was to provide a broad product-range, utilization of the possibilities of combining a limited number of standard components through the concept of interchangeability.[5] (Heskett 1995)

In the same period, In Britain Cadillac showed a remarkable demonstration of standardization and interchangeability for the Royal Automobile Club in 1908.

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[3] Each had their own types of locomotives and rolling stock. For military purposes, mobilization and utilization exposed the full inappropriateness of the various stocks. Under war conditions maintenance and repair was attendant problems. There was pressure from the military authority that led to the nationalization of the system and its formation info the Prussian State Railways. The new state system, which inherited the stocks of its component companies, was not sufficient, for the required program. Technical parts, the design and production of a series of standard types of locomotives and rolling stock embarked on the growth of a set of Prussian standards' for each group of use.

[4]Their products for instance his electric fans and arc lamps were basically similar to competitors' products. Products were dominated by their technical purpose. His sensitive handling of materials, color and detail made technical form aesthetically distinctive. With his electric kettles, however, something was new. His and competitors' designs were similar in external forms. It showed tacit agreement on prevailing consumer taste.

[5] So he distinguished himself as one of the first industrial designers in the modern sense.

Understanding the notion of interchangeability, three cars were taken apart and their components were mixed with spares. (Figure 2.3)

Figure 2.3 In 1908 remarkeable demonstration of Cadillac.

In the automobile industry two opposing demands appeared importantly. On one hand, result of standardization there was the demand for cheapness, in order to attract the massive investment in plant required for volume-production (such plant needed to be sufficiently flexible to take advantage of the rapid speed of technical innovation). On the other hand, the demand for newness required rapid changes of model in order to sustain the interest of customers in continuity. [6]

Concept of standardization was firmly recognized with various ways by the early twentieth century. Technical measurements, or basic standards, and specifications for connections determined by national standards. Standards Association, in 1916 the *Deutsche Normen Ausschuss* (German Standards Commission), in 1918 The American Standards Association were founded.

In addition, the potential of standardization was considered as attaining stabilization and continuity of form, demonstration of standardization through the concept of interchangeability.

[6] So with these two opposing pressures that styling was born: The introduction of frequent changes of external style that underline aesthetic appearance, leading to the annual new models. Automobile industry encountered the demand for newness of customer with the interchangeability of parts

2.1 STANDARDIZATION OF WORK PROCESS: SERIAL PRODUCTION

As a synonym of full mechanization, assembly line is the most effective tool of mechanization. Making production process uninterrupted is the main aim of it. This is accomplished by integrating the various operations.

Line production requires a rational layout and often, but not essentially, involves the use of conveyor systems in order to enable frictionless transportation from each fabrication process to the next. Oliver Evans who first integrated the three basic types of conveyor, which are still used today, into a continuous production line. The three types of conveyor system, which are the 'endless belt' (belt conveyor), the 'endless screw' (screw conveyor), and the 'chain of buckets' (bucket conveyor) are used from the very start to the present day. The three basic types of conveyor of Evans these three elements developed technically, but the method did not change absolutely. This period was the unperfected state of the machinery. Men had to be inserted in the mechanisms, in order to ensure an uninterrupted production line.

Beyond its labor-saving mechanisms, the assembly line based on the rationally planned co-operation of groups, and teamwork. In the eighteenth century Adam Smith comprehended the importance of the division of labor in regard to both time and succession. In 1804 Oliver Evans' automatic mill was established in an English naval arsenal for speeding up the production of biscuits. The work was divided into various stages, and according to different workers. Division of labour was the determining characteristic of industrial production. As result of division of labour, the factory worker had to carry only a limited of number tasks.[7] In several other fields, the production process divided into phases by Adam Smith's description of the division of labor. (Hauffe 1998)

A Swiss inventor, Johann Georg Bodmer (1786-1864) who was one of these inventors aimed to save labor, and energy in conveyance. [8]In order to increase efficiency in conveyance, Bodmer used his traveling cranes in the Manchester machine-tool factory

[7] The need of limited number of skills meant that the worker could work for lower wages. This process made individual worker unskilled worker. These working conditions brought together miserable living conditions. In 1867 Karl Marx wrote Das Kapital, in which he analyzed the structure of new society and miserable conditions of proletariat.

[8] He worked on water wheels, steam engines, locomotives, machine tools, spinning machines; even on the mechanical production of beet sugar.

(1839) with adding a rational arrangement of the machines. So the material easily moved on rails towards the machine where needed.

After mid-eighteenth century, the division of labor, which was considered by Adam Smith as the essential point of industrialization; the continuous production line of Oliver Evans, 1783; in order to convey the material to the convenient spot the traveling cranes and rails as the invention of J. G. Bodmer, 1839; all of these were important steps toward the assembly line.

Around 1900's competition grew harshly. Wage cutting meant lowering production costs. The machine tools were differentiated and specialized. The term that named as scientific management seem likely to raise productivity.

> "The question is narrowing down to: What can be done within the plant to lower costs and raise productivity? Before the turn of the century, the attention of industrialists was being claimed not so much by new inventions as by new organization. Work in factories was computed by rule of thumb. Scientific methods should take the place of inventions. Hence the question: How is work performed? The work process is investigated, as well as each movement and the manner of its performance. These must be known to the fraction of a second." (Giedion 1948, p.96.)

Related with these questions, there was the constant effort of Frederick Winslow Taylor (1856-1915) who developed his method of scientific management around 1900, taking up the problem of rationalizing operations within the factory. He underlined complete rejection of craft conception. Taylor focused on analysis of work process. He searched the one best way of performing tasks in order to reach maximum efficiency in production. He sought to eliminate superfluous movement and sought to integrate human capacities into machine operations. (Heskett 1995)

> "Work should be done easily and so far as possible without fatigue. But always behind this lies the constant goal to which the period was magically drawn — production, greater production at any price. The human body is studied to discover how far it can be transformed into a mechanism." (Giedion 1948, p.98.)

Previously, Taylor built a huge steam hammer, whose parts were so superbly calculated that the elasticity of its molecular forces provided to heighten its efficiency. The elasticity of its parts, which yielded to the force of a blow and returned to their previous positions kept the steam hammer in its alignment.

Similarly, he carried on the limit of elasticity in the study of human efficiency. He picked the best workers for his experiments and fixed the task accordingly. But the human organism is more complex than the steam hammer. The body could react, not

always in a directly identifiable manner, when worked too long close to the limit of its capacity. (Giedion 1948)

High-speed steel the most important invention of Taylor, also was concern with the exploration of a limit. He made in 1898 in the Bethlehem Steel Works.[9] The stretching of human capacities and the stretching of the properties of steel developed from the same principle.

Taylor developed a methodical system. He called the system as military type of organization. Every man shall accept his orders asking no question. The general controller of the works sends out his orders on tickets through the various officers to the workmen. So the system was based on automatization. For the talented workers there could be chance to have benefit, but for the average man there was no way to escape automatization.

For further elaboration of his method he followed a coalition between scientific management and experimental psychology. Independently of scientific management, in order to determine the person best appropriate to certain occupations, psychology had already worked out tests. Relationship among Scientific management and psychology appeared with the giving up of Taylor's stop-watch methods. Frank B. Gilbreth (1868-1924) and his wife, the psychologist Lillian M. Gilbreth developed methods which led to a visual representation of the work process. Gilbreth explored the best way of doing work in industry and handicrafts indifferently. (Lupton and Miller 1996)

> "The method responsible for this was the study of motion. From the question: 'How long does it take to do a piece of work?' one came to a representation of the path and elements of a movement. Soon the stop watch was eliminated, to be replaced by objective recording apparatus. The Gilbreths were thus led deeper and deeper toward the inside of human motion and its visualization. This was accomplished through time and space studies. " (Giedion 1948, p.101)

Serial production in improved efficiency was first fully developed in production of motor cars. As exceptional success, Henry Ford established The Ford Motor Company in 1903, on the principles of standardization:

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[9] When tools were run at their top speed until they became red hot, they performanced an extraordinary property of keeping what hardness they have. It turned out that at a certain degree of heat [over 725° Fahrenheit], they kept the sharpness of cutting steel as well as their "red-hardness," the greatest improvement taking place just before the melting point.

> "The way to make automobiles is to make one automobile like another automobile, to make them all alike, just like one pin is another when it comes from a pin factory." (Lambert 1993, p.43)

Precise standardization was understood with his system of production. The system depended upon the assembly line, with the automobile put together from a series of sub-units such as frame, engine, transmission and body. 1914 had been dated as beginning of Fordism. Division of labour and technological newness of Ford was only continuous of existing methods. The originality of Ford was having a vision. He understood that standardization was great attempt to create new people type and new life style. He was aware of that mass production had brought mass consumption, new politic, new aesthetic, and psychology, so created modernist, populist, and rationalized new society. (Harvey 1999)

All of these marked the putting into practice of the dominant principal of the twentieth century; mass production that based on efficiency and rationalization, created modern inspiration, life, people and society.

2.2 STANDARDIZATION OF MODERN HOUSING

The concept of industrialized housing was a prominent and was the discussed issue of the time. The imperative of industrialized housing was more than a matter of being in step with modernity; it was a matter of need. During the interwar years World War I and World War II the middle class was subject to serious housing problem. Prefabrication was pointed out as solution to housing problem. Industrialized housing based on, the repetition of standard units and receptive to modern techniques of mass manufacture. The leaders of architectural profession like Le Corbusier had supported the mass-production spirit, the spirit of constructing mass production houses and the spirit of living in mass production houses. They thought that traditional methods of construction would disappear. They had advised their students to understand and incorporate industrial processes. (Abercrombie 1995)

After World War, with the spirit of mass production, while many prototypes of experimental houses were being created in America, the avant-garde architects in Europe across Germany and Austria, searched the standards of living in minimum space with maximum efficiency through the scientific method of Taylorism. Searching the domestic life of the proletarian dwelling, 'The Gemeinde-Wien Type' was developed as a concept of proletarian dwelling in Austria and transformed into Germany through the Weimar Housing Program with the help of social democrats. (Hauffe 1998)

2.2.1 STANDARDIZATION OF MODERN HOUSING IN EUROPE

2.2.1.1 THE NEW DWELLING: 'THE GEMEINDE-WIEN TYPE'

Until 1923, social democrats did not have real concept of the proletarian dwelling, which they proposed to build. Though the specific form of the new dwelling space in the Social Democratic city was questioned after World War I.

Gustave Scheu formulated the first programmatic description of the new dwelling in February 1919. He suggested that each apartment had at least two full-size rooms, a living room/kitchen, adequate light, air and sunshine. Each unit would be fitted with equipments, which were functional, labor-saving and easy to use. There would be gas, water, and electric light, flushes toilets in the compass of the apartment itself, and built –in closets and cabinets. He provided baths, depending on the size of the individual dwellings, either within the apartment or in communal facilities. If there is feasible he provided elevators and central heating and he oriented all inhabited rooms toward the sun. The municipality would provide communal playrooms for children in buildings. According to current circumstances in Vienna such housing program was hardly realizable. Scheu was describing an ideal rather than a real program, which would be realized.

Disadvantages of existing housings were turned into the new housings needs. They would have 'no long corridors', 'no light shafts', ' no shared toilets and water taps'. Though these list, social democrats assumed that the spatial program for the new housing would emerge out of practice and through collaboration with 'private' architects. (Blau, 1999)

Franz Schuster, Franz Schacherl, and Josef Frank were a small group of socialist architects. They criticized the lack of coherent theoretical or even typological conception in the new dwelling space. They believed that the red Vienna had little knowledge of typological research and innovations in spatial planning, developed in Germany and elsewhere in Europe at that time. Reflecting middle class value of the social democratic party leaders and their architects, the concept of qualitative improvement was *embourgeoisement* of traditional working class dwelling space and domestic habits.

Historians of Red Vienna took up this charge, including Manfredo Tafuri, Karla Krauss and Joachim Schlandt and O. Matthias Ungers. Tafuri was not interested in typological

research, so their organization was criticized as being empirical and full of inconveniences on functional level. According to Ungers, 'In terms of their technical planning and construction, these houses complexes could hardly be considered experimental. Only by pre-World War I standards do they seem advanced.' To Krauss and *Schlandt*, 'the effect of the plans was the unimaginative *petit-embourgeoisment* of the working class. Collective forms could not be imagined by the planners. For those responsible for the program, progress for the proletariat meant elevating them to middle-class life standards.

These critiques raised important questions about the Viennes conception of working class domestic culture and the sociopolitical program of Red Vienna.

> "Just how conventional were the plans of the apartments in the Viennese *Gemeindebauten*? What relationship did they bear to existing working class and middle class apartment plans in Vienna? Finally, how did they differ from the Taylorized apartment plans developed during the same years in the German housing estates outside Frankfurt and Berlin?" (Blau 1999, p. 177)

2.2.1.2 EVOLUTION OF THE 'GEMEINDE-WIEN-TYPE'

By 1923 the new working class dwelling was formulated into a precise roster of planning guidelines developed by the Architecture Bureau. Known as the '*Gemeinde-Wien*-Type' (Vienna Council Type), the new proletarian dwelling was an apartment that Franz Siegel described as being consisted on average of a full-size room, kitchen, and *Kabinett* (a small bedroom). All rooms are directly lit and, in order for the kitchen to be used as a *Wohnküche* (living room-kitchen), a scullery is built in so that unpleasant tasks of the domestic hearth are removed from the living space of the kitchen.

The *Gemeinde-Wien*-Type emerged out of practice in the period of postwar inflation between 1919 and 1923. During that time disused military barracks, school buildings and half built tenements were converted to dwellings. These conversions were better than the standard tenement plan. Because each apartment included ventilation for kitchens and toilets, gas, electricity, water and corridor windows. But they did not converge the new standards of social amenity that were prescribed for the new buildings.

Margaretengürtel 90-98 was the first building, which approach the Social Democrats' new standards for worker housing. It began in 1919 and completed in 1921. *Margaretengürtel* 90-98 was developed and renamed as '*Metzleinstalerhof*'. It was conversion and expansion of preexisting building. It begun in 1916 and that left

unfinished during the war. Robert Kalesa designed both the original building and its later conversion.

The working class district of *Margareten* consisted of five building lots along the Margaretengürtel. Construction of the five apartment houses on the site had reached the mezzazine level when work was stopped in 1916. In 1919 redesigning of the block was started. Before redesigning, the blocks were most likely standard small apartment houses. Each house coordinated around single staircase, single loaded corridors along which the standard kitchen-corridor-type apartments were ranged and within which the shared toilets and water basin were located.

In redesign of the block, Kalesa radically changed this organization. There are no long corridors, all rooms are directly lit and ventilated; and toilets, running water, gas, are contained within the compass of each apartment. Every apartment has a small entrance hall, which was the only space in the apartment without its own external window, *Wohnküche* with attached scullery, one full-size room, and a lavatory. Some apartments, there is little variation, they have two full-size rooms or room and *Kabinett* (a small bedroom) .It was the first municipal housing in which the city's new lower ceiling height. It reduced from 350-300 cm to 260 cm. Firstly, reducing the ceiling height reduced the initial building costs, later it reduced the heating costs. At the same time the lower ceiling height had cultural and political importance. Combining the new vertical dimension with windows in every room changed the proportions of the rooms and flooding the interior with light, which gave the new working–class dwelling its own spatial distinctive character. (Figure 2.5) (Blau 1999)

Margaretengürtel block became standard in the eleven municipal housing blocks which begun in 1922, even though the buildings differed in size, coordination of communal and public spaces. There were three basic types, consisting of either one or two full-size rooms, or a room and a *Kabinett*, small entrance hall, *Wohnküche* with attached scullery, and toilet. There were little variations. Some did not have the *Vorraum*, some were without a scullery, some had a small balcony, but all had the basic units, which were one or two full-size rooms, *Wohnküche*, and toilet. All had electric light, gas, and water. Toilets were directly lit and ventilated and accessed from either the scullery or the small entrance hall.

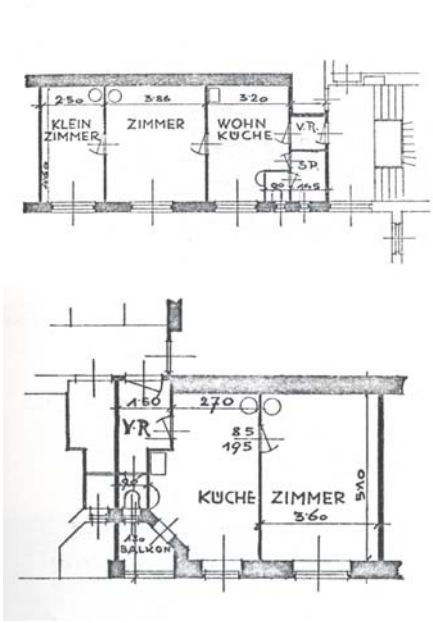

Figure 2.4 Gemeinde-Wien-Type standard apartment type, 1923

Figure 2.5 Margaretengürtel block, Apartment interior, by Robert Kalesa, 1923.

In 1923 the *Gemeinde-Wien*-Type was additionally standardized. Bed-sitting room cooking facilities, lower ceiling height, running water, a flush toilet, a gas cooker, electric light, private balconies which were considerable size, they all conformed to the new working class dwelling. Entrance hall was a small space and a buffer against cold and noise. At the same time, it was passage transitional zone from public to private space and from toilet and living space. Additionally the entrance hall prevented kitchen smells spreading to communal staircase. They all improved the dwelling quality.

2.2.2 STANDARDIZATION OF MODERN KITCHEN

2.2.2.1 PRE-MODERN SCIENTIFIC METHODS: DOMESTIC SCIENCE

Catharine E. Beecher, who is prominent pioneer in the area of domestic science educated girls and women in all aspects of household management across the America. In the 1869 American Woman's Home, which the famous book of Catharine Beecher and her famous sister, Harriet Beecher Stowe, showed the most complete household manual that was written during the mid-nineteenth century. In their books they suggested extensive changes in the organization of kitchens. They implied with their books the importance of housekeeping and the important position of kitchen. They advised women to save labor, time, space and expense. (Henderson 1996; Heskett 1995)

As early as 1869, Catharine Beecher had focused on the trend the cook's galley in the steamship. She indicated that such facilities in order to feed two hundred people, realizing no irony in using a similar arrangement to feed a family of four. The ship's galley called the "workshop of the home," suggesting production instead of consumption of material as being similar to the Pullman car.[10] (Giedion 1948)

> "Catharine Beecher's work continued and in 1873, at the age of 73 (five years before her death), her books. Miss Beecher's Housekeeper and Health keeper and The New Housekeeper's Manual were both published. Her pioneering efforts to formally educate young women in domestic science had far-reaching effects that inspired others to take up her cause. Her many books brought valuable advice into the nineteenth-century homes of young housekeepers and helped institute guidelines for "system" in household management. For many, her works no doubt brought encouragement, comfort and applause as they strove to make a comfortable home and nurture a happy family. In addition, her efforts inspired others to focus attention on domestic science. As newer kitchens, household products and appliances became available, additional home manuals and cookbooks were published, cooking schools were established, healthful cooking became increasingly important and extensive studies in domestic science at colleges and universities during the late 1800s continued the work she began." (Plante 1995, p. 58)

In the 1860's Catharine Beecher published drawings of a "cook form," combining a work surface, storage unit, and sink as a built-in unit. (Figure 2.6) With its concept of storage and preparation furnishings, her drawings guided the grammar of the continuous kitchen. Preservation and storage and cooking-serving were clearly distinguished in the drawings of Catharine Beecher. The large table and isolated dresser have disappeared from her kitchen. Instead of table, more compact working surfaces extend beneath the windows. Instead of the dresser, there are shelves, drawers, and receptacles beneath the working surfaces. The "moulding board" for kneeding dough flips over to cover the sink, and the surrounding walls are lined with open shelves.

Beecher's design is accepted as a forerunner of the modern continuous kitchen, although it was not broadly used at the time. In the 1890's, cabinets and tables combining drawers, flour bins, and other features became well liked in American kitchens; they carried forward Beecher's concept of concentrating work and storage functions in a single piece of specialized furniture. She pointed out convenience, compactness, and flexibility. (Lupton and Miller 1996; Kostof 1986)

[10] Industrialist G. M. Pullmann designed the Pullman car. Initially, he designed a wagon for sleeping, eating and traveling. He richened the design with mechanically movable fixtures, which offered a high degree of comfort in a small area. (Hauffe 1998)

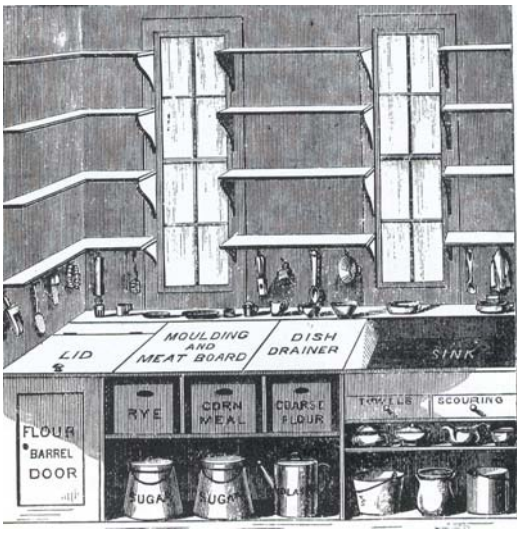

Figure 2.6 Catharine Beecher's design for a built-in work and storage unit, American Women's Home, 1869.

In 1900's Domestic Science offered as lesson in high schools across the America. This lesson carried out in a laboratory including a kitchen, dining room, laundry area and dressing room. In 1912, in instructional domestic science manual, which used in classrooms, Ida H. Clark implied that domestic science went much further than the mere skill to produce palatable and digestible dishes.[11] By the 1920's the classroom study housewife became more scientific, focusing on kitchen efficiency and charm, budgeting time and money, etc… In these terms, in Foods and Homemaking by Carlotta C. Greer author prepared some questions for students in order to make kitchen efficiency considered.[12](Plante 1995)

2.2.2.2 MODERN SCIENTIFIC METHODS: TAYLORIST METHOD

The most developed method for the home was "Taylorism," that fragments the production process into tasks, divided among workers on an assembly line and in order to expose wasted motions he used photographic time-and-motion studies. He regarded behavior of each machine-like, repeating a single atomized task with no question.

[11] For more knowledge see Ida H. Clark, Domestic Science, Boston, 1912.

[12] "How high should a work table be?"

"What is inlaid linoleum?"

"How deep should a cupboard shelf be?"

"If a kitchen has windows facing south, what colors would be suitable for the walls?"… These were some questions from the book of Carlotta C. Greer.

Beginning in the 1910's Christine Frederick, Lillian Gilbreth, and others used the method of Taylorism in the private home, performing their own time-and-motion experiments in order to increase efficiency in domestic habits through the house plans. Gilberth highlighted the need for improved kitchen equipment. She offered new kitchen plans to decrease unnecessary movements. Stimulate She searched a range of solutions, so she allowed flexibility for individuality. (Rybczynski 1986; Kostof 1986)

> "(She) recognized that there was more than one "correct" way of doing thinghs, and their aim was to help peoplediscover solutions that would suit their individual needs… Lillian Gilberth's flow process charts and micromotion transfer sheets were intended to enable the housewife to organize the home according to her own work habits. She continually reminded her readers that there was no ideal solution; the height of a kitchen counter must be adjusted to the height of the person, and the most useful layout of appliances would vary from one household to the next." (Rybczynski 1986, p.191)

While Beecher's design suggestions and applications were not developed, Frederick's experiments and her layout of storage units and work surfaces, which she modeled on the assembly line of the modern factory had a deep impact on the modern kitchen, both in the United States and in Europe especially in Germany where the rationalization followed with particular interest. Frederick initiated women as factory managers and pointed out the kitchen as factory or workstation. (Henderson 1996; Heskett 1995)

> "As Dolores Hayden has pointed out, Taylorized housework is a contradictory proposition: while factory labor involves breaking down one process into many, housework traditionally is performed by a single worker and involves countless divergent tasks (1981). Taylorism organizes production, while cooking, cleaning, and laundry are labors of consumption. The Taylorized housewife acts as both factory manager and factory worker, professional mastermind and disciplined laborer." (Lupton and Miller 1996, p.13)

Figure 2.7 Lillian Gilbreth's improved kitchen design (1930) consolidates the appliances and work surfaces along one wall of the kitchen, as in the linear sequence of an assembly line. Steps are saved walking around the kitchen, because the cook stands in one place while working.

Frederick challenged the traditional pantry that attached to the kitchen as a distinct room. At the turn of the century a good middle-class house minimum two pantries: one for storing utensils, food, and fuel, and the other placed between the kitchen and the dining room, for storing dishes and serving meals. The last was called a butler's pantry that could vary from a miniature niche or hallway to a fully equipped room. One of the functions of the butler's pantry was to protect the dining area from the noises and smells of the kitchen. At the same time, the butler's pantry was a buffer that controls the circulation between the service zone of the kitchen and the public zone of the dining room. In an upper-middle-class home, the pantry would be added as a separate unit in case of existence of a hired servant without considering whether it is convenient or not. The vanishing of the butler's pantry marked the kitchen's gradual defeat of public domestic space.[10]

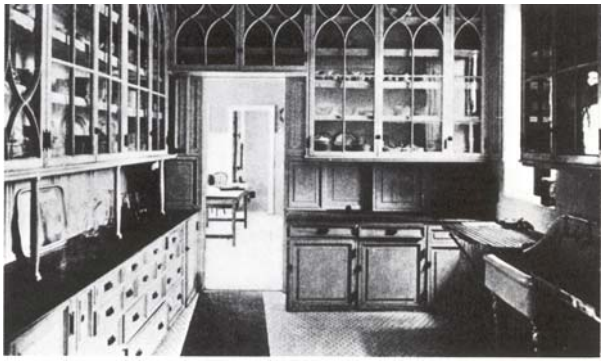

Figure 2.8 Butler's pantry with built-in cabinets and running water. Courtesy House and Garden, 1907.

In the plan of Frederick's "No Servant" house, (Figure 2.9) the kitchen had direct access to the living room, entrance hall, and a dining/living porch. There were no distinct pantries. The built-in "breakfast nook" made the kitchen a place where the family ate, relaxed and worked.

[10] Although Frederick's book Household Engineering (1919) includes some house plans having butler's pantries, Frederick argued and transformed over-articulated kitchen into a single open room. She replaced pantries with built-in cabinets and "dressers" located in the kitchen.

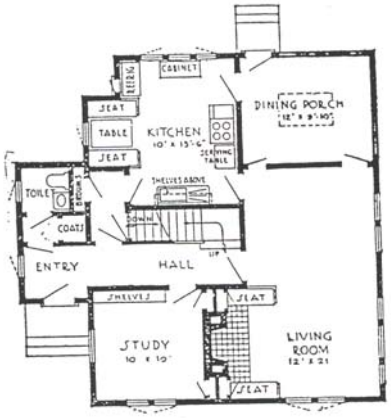

Figure 2.9 Frederick's plan for a 'No Servant' house.

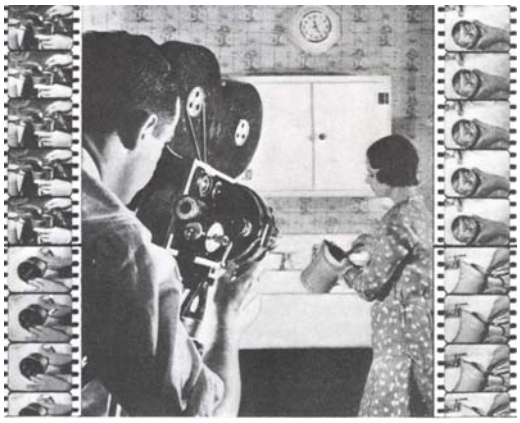

Figure 2.10 Time and motion study, 1932.

Figure 2.11 Breakfast Nook or Pullman

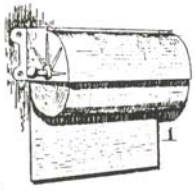

Figure 2.12 Chiristine Frederick was an early advocate of paper towel.What they waste in materials, she argued they save in time.

Frederick followed Catharine Beecher and divided the heterogeneous tasks into general phases. Frederick reduced kitchen work to two basic procedures: preparing and cleaning. The below plans, help us to compare efficient and inefficient kitchen plan, along two paths (A meant cooking, B meant cleaning up).

> "In the inefficient kitchen, the cook must walk greater distances and continually recross her path, while the revised kitchen enables a coherent, linear series of operations: appliances and work surfaces are laid out in a continuous row, like stations in an assembly line.
>
> While grouping work surfaces and appliances according to their use can make cooking easier, Frederick has reduced kitchen labor into an ideally coherent and linear process. By analyzing the cook's duties into generic phases, Frederick hoped to make the unpredictable paths of housekeeping resemble the regulated and continuous routines of factory work. Numerous tasks have been omitted, such as putting away groceries, setting the table, consulting a cookbook, tending a child, stirring the sauce, wiping the counter-tops, adjusting the stove, discarding empty packages, or preparing anything more complex than a single-dish meal." (Lupton and Miller 1996, p.46)

The majority of the furnishings in Frederick's efficient kitchen plan are neither connected, nor built-in. They all continued along the wall. By dividing the kitchen into workstations, Frederick imitated the assembly line of the factory. These domestic tasks, however, are performed by a single person and address consumption rather than

production. On open shelves, her design kept the nineteenth-century tradition of storing utensils, resisting the more "modern" impulse to hide everything behind closed doors, as dictated by the continuous kitchen of the 1930's. There were open shelves for pots and pans in Frederick's kitchen. There was no waste of motion pulling out drawers, no confusing of one tool with another. There was a stool on wheels, which allowed the cook to work sitting down. The cabinet or "dresser" combined storage with a pull-out work surface. Popular from the 1890's through the 1930's, dressers were a cheap, factory-made alternative to custom cabinets.

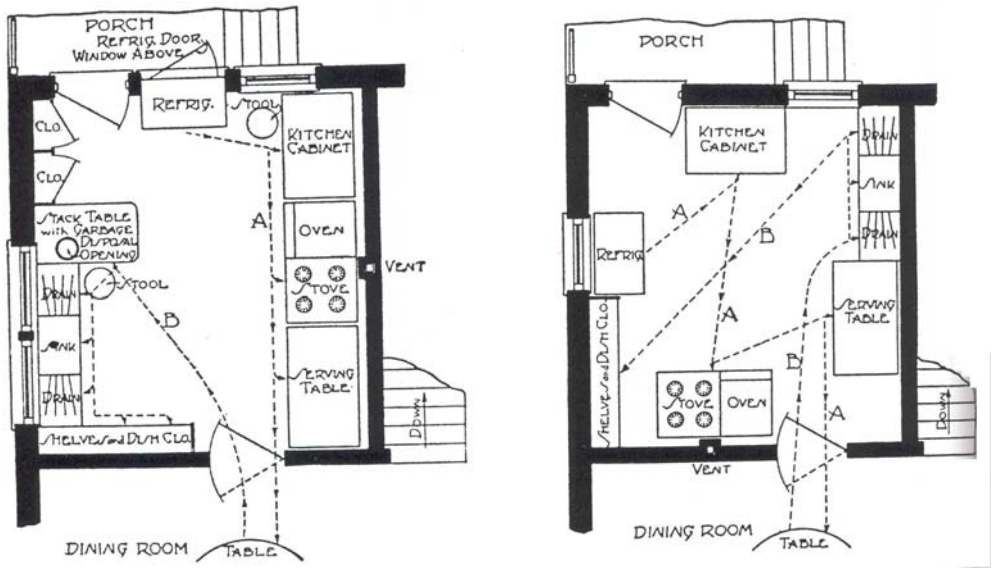

Figure 2.13 Chiristine Frederick's efficient and inefficient kitchen

This plan is an early application for a continuous kitchen. (Figure 2.16) The form was an unbroken U-shape. The dish closet was placed over the sink. The dish closet has doors that opened onto both the kitchen and dining room. In order to avoid the dust trap, which usually exists in the space underneath, the designer, anticipated the base cabinets and appliances of the 30's and the designer raised the stove, refrigerator, and cabinets on a solid platform.

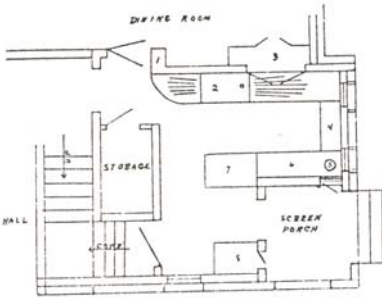

Figure 2.14 Louise Stanley, "A Convenient Kitchen," 1916.

From beginning of the industrialization to World War I, these domestic science projects, which developed from women, had great impact in Europe and America. These projects became the first steps of modernist movement. (Eroğlu 2000)

2.2.2.2.1 GERMAN EXPERIENCES: THE 'TAYLORIZED' WOHNKÜCHE

Through the Weimar Housing Program, Frederick's Scientific Management was translated into German *Wohnküche* in 1922 by professionals across Germany and Austria. *Wohnküche*, the living room/kitchen that was barely identifying feature of the new proletarian dwelling was central space of working class life. The *Wohnküche* was essential in binding the new proletarian dwelling to the old. Because the *Wohnküche* rooted in working class domestic life.

Modernization of the *Wohnküche* was not only newly equipping, but also reorganizing it both in order to make the best possible use of the available space and in order to make the kitchen itself easier and less labor-intensive. The new kitchen was planned according to 'Taylor work method'. Officials declared this method that had important advantages for the housewife. 'Frankfurt *Küche'* designed by Margarete Lihotzky in 1926 was the famous taylorized kitchen of its period. In 1922, She had designed a *Wohnküche* with kitchen niche or scullery for the *Österreichischer Verband für Siedlungs*- und *Kleingartenwesen* (ÖVSK). This design was realized as being influenced from Taylorism. She also positioned forward by Christine Frederick in The New Housekeeping: Efficiency Studies in Home Management (1913), in order to organize and equip the domestic interior within labor saving ways. Lihotzky' s cooking niche design was built and displayed in the *Rathouse* in Vienna in September 1922. (Figure 2.17) Exhibition was enlightened by Frederick's analysis of work patterns in the kitchen and her ideas for efficient spatial organization. Two principals leaded Lihotzky's design. First, she located the stove-cooking surface and source of heat centrally. Second she removed kitchen functions, which involve water, from the central living space of the kitchen, and located in a cooking niche or scullery/kitchen installation, and called it as *Kochnishen - Spülkücheneinrichtung* , which could also do service as bath and washroom.

Lihotzky centered on her notice on the design of this *Kochnishen - Spülkücheneinrichtung.* (Figure 2.18) Her niche had 95cm2 workroom and it measured 2 m x 2.05 m. It consisted of the water heater, a wash tub that could be covered when

not in use and transformed into a work surface, a drainboard, shelves for kitchen utensils, buckets, and a storage area for fuel. The sink, tub, walls surrounding the oven and encasing the water heater were all poured concrete, as was the floor, which had a central drain and 10cm high wall base. All corners and moulded surfaces were encircled. So there were no sharp edges in the kitchen. In order to save her design she employed for a patent and she was granted protection for three years. The *Spülküche* produced for the ÖVSK and displayed in 1922. But it did not mass- produced in large number. It become the model for the work niche or *Wirtschaftsnische*. It exhibited in the *Rathaus* in September 1924 and then placed in the new housing. (Blau 1999)

Figure 2.15 Cooking Niche, Margarete Lihotzky, Vienna 1922

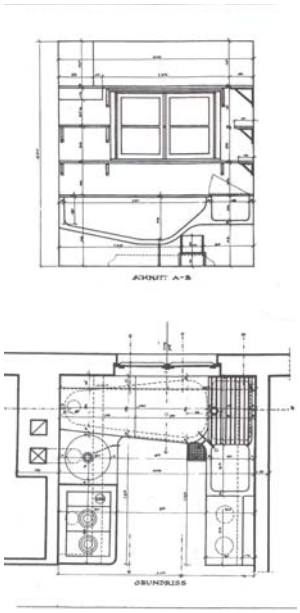

Figure 2.16 Kochnishen –Spülkücheneinrichtung, Margarete Lihotzky, 1922.

The new *Wirtschaftsnische* was a refinement of the Lihotzky model. Though connected to the *Wohnküche* it could also be closed off from it by curtain. Lihotzky equipped the new *Wirtschaftsnische* with a *Gemeinde-Wien-Type* gas stove next to a cupboard with five drawers; a sink with a shelf underneath it for buckets, pots, a drainboard with a shelf under it for different utensils; a tub with wooden cover that could be used as a table or work surface; a gas-fired hot-water heater that could enables water to tub or sink; a double burner cook-top; a folding table; a kitchen closet; with compartments with a cutlery; a rotating waste bin that could be emptied from the entrance hall; a folding stool; and a ironing board that flipped down from the side of the kitchen closet into the living area of the *Wohnküche*. The new *Wirtschaftsnische* measured 1.95 m x

1.60 m. The tub, sink, and cabinet underneath it, as well as the floor and 12 cm high base were all of a piece, which formed from seamless poured concrete. Spatial relationships were attentively planned and organized as well as the work ranges were calculated. For instance, cutlery could be taken by the left handfrom the work surface above the tub, then rinsed in the sink and latter returned to the drainboard, without the dishwasher having the stretch or pass anything from hand to hand. According to time-motion diagrams, traditional Viennese *Wohnküche* compared with the new efficient, space-and labor-saving *Wirtschaftsnische* which designed for the municipal apartments installed in the *Arbeiter-Zeitung* in May 1924.

In one of the city's new housing blocks, the taylorized work niche was installed. It was a building, which consisted of twenty six apartments at *Bergsteiggasse* 28, designed by Otto Polak-Hellwig, in 1924. (Figure 2.19) The city council were discussed the plans for this building particularly. Apart from the new kitchen, the apartments had other innovations. For example gas and electric meters positioned in the stairwells so that it could be read from outside the apartment. It was very important for tenents who worked outside the home during the day. A garbage chute planned in the stairwells, so that it could be emptied into bins in the basement. Some of them had built-in closets.

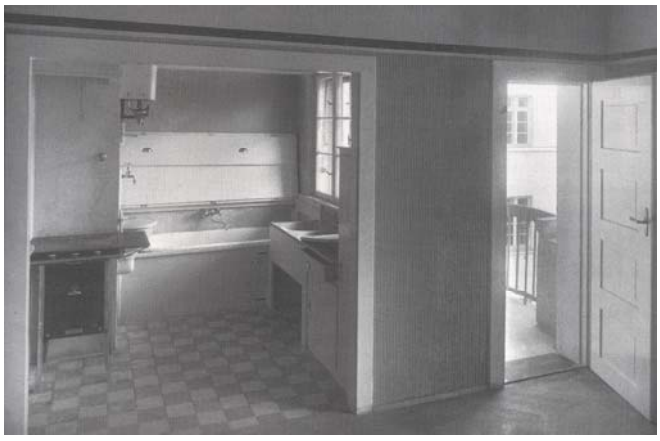

Figure 2.17 Bergsteiggasse 28, designed by Otto Polak-Hellwig, in 1924.

Tubs and built-in closets were luxury fittings and many of the municipal apartments did not have them. At this time apartments were unfurnished. Durability of materials and workmanship in the construction of building were comprehended subjects. After 1922, in all rooms floors were hardwood except for the kitchen niche, toilet, and balconies, which were poured concrete and covered with tiles. The walls were plastered, and the

ceilings were reinforced concrete. Windows were standardized wood and metal framed and had ventilation panels and wooden slatted blinds. Apartment walls were painted brightly, as green, orange, and yellow. The electricity came to the building. After July 1927, gas stoves were installed gratis in every apartment.

In September 1926, The International Town Planning and Housing Congress were toured the new housing blocks. The general verdict of the housing experts was that the Viennese apartments were too small and had too few rooms. City building officials immediately responded new apartment types. Aside from having more rooms, the apartments would also be provided with storage space in basement or attic, balconies, and gas and electricity. In the new apartment types, the *Wohnküche*, which was central space of proletarian dwelling replaced by a working kitchen. For these changes, Housing authorities in Vienna influenced by new plan types, which were developed in Frankfurt by Margarete Lihotzky and others, under the direction of Ernst May. According to Lihotzky, the area of apartment should plan as small as possible by increasing number of room. The *spülküche* or *Kochnische* was a refinement of the traditional *Wohnküche*, which Lihotzky had improved in Vienna according to double use of cooking as both cooker and living room hearth. Since the Frankfurt apartments were centrally heated, there was no need for open kitchen. As an ideal solution and most efficient use of space, Lihotzky and May decided that the cooking area should be separated from the living area, in order to make them interconnected spaces. So, the new kitchen developed by Lihotzky with the themes of efficiency and hygiene in 1926. Everything was designed to install into a small apartment. The division of space and the functional and ergonomic design of the furniture and appliances were served to make easier the job of the housewife by reducing the distance, between the fixtures. (Figure 2.20) (Blau 1999; Hauffe 1995)

It was a working kitchen for meal preparation but not eating or other domestic purposes. Frankfurt kitchen covered the worker with continuous counter top and was lighted the directly. The design covered with calculations of distances between sink, stove, dining table. The calculated distance of counter tops was 0,95m. She calculated the distance between stove and table as maximum 3m. There were two doors, one connected kitchen to entrance, the other which was sliding door, was to connect women to her family for communication. The ground was black ceramic. Because of the insects escaped from the blue, as being rational choose, the wood cabinets were polished as blue Frankfurt

Kitchen was equipped with a range of labor and space saving innovations, including canister-scoops for flour, rice, sugar, and the like; warming oven, dish drainers: a movable lighting fixture, a moveable stool, a foldaway ironing board, a cutting table with waste catcher. (Eroğlu 2000)

Lihotzky's Frankfurt kitchen became one of the most acclaimed creations of the Weimar housing programs. Lihotzky's Frankfurt kitchen created an immediate photographic impact with its interlocking parts, its modular totality, and its technical fittings. It was the realization of the kitchen as machine. Its tiny plan was scientifically calculated as the optimal dimensions by which every movement was totally efficient and every operation coordinated. (Henderson 1996)

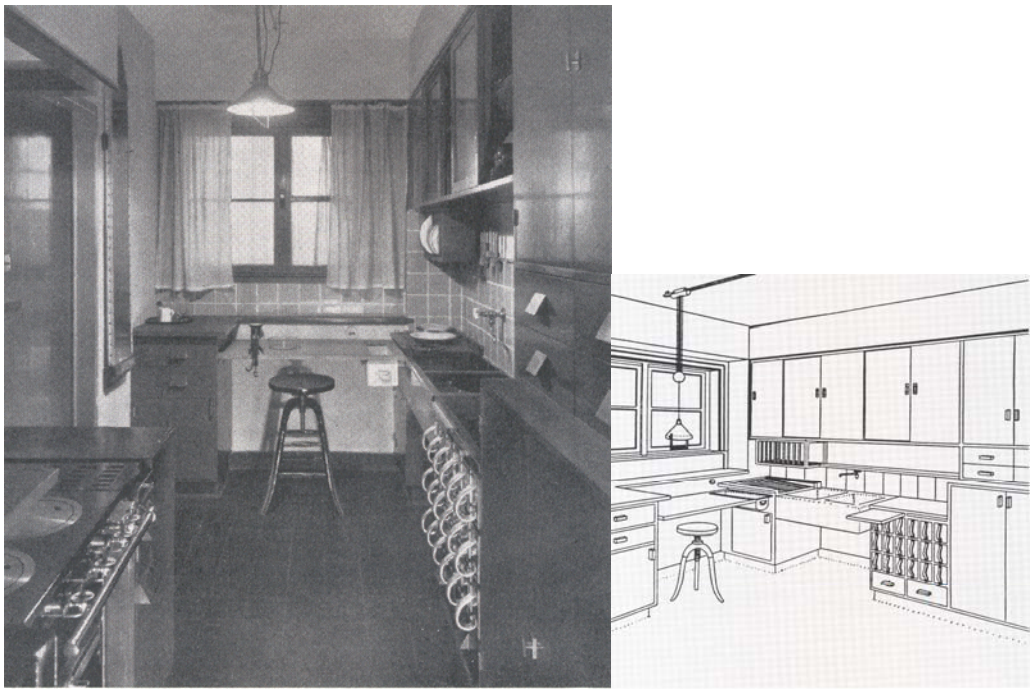

Figure 2.18 Frankfurt Kitchen, Margarete Schütte Lihotzky, 1925.

Although Earlier than Frankfurt Kitchen, there had been important stages, Margarate Lihotzky's design had unique power among all the various proposals for kitchen modernization.[11] As being unique, it transformed the kitchen into a consumer product. The Frankfurt Kitchen was a factory-assembled module delivered to a building site and lifted into place by crane. Ten thousand were installed in ten *Siedlungen* in Frankfurt

[11] The Kramer house kitchens were designed by Hermann Muthesius in 1919. Rietveld designed kitchens for the Schröder Family in 1924, in Utrecht and for the House of the Bruno Taut, in Dahlewitz, in 1926. As the other forerunner of the modern kitchen Mies Van Der Rohe designed more than sixty homes with their kitchens in Stuttgart.(Carugati 1998)

alone, but individual units were also sold in the late 1920's. In contrast, Meyer and Oud's collaboration at the *Weissenhof* Settlement, or Georg Muche and Adolf Meyer's model kitchen at the *Haus am Horn* in Weimar seem fragmentary and unresolved. (Figure 2.21, 2.22) (Henderson 1996)

Figure 2.19 Erna Meyer's kitchen, Weissenhof exhibition, 1927.

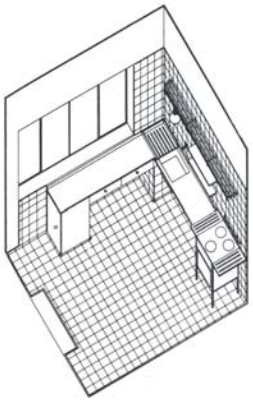

Figure 2.20 J. J. P. Oud's kitchen, Weissenhof exhibition, 1927.

With the conception of Frankfurt Kitchen Schütte aimed the rationalization of kitchen for women who worked as slaves of drudgery. But turning of the kitchen into laboratory and idealization of housework made women more dependent to kitchen and house. The more tools which came into kitchen to decrease labor, in fact they increased labor causing of the more tools for cleaning. Somewhat apart, women magazines tried to create a new women type who seem as mass production line worker or manager in fact who were great consumer of domestic goods. (Kaçel 1998)

2.2.2.2.2 AMERICAN EXPERIENCES: CONTINUOUS KITCHEN

Built-in cabinets were part of the Victorian bourgeois pantry. In 1890's, the standard continuous kitchen had emerged out of factory-made kitchen "dressers". At the turn of the century, the typical kitchen dresser was a single vertical unit that had been separated into a shallower top level and a deeper base. There had been a pullout counter that could extend the work surface extra and offer leg room for sitting down.[12]

The most prominent producer of kitchen dressers was The Hoosier Manufacturing Company.[13] The Hoosier focused on preparation and storage functions into a single unit. Mainly, the cabinets were designed to store both food and utensils. The more complicated models were outfitted with flour dispensers and rotating racks for jars of condiments. (Plante 1995)

In the late 1910's, the single kitchen dresser had been enlarged in order to cover modular systems of combinable units. The most common arrangement had consisted of a wide central cabinet with a projecting work surface, had been bordered by two narrower vertical closets. Such designs had been consisted of a closed A-B-A series of vertical bays symmetrically. More complex open systems of cabinets had been promoted in the late 20's. They had combined horizontal units as well as vertical ones in asymmetrical and expandable patterns. These wall systems had been used singly or in combination.[14] (Lupton & Miller 1992)

Figure 2.21 Steel kitchen cabinet, Bisk, 1922.

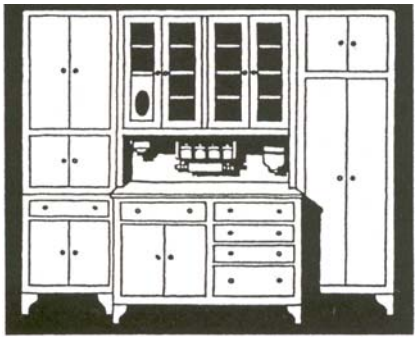

Figure 2.22 White House Line steel kitchen, 1930;available by 1918.

[12] In order to use space in efficiency, use of pull-out counter as sliding component.

[13] The name "Hoosier" became a common name for tall cabinets. Christine Frederick asserted, "The Hoosier has no frills. It is a scientific labor saving kitchen machine." The Hoosier followed contemporary theories of home economy.

[14]They were usually handled as detached furniture, although catalogues from the 20s include renderings of built-in units as well, connected to the ceiling with dry-wall soffits.

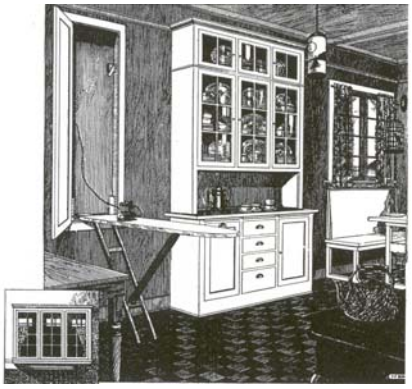

Figure 2.23 Kitchen furniture advertised, describing this cabinet as "labor-cheering, stepsaving built-in furniture" with fold-out ironing board and a breakfast nook, by Curtis Woodwork, 1924.

Figure2.24 Kitchen cabinet advertised by Hoosier Manufacturing Company, 1916.

Siegfried Giedion had considered the Kitchen Maid cabinets as the first standardized, combinable cabinets in the US, beginning in 1922-23. (Figure 2.25)

> "He discounts the importance of the American precedent, claiming it fails to consider the "work process." In fact, however, it embodied the theory of concentrating kitchen labor around specialized work/storage stations."(Lupton and Miller 1992, p.51)

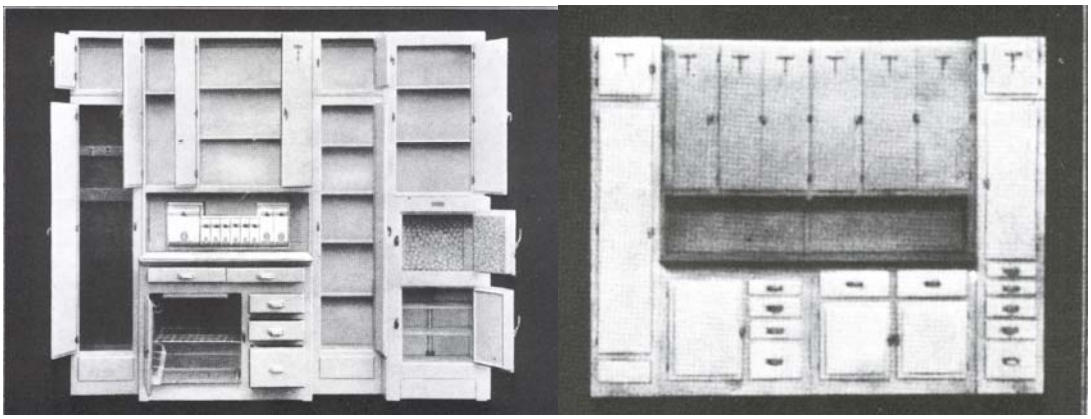

Figure 2.25 Kitchen Maid cabinets, 1929, assembled out of seven units.

Vari-Uni-Cab had been introduced as a new idea in kitchen cabinets by Variable Unit Cabinet Company. (Figure 2.26) They were modular and factory made cabinet systems. They had been designed in order to be assembled on a wall and pointed out as an expression of the domestic theories of the 1910's and 1920's.[15]

[15] "They also reflected modern principles of standardization and modularity, although by the end of the 30s they were superseded by the norm of horizontal base cabinets and wall cabinets." (Lupton and Miller 1992, p. 51)

Figure 2.26 The “Vari-Uni-Cab,” advertised in 1928 by the Variable Unit Cabinet Company.

Although the modular wall system was effective on the domestic theories of the period, it did not become a reputable norm. In the 1910’s and 20’s the sink had been positioned beneath a window, and had been bordered on either side with tall cabinets that had been called as freestanding "Hoosiers" or built-in units. In the beginning, such cabinets were firmly vertical in design, visualized as two tall units separated by a distinct sink, which commonly stood on painted metal legs modeled after lathe-turned wooden furniture. (Lupton and Miller 1992)

> “In another variation of this typical cabinet/sink/cabinet pattern, a unified countertop and sink formed a bridge between the two base cabinets. Designs of this type appeared in the 1910’s and became common— but not standard— during the 20’s. While the ensemble was still conceived in terms of a matched pair of vertical cabinets, the sink and work surface became a single horizontal plane.” (Lupton and Miller 1992, p.52)

This horizontal relationship had caused the kitchen to be conceived in two layers: **the base cabinets**, disconnected from **the wall cabinets**, could freely enfold the walls of the room.

> “Designs of this type appear in custom-built kitchens and pantries early in the century, but became a mass-produced reality in the late 20’s and 30’s, when kitchen cabinets were manufactured as modular, combinable systems. The most typical modern plans are the L, the U, the strip, and the galley; in the increasingly open plans of the 30’s, banks of cabinets could also form partial room dividers between cooking and eating spaces. The horizontal bands of modem cabinets became a powerful grammar governing kitchen planning and appliance design.” (Lupton&Miller 1992, p.52)

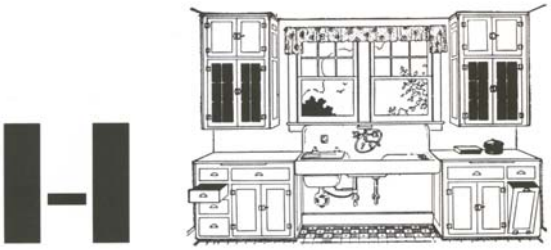

Figure 2.27 Standardized wood work, 1929; collection Baltimore Gas and Electric Company.

Figure 2.28Cabinet design from American Home, 1930.

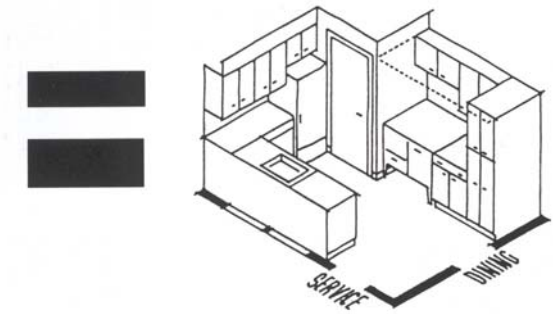

Figure 2.29 Drawings of a compact kitchen, Architectural Record, 1939.

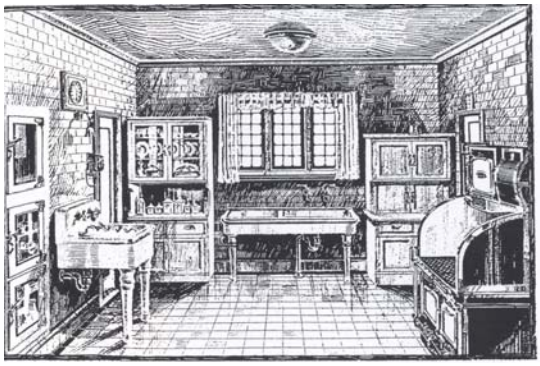

Figure 2.30Kitchen furniture by crane in 1920.

Figure 2.31 Kitchen pictured in American Home, 1930. The two tall cabinets were designed as vertical units.

2.2.3 STANDARDIZATION OF MODERN DOMESTICITY AND WOMEN ROLES

2.2.3.1 BUILT-IN FURNITURE

In 1924, as an experimental work, *Stadtbauamt* sponsored the construction of a small apartment building of thirty-three units with built-in furniture. It was designed by Anton Brener (1896-1957).[16] Brenner adopted German ideas of household rationalization and embraced the principles of Taylorism in "the house". (Blau 1999)

He was succeeded in convincing that *Stadtrat Siegel* to build his design for a municipal apartment building at *Rauchfangkehrergasse* 26. He had equipped throughout the building with built-in furniture. In the kitchen, there were built-in cupboards. In each room there were built-in closets. Unlike *Gemeinde-Wien-Type* apartments, living room and kitchen were detached. The living room and bedroom were heated and separated by closets. Some opened into the bedroom, some opened into the living room. The most striking innovation in Brenner's design was a pair of **foldaway beds**, which were in the living room and **stowed in a cavity** in the wall during the day. It was separated from the rest of the living room by a **folding screen** at night.[17] His design had also contained a large open loggia accessible from the staircase landing where built-in flower boxes had been placed. (Blau 1999)

In 1926 Brenner went to Frankfurt and he worked with Ernst May Between 1929 and 1931 he was at the Bauhaus in *Dessau* to teach. He returned to Vienna in 1931. Brenner's innovation had been criticized because of economic reasons and it could not find the opportunity to be generated. Although, **foldaway furniture** had reduced the size, it had increased the number of rooms in the apartment. The city claimed that the cost of building and the installation of the furniture were prohibitive. Installation fee was about 1,200 to 1,500 schillings. Most of the tenants could not afford. Even Otto Neurath who was a strong advocate of typological innovation, had claimed that built-in furniture was not ideal for tenants of rented apartments. Because of the fact that after paying its installation, they would have to leave their furniture behind if they moved. So, built-in furniture could not be carried out. (Blau 1999)

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[16] He trained and instructed with Josef Frank and Oskar Strnad at the *Kunstgewerbeschule* (1920-1925) and then with Peter Behrensand Clemens Holzmeister at the Academy of Fine Arts (1925-1926).

[17] In minimum dimensions of dwelling, space saving solutions of Brenner's can be accepted as one of the first example of mobility conceptions in modernity.

2.2.3.2 PROLETARIAN DOMESTICITY

The new proletarian dwelling had presented problems in furnishing both ideologically and practically. Though, the characteristics of proletarian dwelling were no longer high, narrow, and dark; moreover it was proportioned and bright with lower ceilings and numerous windows including various scaled furnishings. Municipality had requested for professional assistance from bureaus and other organizations in order to help tenants to find convenience and reasonably priced furniture and household articles.

Warentreuhand (good trust) where the settlers and tenants could order good, inexpensive furniture and other household articles had been established in 1922 by the ÖVSK and the *Gemeinwirtschaftlichen Siedlungs* und *Baustoffanstalt*. The aim of the "new trust" was not raising the quality of craftwork or using expensive materials, as Lihotzky emphasized. It required cooperation with industry in order to raise general standards of living of the working class.[18]

The municipality had sponsored a series of exhibitions related with housing where guests could visit. The exhibitions and model interiors encountered the new tenants' needs. They had adopted their existing furniture and needed to purchase in the new space of the municipal apartment. Department of Health and Welfare organized an exhibition on "hygiene" from 28 April to 30 June 1925 in the *Messepalast*. A model of typical municipal apartment was furnished with simply built wooden furniture so that the tenants could acquire available inexpensive contemporary furniture (Figure 2.32). Lihotzky had designed them for the Siedlung houses. The furniture were boxy and inelegant that looked in contrast with the English–inspired furniture, which were known as thin, lightweight ladder back chairs, benches, and gate-leg tables. Exhibited pieces were straightforward, unornamented in form and revealing construction. They were radically simplified models for the domestic spaces. Only one was very different from the standard types of interior spaces of apartments of the time that was furnished with bulky and heavily draped chairs, tables, and cabinets (Figure 2.33).

[18] The *Warentreuhand* had started with producing apartment furnishings and fixtures and then had expanded studies through the clothing, ceramics, and other articles of daily use.

Figure 2.32 Model apartment, Hygiene Exhibition, 1925.

Figure 2.33 View of apartment, furnished by tenant, Hanuschhof, 1923.

"*Wien und die Wiener*" was the best-known and largest exhibition, which was sponsored by the city. It was realized in *Messepalast* in 1927. Well-known architects such as Josef **Frank**, Franz **Schacherl**, and Karl **Schartelmüller**, Wiener Werkstatte designers Oskar **Haerdtl** and Josef **Hoffmann** had created new models for new domestic interiors. New models were small-scale furniture, which were functional and available for the new municipal apartments.[19] The new proletarian interiors had been shaped in *Gesamtkunstwerke*, which was integrally designed by Josef Frank. According to him "the concept of assemblage" was essential principle of interior design. He had integrated found objects, which were affordable and available from commercial vendors. The unchanging theme of the exhibition was **accessibility**, **affordability**. They were about the good inexpensive objects.

The Advice Bureau for Interior Design and Domestic Hygiene of the Austrian Association for Housing Reform was known as the acronym 'BEST'. It had included a permanent design center and an exhibition space, where the temporary exhibitions had taken place in the late 1920's. It had been created in December 1929 and housed in the Karl-Marx-Hof. The purpose of the new permanent design center was to give advice to tenants about to furnish their new apartments and to introduce new furniture and industrial design.

Ernst Lichtblau had been the director of the BEST. He had organized his own design firm on the production of objects of everyday use with modest workmanlike materials.

[19] The starting point for design was consumption rather than production. So individualized consumers have begun to appear…

The Advice bureau had run by as the director of BEST, Lichtblau, the secretary of the ÖVSK, and fellow *Werkbund* members Josef Frank, Walter Sobotka, Carl Witzman, among others) and organized lecture series including architects and designers, and other Austrian *Werkbund* members. A model interior of municipal apartment had been furnished with articles, which were designed by Lichtblau and others (Figure 2.34).

Figure 2.34 The Good Inexpensive Object, BEST Showrooms, From Der Kuckuck, 20 December 1931.

The purpose was to show the production of good, inexpensive, and technically innovative contemporary design and to demonstrate how such furnishings could be accommodated and arranged in a typical working-class apartment to make the most effective use of available living spaces. The emphasis was made on **small-scale, space-saving, and multipurpose articles**. There were lacquered **steel folding chairs and tables** (painted in primary colors), carpets and rugs, small wooden side tables, and **innovative space-saving items like a collapsible child's play table that could be easily stored behind a door or cupboard, foldaway beds**, linoleum covered serving trays, and etc… Admission to all exhibitions, events, and lectures, and consultation services were free.

Attendance to the BEST was large in scale and it was considered as a success. Moving into a municipal apartment was the beginning of a new way of life. Tenants did not have to fear of landlords for arbitrary eviction. Before the war, several times they had been obliged to move, but they no longer had to move more than several times in the post war period. They had home, though they had a life. They no longer had to share their home with strangers and they could afford and count for staying for a long time. They had chance to invest the dwelling itself and to furnish it as they wish.

Furnishing the new apartment involved accommodating possessions then acquiring the additional furniture and household articles. Tenants were subjects of their own living space. They wanted to personalize their own spaces.

The city officials did not sustain the idea of fitting the new municipal apartments with built-in furniture. Viennese working-class tenants were allowed to bring personality to the new space. The city officials had capitulated the popular taste of a proletariat not yet raised to full class-consciousness and still desiring to middle class luxury. Furnishings of traditional working class that was knick-knacks and trivial trinkets, scorned by architects and socialist intellectuals. They had their place, along with the traditional working class *Wohnküche*, in the new proletarian dwelling as well.

Harshest criticism had come disparagingly among the proletariat for holy pictures, pictures of royalty, postcards, and vulgar reproductions and particularly antimacassars used to prettify the furniture.

> "Clearly, as Richard Wagner himself pointed out, the Social Democrats had failed to develop a cultural theory comparable to the party's political theory. Taste was loosely construed to be a matter of class-consciousness. Accordingly, it was assumed that once the working class had achieved political self-realization, cultural self realization, would follow; the proletariat would naturally reject the sentimental trinkets of petit bourgeois culture in favor of cultural forms that followed directly from the character of its own social and political organization, defined by Neutrah as objective, egalitarian, uniform, clear, and straightforward." (Blau 1999, p.193)

Franz Schuster and Franz Schacherl had discussed this position. According to them the Viennese working class was not receptive to such innovations as built-in furniture and the austere functional forms of Bauhaus-inspired furniture design.

> "Because the proletariat - particularly in Austria - was not interested in understanding or deeper sense of its own domestic culture. 'What most proletarian understand as a well-furnished dwelling is such a deceitful and false illusion that we must do our utmost to disseminate true concepts of proletarian dwelling types,' they announced and continued:

> What (the proletarian) understands by individuality or personal taste is nothing other than the collective expression of other social classes. No matter how impersonal, how little individuality exists in a bourgeois dwelling with all of its deceitfulness, it appears to the worker as something to strive for. He takes over, without a thought, all this obsolete dusty forms and believes that he has achieved his own domestic culture. He fears simplicity, clarity, and objectivity in his home, fears that if he furnishes it simply and objectively all poetry, culture, and art will disappear from his dwelling.
>
> The root of Viennese working-class resistance (and the resistance of low-level Social Democratic building officials) to built-in furniture and other space- and labor –saving innovations, they maintained, was a lack of class-consciousness, a failure of proletarian cultural self-realization. ” (Blau 1999, p. 194)

As mentioned by Schuster and Schacherl, proletarian *Wohnkultur* was ‘the culture of objectivity, hygiene, and clarity. All of these were created for the most efficient and satisfying environment for the housewife and they would lead to free domestic labor. They implied that the women are not free in society as she wastes her time cleaning the many nooks and crannies, dusting the insignificant knickknacks. Up to them proletarian were cultured to refuse the out of date trinkets of bourgeois domesticity, approving their own domestic culture of “objectivity, cleanliness, and clarity.” (Blau 1999)

Bruno Taut put forward the same discussion, which was about the new functional aesthetic, in The New Dwelling: The Women as Creator in 1924.[20] Similar to Schuster, the defense of Taut was on the austere, organized, uncluttered interior that had decreased the domestic work of the housewife. Traditional gender roles took issue with the **conventional division of labor in the home** which was a very important question **that assigned housework exclusively to women**. This point was the failure of architects during this period to address the role of women, and the lack of ability of either democratic socialism or democratic capitalism in interwar Europe to consider nontraditional roles for women inside the context of radical programs of housing and urban reform. (Blau 1999)

[20] He expanded this theme in 1926 again in an article in *DerAufbau*, conceived as a, conversation between two women: Frau Schubert, and Frau Tausendschön. Frau Schubert lives in a minimally furnished functional modern apartment. Frau Tausendschön lives in an apartment with memorabilia she and her husband have collected during the many years of their marriage. Frau Tausendschön can never find anything and is always tired of cleaning her many trinkets, while Frau Schubert, creative by housework moreover she has time and energy for herself.

2.2.3.3 THE STATUS OF WOMEN

- **The Role of The Housewife**

The term "housewife" that reflected changing attitudes about women's role at home, began appearing in popular magazines during the 1920's. Through the term of the housewife, the wife's role was a "mate." The middle class housewife have wasted time with daily work toward being an acceptable marriage partner.[21] So they were in charge at home. (Plante 1995)

> "Her list of household chores included daily work such as cooking the meals, making the beds, cleaning the bathroom and doing the dishes. She also had weekly tasks to attend to such as the mending, laundry and ironing as well as seasonal or occasional jobs such as heavy cleaning, washing curtains, organizing closets and so on. Women were advised to prepare a schedule or routine that would suit their family and life-style, and whether or not they employed outside help was a factor to be considered. In order to be interesting and entertaining, the housewife was encouraged to have planned activities out in the world such as club membership, church activities, shopping or visiting with friends. It was also wise to plan time during the day to read the newspaper or latest issue of a magazine. In this way she'd be informed and capable of conversing about daily events. " (Plante 1995, p.241)

The compact and colorful kitchen of industrialized household of the modern ages has become crowded with increasing number of electric appliances, brand name packaged foods and household products. Advertisers had targeted the middle-class housewife in order to encourage sales. Naturally, as a profession of daily works, women have established the connection between domesticity and consumption.[22] The 1920's was a period of active consumerism and the "de-skilling" of numerous household tasks such as home canning, cooking from scratch, sewing etc. (Kaçel 1998)

Many middle-class women were proud of their modern appliances and colorful workroom, although they were plagued by the monotonous, mindless, repetitive tasks. World War II was a decisive factor in this concept of the middle-class woman as "housewife" or "mate" by the help of economic boom and feminist movement.

- **From "Housewife" To "Individual"**

The war came to close women who went back home to take up again where they had left off. Between 1945 and I960 the concept of housewife continued. They focused their energy on their husband and children and being a good marriage partner, and at the

[21] Home economists regarding the women's role as a profession and acceptable marriage partner wanted them to college education.
[22] Lefebvre has described the dependence of domesticity to consumption in the theory of daily life.

same time taking care of their home. With the economic boom during the 1950's the home had been considered as a "safe haven" apart from rapid industrialism and the problems taking in the city. So, houses in the suburbs were increased in number and suburban American families had considered them as places of safety after the Cold War.

Through the late 1950's and early 1960's women had increasingly depressed with their role and their identity as a "housewife. "The Feminine Mystique" by Betty Friedan was published in 1963. Friedan's book explored the dilemma of the housewife and her seeking creative work or a career. Finally author considered women as individuals in their own right, instead of accepting them as servants within their own house. (Plante 1995)

As a twentieth-century phenomenon, in fact a feminist movement had been under way since the nineteenth century. When Charlotte Perkins Gilman wrote her book, Women and Economics, in 1898, she had encouraged women to work towards economic equality with men. She had loyally believed that the home and all manner of housework were outdated and should be dealt outside the home that the general public could utilize to obtain meals, etc. She defended that there would be houses without kitchen. (Kostof 1986)

In 1949, an article, "Women Are Household Slaves," by Edith M. Stern told readers:

> "When a man marries and has children, it is assumed that he will do the best work along lines in which he has been trained or is at least interested. When a woman marries and has children, it is assumed that she will take to housewifery. But whether she takes to it or not, she does it. Such regimentation, for professional or potentially professional women, is costly both for the individual and society. For the individual, it brings about conflicts and frustrations . . . The educated individual should have a community, a national, a world viewpoint; but that is pretty difficult to get and hold when you are continually involved with cleaning toilets, ironing shirts, peeling potatoes, darning socks and minding children." (Plante 1995, p. 283)

The National Organization for Women (NOW) was established in 1966 and by the early 1970's the "women's liberation" movement was well under way. Only 25 percent of American women had a job away from their home in 1940. In 1974 according to statistics that almost half of the married women with children were employed either full time or part time.

During the late 1970's and the 1980's, as a result of the increase in number, most of the women went to work. So, the concept of "housewife" had disappeared from the

vocabulary. With the economic factors such as the cost of living, housing and so on women felt herself that she had to work.

From housewife, to workingwomen, during the twentieth century, women had considered that with each step forward, there have been personal rewards as self-esteem and conflicts;

> "The two-income family became a necessity for many middle-class couples to maintain their standard of living. As women went to work a great deal of attention was focused on child care and the division of labor within the home. Husbands were expected to share household chores and while this was wonderful in theory, it was far from the norm. Many women realized they had not one job but two—the cooking, cleaning and laundry work was being done by them during the evenings and on weekends." (Plante 1995, p. 284)

Today one thing is absolute "if middle-class women return to their kitchens it will be because they want to—not because the precepts of womanhood deem that they have to." (Plante 1995, p. 286)

2.2.4 STANDARDIZATION OF THEORY AND DESIGN IN INDUSTRIAL DESIGN DURING TWENTIETH CENTURY

In general, the designer intends to make possible production or to attract the consumer through visual sophistication. For the designer, the process of form-giving is a steady problem and he has inspired many and varied approaches through this and the last centuries.

Before the birth of the new profession of industrial design in the 1930's, form giving was a work of individuals related with craft, architecture and the fine arts who have assumed this problem with their minds and hands individually. After that time, design theory has been transformed from the specific problem of form-giving into the preserve, primarily, of non-practitioners, among the design propagandists, sociologists, anthropologists, cybernetic theorists and semiologists. (Sparke 1994)

By the turn of the century a considerable amount of design theory relating to form had already been developed. Most nineteenth-century ideas were produced with little effect upon the mass of objects at that time. A filtering process as a determination of what was desired by a small elite group of today was made available for a much wider market of tomorrow. In this context, it is therefore useful to trace the origins of some nineteenth-century attitudes towards form in design in order to understand the problems and prejudices inherited by the following century.

2.2.4.1 NEW ROLES: ARCHITECTS, AND ENGINEERS

John Gloag who is an architectural historian, has mentioned that there were two kinds of form-givers in Britain in the mid-nineteenth century, architects and engineers. He calls architects as putters-on of styles. And at the same time, he calls engineers as putters-up of structures. The energy created by the dialogue between these two approaches inspired most of the design theories of that period. While the architect was creating styles for the new affluent, status-conscious consumer, the engineers focused on the technical problems with aesthetic dimension and wanted to transform new materials - notably iron and steel - into new machines and structures. For the most of the engineers the mathematical resolution of structural problems was the method to correct form; function, not aesthetics, inspired all his designs. (Sparke 1994; Conrads 1991)

Design reform in the nineteenth century was approached from two fundamental perspectives: one looked at tradition for a design method while the other sought new ways of solving the problem of style. The first was to lead to a re-evaluation of the implications of the craft process and of man's relationship with the natural world while the other looked at the aesthetic implications of mass production.

The design of the new machinery, however, remained predominantly in the hands of the engineer and the manufacturing team and in this period it did not form any part of the concerns of the progressive designers. It was some time before the machine aesthetic was formulated and applied, ironically, first to architecture, second to the decorative arts and finally to machines themselves - was the dominant design style of the day. First, a strange process had occurred whose aim was to develop consciousness and to become theoretical which had been previously unconscious and determined by forces out of man's direct control through the technology of materials and production in the aesthetic of mass-produced objects. (Sparke 1994)

Consequently, the move from the nineteenth to the twentieth centuries was simply a matter of leaving behind the natural world and the individual as the symbolic source of the language of mass-produced objects and of adopting, the metaphor of the machine and the mechanized environment as the stimuli for a new theory of form. The transition was, however, a gradual one. While the engineer continued to treat technology as a fact, the architect, seeking a new aesthetic, began to perceive it as a source of symbolic

inspiration and to inject it, metaphorically at least, into his designs. Thus terms like 'function', 'materials', 'standardization' and others referring to the necessary, internal properties of the machine-made, mass-produced artefacts, took on a significance for the generation of architects who set out to evolve the machine aesthetic. (Sparke 1994)

2.2.4.2 NEW CONCEPTS: MACHINE AESTHETIC, GOOD FORM, STREAMLINING

- **Machine Aesthetic**

During the 1920's many architects were stimulated of both the work of the engineer and the machine itself as sources of symbolic inspiration and the technological advances in building construction in formulating their new aesthetic. The interwar movement in architecture and design, the Modern Movement embraced in Holland, the USSR, Germany, France, the USA, Austria and a number of other countries, was characterized by its fascination with the machine and the industrialized environment.

In product design the main criteria was the problems of technology, and mass market. But paralleling the developments in architecture, some aesthetic developments were made in this period. One prominent example was the work of the architect, Peter Behrens who went on to design a number of small electrical appliances, kettles, fans, and so on for the A.E.G. He designed, technically determined products of early mass-production industry.

In the 1920's, such as bridges, grain-silos 'type forms' and mass-produced objects were characterized by the work of Le Corbusier, in France. He based his architectural principles on the postulations of mechanization. He considered the industry and the aesthetic 'purity' of standardized artifacts. He claimed that mechanization is based on simple geometry, that have its language and indicates order. For Le Corbusier and others, the machine entailed undecorated geometric form attaching an abstract force with a strong visual, cultural and spiritual symbolism to it. In social terms, machine aesthetic implied a democratic approach to design, while nineteenth-century naturalism was related with conservatism and elitism. (Sparke 1994)

At the Bauhaus in Germany in the 1920's, the purpose of Walter Gropius, the director, was to apply 'basic' or 'elementary' forms to mass-produced goods and, finally, to architecture. Wassily Kandinsky and Paul Klee who were foundation-year students

taught how to articulate the language of geometric form and elementary composition in two and three dimensions rejecting all memories of naturalistic realism and historicism.

Marcel Breuer, who was a student from the Bauhaus, formulated the principles of objectivity and universality. Breuer's work affected De Stijl Movement in Holland, and the aesthetic ideas of Russian and East European Constructivism. Although the Bauhaus was emotively craft oriented, many of Breuer's designs were highly suitable for mass production and were certainly later mass-produced in large numbers. Inspiring the strength and lightness of the bicycle, Breuer explored the possibilities of tubular steel. He found the technical solution of the questions originating from the aesthetic of this material. With his chair studies in tubular steel, Breuer underlined the Modern Movement's commitment to lightness rather than weight and to space rather than mass.

Figure 2.35 Wassily chair, by Marcel Breuer, 1925.

The conversion of the architecturally dominated machine style into machines themselves was slow. Once mass consumption of domestic equipment became widespread. Many manufacturers appreciated the advantages of the ‘modern style’. By the early 1930’s automobiles and domestic and office machinery began to look like integrated objects as a result of both new production technologies and the desire for a modern look. The US industrial designers were all dedicated to, at least in their writings, the purist ideas about form in Europe. The US designers lacked, however, the political and social idealism that inspired their European counterparts. Soon their slogan ‘styling follows sales’ had replaced the more purist 'form follows function', and the machine aesthetic had been transformed from a philosophy into a marketing device.

- **Good Form**

By the end of the Second World War, as showing the direction in the development of form, it was seen that the simple black and white boxes had dominated the product design in the 1960's and 1970's. Good Form that called either the 'efficiency style', or the 'new functionalism' was characterized by functionality, simple form, utility, durability, timelessness, order, clarity, suitable materials, finished details, technology, environmental responsibility, ergonomic design.[23] **Designers had finally transferred the machine aesthetic from architecture into product design**, thus one of the dominant visual languages of the second half of the twentieth century had been created. (Hauffe 1998; Sparke 1994)

After 1951 The German electrical company, Braun, created an image of electrical consumer goods and reflected the spirit of the age, and the principles of Good Form.[24] Braun dedicated itself to the geometric forms related with the rationalism of machine production. The whole object was an exercise in harmonious composition and geometric simplicity. There were no superfluous details added to the machine's essential features. (Hauffe 1998; Sparke 1994)

Figure 2.36 Braun Phonosuper SK55, 1956.

In the years after the war, England, Japan, Italy and the USA compulsively followed the German style where design formalism arrived at its peak in the objects of pure geometry. Thus the concept of 'good form' developed in Germany.

[23] Designers began to think of themselves as engineers more than creators. This changing tide caused to emerge the field of ergonomics.

[24] Braun Coorporation was the reflection of the Ulm Academy, which had great impact on evolution of 'Good Form'. The company has guided the other company with its functional designs and consistently modern corporate identity.

- **Streamlining**

Streamlining, the design style, rapidly became an extremely fashionable and symbolically strong part of the modern environment, in America. As a technical term, streamline refers to the path of a particle in fluid as it passes beyond a solid body in the late nineteenth century. The study of streamlining started as related with part of the new science of aerodynamics. The meaning of streamline, dating from 1913, is to design or construct with a streamline, in order to modernize, to organize, to make more efficient and simple. Synthesized aesthetics and technology was the real achievement of streamlining. (Heskett 1995; Lupton and Miller 1992)

Figure 2.37 Pencil sharpener, by Raymond Loewy, 1933.

Its supremacy lay in its presentation of power, speed, mechanization, and the future. As a symbol of dynamism streamlining had formed many products, from buses to baby carriages, from coffee machines to pencil sharpeners, refrigerator, washing machine, iron and so on… They all had been formed by the influence of streamlining and which were so important to the new hygienic and efficient US life-style. Wide availability and low price made the streamline popular, related with the introduction of new production techniques, such as steel stamping and die-casting and new materials such as plywood, plastics, and sheet metal… The curved radii and bulbous forms seemed in order to reduce material costs and hand labour but in fact, it was not more important, because of the fact that, as Harold Van Doren declared, that 'the public likes the smooth, easily cleaned, nearly jointless surface'. So encircling innumerable American products in the 1930's, convincing philosophy of bodily hygiene and domestic discipline streamline symbolized in the modern bathroom and kitchen, offering technological environments for the care of biological and economic consumption. The industrially finished yet organically modeled forms pointed out a plastic celebration of waste. (Lupton and Miller 1992; Hauffe 1998)

By the late 1930's streamline had entered the popular vocabulary of international design and taste and had been absorbed into the mass environment. Along with a number of other foreign-based-styles, the US mass market received streamline enthusiastically. [25]

2.2.4.3 NEW MATERIALS, TECHNICS, AND FORMS

During this century, the innovations of new materials and production technologies have encouraged designers responding by inventing ever new and appropriate product forms. Since the early days of industrialization, manufacturers of consumer goods have increasingly searched for cheaper as a meaning of mass production and have continually alternated new materials instead of more expensive traditional ones.

- **Iron and Steel**

In the nineteenth century, most of the progresses were realized in the area of metals. Innumerable new machine tools were improved as the screw-cutting lathe, the block-making machine, the woodturning lathe, the planing machine, the band saw and the grinding machine. As result of cast or wrought state of iron, and later appearance in the form of steel, iron was the material of the day. Iron was used in the Art Nouveau style in the decorative balconies, staircases and metro stations, and in the hands of architects like the Frenchman Hector Guimard and the Belgian Victor Horta, came to symbolize a new style for a new century.

Aside from that, on a less decorative front, firstly the USA utilized steel on car body. First use of the new steel-stamping machinery was realized as an innovation, too. Britain quickly comprehended the potential of this development, and Morris Motors convinced the US company and soon patented the new process.

Steel-stamping was also used in the manufacture of body-shells for the new domestic machines like refrigerators, washing-machines and cookers. Cast-iron was used mostly in Traditional craft-manufactured products, like furniture, and also used in the manufacture of pipes, flat bars and rods. This material usually intended for the garden but occasionally for the domestic interior as well. In this area The USA behaved more daring, producing from the 1840s onwards a huge collection of innovative furniture in cast-iron. This innovative furniture collection distributed widely, often through

[25] For the first time, a number of alternative design styles became more widely available than ever before and their consumption permeated all levels of US society.

catalogues, with the help of mail order. While most were training in stylistic revivalism, a few were the more functional forms of the following century.

Behind the search for a new material, the major inspiring factors are constantly the need to decrease costs and to increase efficiency. Bent-steel was strong and long lasting as well as elastic. In nineteenth-century furniture designs, traditional styles were imitated using this material. A small number of efforts were achieved using the new material as visual innovation. In the USA, cost and efficiency offered the good reason for the rejection of a traditional material like wood, and it was not until the introduction of tubular steel, bent plywood and plastics in this century. So furniture designers really started to react aesthetically to the potential of new materials, inventing and searching new forms for them that were suitable to the spirit of the modern times. (Sparke 1994)

- **Aluminium**

During the interwar years aluminum had the strongest effect on both the manufacture and the design of products. Aluminum combined the strength of iron with the conductivity of copper. As newness, this feature of aluminum was being searched since the nineteenth century. Until the turn of the century, it was not possible to isolate and purify aluminum and to manufacture it in adequate amount and at a low-enough cost in order to make it commercially possible. In Britain, British Aluminum Company was established in 1894. (Sparke 1994)

In the years of the Depression, there was strong demand for ever-cheaper consumer goods, so the application of new materials and production techniques supported in the USA. There was no doubt, the production technology developed according to the structural requirements of the materials, which had a great impact on the finished forms.

"Aluminium, for example, could be cast, pressed, or spun and every product made from it showed signs of its particular method of manufacture, whether in its general outline, the radii of its curves, or the expanse of the metal employed. Features like ribbing were also usually structural necessities rather than decorative afterthoughts." (Sparke 1994, p.129)

Its weightlessness, its resistance to corrosion, its high thermal and electrical conductivity, and its formal flexibility made aluminum appropriate for a number of different purposes. While aluminum was much used both in streamlined objects as an answer to structural requirements and in interiors for having a decorative role as painted in various colours and polished. In the canning industry, aluminum was used extensively as a combination of lightness and strength. For the manufacture of canning

and manufacture of collapsible tubes that contain toothpaste and similar products, lightness and strength made aluminum the perfect material. Although the cost of aluminum is more expensive than tinplate cans, aluminum is preferred. Because aluminum could be stamped easily, which saved labels. Designers in other countries also considered the design potential of aluminum. The Swiss National Exhibition of 1938, in Zurich implied new developments in aluminum technology, in terms of both alloys and hardening treatment. The construction of Exhibition Gerrit Rietveld who was the famous "The Dutch De Stijl" designer, also designed an aluminum chair in 1942 at the same time, the Englishman, Ernest Race's aluminum chair was displayed at the "Britain Can Make It Exhibition" in London in 1946. They expertly combined the material's flexible qualities with lightness and strength in the chair. This exhibition enthusiastically showed how progresses made in the technology of aluminum, as well as plywood and plastics. (Sparke 1994)

Following the Second World War, however, aluminum was almost replaced by plastics, it has continued to be utilized in the industrial and capital goods sector, chiefly in components production, but has had less influence on the exterior design of products. Anywhere and every time the relation of weight to strength is imperative, although aluminum has a (nasıl bir part) part on the whole, it has diminished into the background as a material with a modern image. But since the oil crisis of 1970's there are signs that it might again come into sight.

- **Plastics**

In the second half of this century plastics, like aluminum, became available in a wide market, and grouped together under the umbrella as the origins of the synthetic materials.[26] By the interwar period, plastics had become a part of the manufacturing process of a huge range of goods. The head reason for use of plastic was economics and its potential of becoming a mass in daily life, and the potential of making products appear more luxurious. (Hauffe 1998)

[26] Early examples of polymer materials, Celluloid patented in the USA in 1869; Casein patented in Germany in 1897, and Parkesine patented by Alexander Parkes, a Birmingham inventor, in 1864. In 1909 Dr Leo Baekeland first introduced Bakelite, a brown material which was first used in electrical fittings and was soon extended to telephones, wireless cabinets and ashtrays.

The main important feature of plastics was the capability of being moulded. The ease of moulding was the characteristic of the plastics, although other techniques such as casting, machining, laminating and rolling were also commonly employed. So much progress has been achieved in developing the alternative forms of moulding plastics through this century. [27]

The aesthetic requirements were limited by the production method. There was an important role for designer but the collaboration of the designer and the plastics engineer was also necessary. Some particular requirements were needed for particular processes. Some visual components of plastics design which has emphasis on curves, the compositional role of the 'parting line', colour and size are limited technically, so the designer has to work together carefully with the engineer. (Sparke 1994)

Figure 2.38 Plastic ball chair, by Eero Aarnio, Finland, 1963.

After the Second World War, there was a problem about the aesthetic quality of plastics. Discussions about the image of plastics highly increased. It was considered as the meaning of 'cheapness' and ‘shoddiness’. Aside from that some outstanding examples proved the strong aesthetic quality of plastics. Few progresses were achieved in this field in Britain and it was followed by Italy and Germany using plastics' full aesthetic potential. [28]

[27] The technique of injection moulding was very simple: at first, the material was heated, then forced into the mould hole and then cooled by water or air. The die was opened and the ejector pins push out the moulded part. This technique was largely employed in product manufacturing in this process.

[28] There are examples of plastics design, like the work of Gaby Schreiber designed for a company that name was Runcolite which was headed by a manufacturer who believed that plastics products could be better if professionally designed, of David Harman Powell who designed for British Industrial Plastics, and that of Martyn Rowlands who designed for Ekco Plastics. Italian designers like Roberto Menghi, Marco Zanuso and Vico Magistretti and

At this time, as a result of both the increasing production costs after the oil crisis of the early 1970's, and the ecological problems, the popularity of plastics is weakening exactly. Manufacturers are more and more in search of new materials, often returning to metals as the only practical solution.

These new materials had immediate effects on two levels. The first level was related with economics and aesthetics. The second level was the symbolic relationship of man with his material environment. The second level pointed out a mood of optimism and excitement with a commitment to the present and to the future through the discovery of new materials. (Sparke 1994)

companies like Kartell, Brionvega and Artemide arrived at visual sophistication in the design of plastics household equipment, electrical equipment and furniture.

CHAPTER3

ADAPTABILITY CONCEPTIONS IN MODERN KITCHENS

3.1. MODULARITY AS ADAPTABLE CONCEPTION

Today, the modern kitchen is styled as a system with the principles of modularity, flexibility, and prefabrication. Design of modern kitchen is realized matching modular boxes, which fit together in a variety of ways. There are no separate appliances as sculptural objects. The kitchen design is generalized as repetition of similar units.[1]

While modularity, flexibility, and prefabrication support the meaning of each other, simultaneously, they underpin the concept of mobility. The modularity as supporting concept of mobility enables a flexible variety and interchangeability among parts. Modules can be easily fixed, reconfigured and mobilized. Both mobility, and modularity are realized in flexible concept with flexible methodology or guideline rather than an exact method. Components and units introduce any number of design variations, in modular coordination.

3.1.1. MODULARITY IN MODERN KITCHENS

Design of modern kitchens as modular units, their mobilization as moveable components and free-floating objects began to appear with evolution of furniture production in the United States in the nineteenth century.

Discovering the range and capabilities of woodworking machinery had occurred in the United States. Use of new materials completely changed the nature of furniture production. Timber is not a homogeneous material, which was one of the great skills of traditional craftsmen, such as cabinet-makers, coachbuilders and wheelwrights. Timber is hard to have a true or constant straight line; the grain and strength will change. On the contrary, dimensions and homogeneous materials must be used, in mechanical working. By the early twentieth century, timber technology was developed and new products such as plywood, blockboard, chipboard and hardboard began to be produced in large quantities. National standards organizations formulated Dimensional specifications. Adaptable sizes were produced to standard formats, simultaneously with quality specifications that pointed out their constitution, potency, and appropriateness for

[1] In conventional production, craft skill man had shaped furniture as separate pieces. Sideboards and cupboards were the means of style and decoration. These items were considered and used as separate sculptural objects.

various purposes. The results of this process were transmitted throughout the formed end-product by an enlargement of the concept of standardization to hold three-dimensional form, offering a standard unit of area: a module.

> "A modular system of furniture, however, is composed of a set of units for various purposes which, being designed in multiples of the standard dimensions, are compatible, and capable of being arranged flexibly to suit the space available and the needs of the user."(Heskett, 1995, p.74-75)

In the United States in the 1880's O.H.L. Wernicke had produced a system of unit bookcases. All four sides of unit were interlocking. In the 1920's, when several American and German firms began to market 'combination furniture', the idea began to have wide currency. In fact these designs were not modular systems, they were a series of compatible units and a half-way stage through the modularity. Carl Nies advertised the 'Musterring' collection in Germany. (Figure 3.1) It was described 'Build-on Furniture', and marketed with the slogan: 'Choose for yourself, furnish for yourself.' It included cupboards, cabinets, shelves and bookcases for living-rooms, and really made available a great measure of flexibility. Exception of corner-pieces, the parts were formed as rectangular, in order to link units on two sides of a room. All were designed for fitting flush to the walls.

> "Their simplicity not only matched contemporary taste which had moved away from rich decoration, but can also be seen as a manifestation of the materials and mechanized processes used in their manufacture. Since modern timber-products such as blockboard and plywood are unsuitable for detailed surface working and are most effectively utilized in simple sections, flush unpanelled doors were introduced. Warping is less than with these materials than with natural timber, the planks of which needed encasing in a heavy frame to hold them rigid." (Heskett, 1995, p.75-76)

Figure 3.1 The 'Musterring' collection, a half-way stage through the modularity, by Carl Nies in the late 1920s.

By the 1930's such systems that were designed as completely modular, began to be appeared in many countries. However, It is not clear, which design was the first totally modular. One of the most advanced examples was, from the Netherlands, *Bruynzeel* kitchen. (Figure 3.2) It was designed as a full kitchen system, by Piet Zwart. In Zwart's design of 1933, kitchen cabinets were designed under a continuous working-surface. He comprehended that the advantageous of designing kitchen furniture as a complete package, with standardized units according to the condition of mechanized mass-production. In 1935 Zwart attempted to work on the kitchen with great concentration, simultaneously with the firm's technicians. So, the *Bruynzcel* kitchen production started to become available in large quantities, in 1938. It was designed to be so flexible that for any surface area, a satisfactory kitchen including a dining area could be built up. Zwart provided the range of fixtures and fittings in flexibility, in the various units. He carefully designed racks, drawers, clips and hooks for accommodation of various equipment and appliances.

> "Most systems of the time left a gap for free-standing stoves and refrigerators, but in the Bruynzeel range these, too, were designed as modular units, so that no matter how small or large a kitchen might be; they could be fully integrated. The result, in whatever combination the components were assembled, was intended to be attractive and functional. Zwart later commented that he saw his task as bringing aesthetic quality to add to sober efficiency." (Heskett, 1995, p. 76)

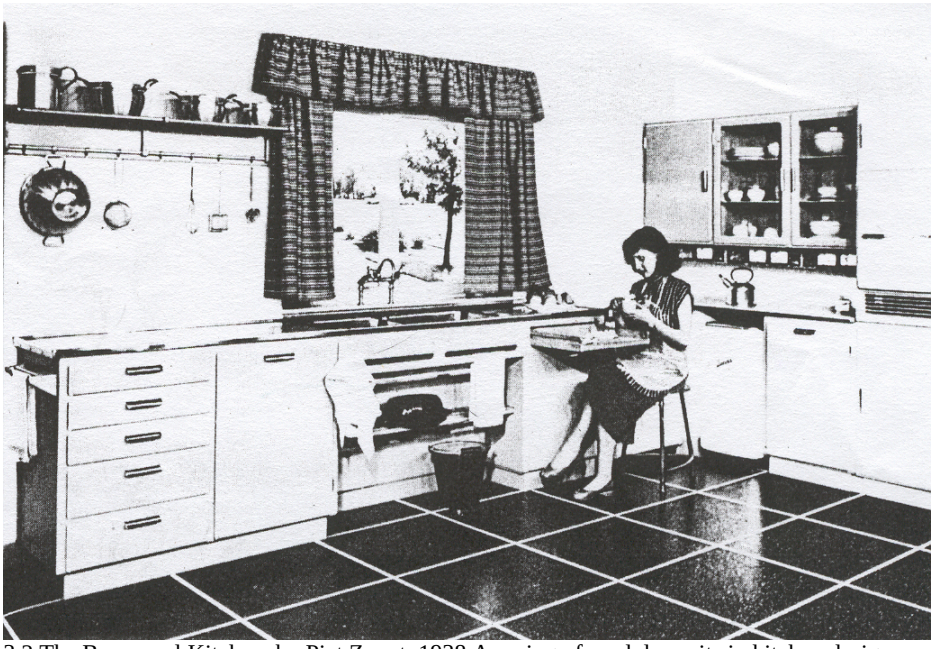

Figure 3.2 The Bruynzeel Kitchen, by Piet Zwart, 1938.As using of modular units in kitchen design, one of the most forward-looking examples in Europe, during the 1930s.

In the twentieth century, with the expansion of government administration, modular systems were widely required with the need of storage and filing of documentation. They were adaptable to all types of accommodation and expandable needs. In the beginning, systems were timber construction later metal pressing techniques also began to used, simultaneously with the introduction of mass produced systems of thin steel-sheet into office furniture industry. Roneo system was one of the most advanced examples. (Figure 3.3) System was efficiently designed without complexities for space efficiency. System has capability of great adaptation to different conditions in simplicity.

Figure 3.3 Roneo system, use of modular boxes as filing drawer in the Midland Bank head offices, 1930, London.

In the United States the emergence of some storage concepts underpinned and strenghtened the idea of modularity and flexibility.

One of the most advanced example was the concept of storage wall, which was created by the American designer George Nelson. (Figure 3.4) The main aim of George Nelson was using the space with maximum efficiency. While Nelson was looking at the wall, he invented his idea...

> " 'Air' was the trigger. Suddenly all those unrelated things crashed together, and I realized that the essential element in any storage unit of any sort or size was *air*. A closet has so much air; a kitchen cabinet has so much air. And I thought, 'My goodness, if you took those walls and pumped more air into them and they got thicker and thicker until maybe they were 12 inches thick, you would have hundreds and hundreds of running feet of storage. It didn't take enough inches off the room on either side to be noticed.' This was the birth of the storagewall." (Abercrombie 1995, p. 70)

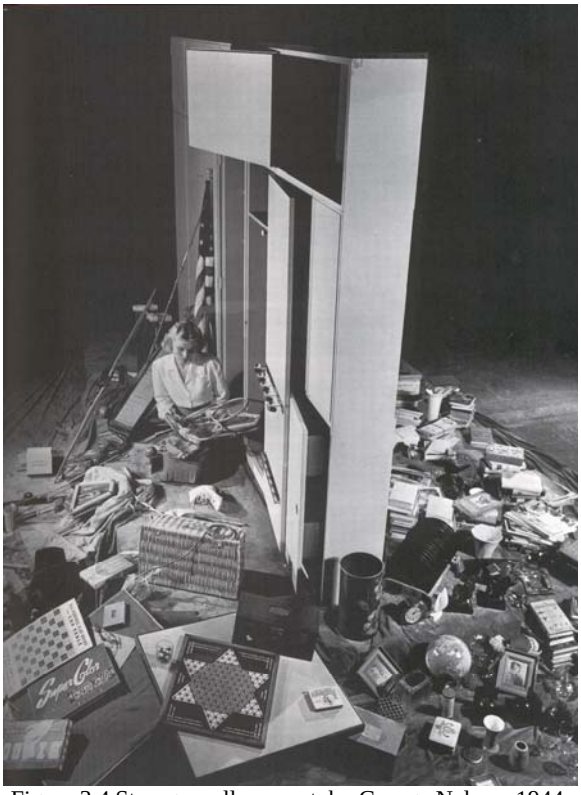

Figure 3.4 Storage wall concept, by George Nelson, 1944.

The storage wall concept was basically a two-sided matter, was not an assembly of boxes or shelves against a divider or a panel. The storage wall was a replacement for a divider. The Storagewall concept was published in *Architectural Forum* and then in *Life*. The success of storage wall was great in field of commercial interior design that Nelson did not even imagine.

The invention of the 'Storagewall' as 'System Furniture' by George Nelson in 1945, was described as basic to the whole innovative development. In 1975, Olga Gueft editor of *Interiors* wrote that "all open plan systems are derived from the possibilities generated by Nelson in that 1945 *Life* spread." The most striking feature of the concept was its creation of a new horizon. It was not exactly architecture, not exactly furniture. It was structurally free and extensive but also modular and noticeably flexible. (Abercrombie 1995)

Nelson began to concentrate into kitchen design in 1943. His sketches on prefabricated kitchen printed in *Fortune.* His kitchen sketches included dashboard controls, deep refrigerator drawers with glass tops flush with the counter, a separate freezer and ice-cube maker, a vertical broiler in order to broil steaks on both sides simultaneously,

foot-pedal controls for the water taps, and a large double-glazed window box for growing fresh herbs. (Abercrombie 1995)

In 1953, Nelson was hired with his ten-year-old sketches by General Electric to the kitchen equipment department, as a consultant.

> "He developed two specific products for GE: a wall-hung refrigerator and a mechanized storage unit ("MSU") that would raise or lower shelves to accessible heights. The refrigerator suffered from the weight of the materials then available and the consequent need for reinforcing the kitchen wall behind it; today's lighter materials might warrant a revival of the idea. In any case, neither product was a bigseller. Of greater potential importance was something called the Unit Kitchen, Nelson's concept of a pre-plumbed, pre-wired package incorporating all mechanical needs." (Abercrombie 1995, p.72-74)

Figure 3.5 Mechanized kitchen storage unit ("MSU") for General Electric, by George Nelson, in the late 1950s. Closed position and open position. It was never produced in large scale.

Nelson claimed that the kitchen should style as a system. There should be no longer separate appliances as isolated sculptural objects, but going with modular boxes which install together in a variety of ways.

It was unavoidable that Nelson almost immediately applied the principles of modularity, flexibility, and prefabrication (not only kitchen) to the house as a whole. In 1957, Nelson attempted to employ his ideas into his project “Experimental House”, as solution to the housing problem. Experimental House was based on the repetition of similar units and designed according to modern techniques of mass manufacture.

The following innovative storage concept of George Nelson was ‘Omni Pole System’ that was based on modularity. Nelson developed the system for the furniture firm Dunlop. The first version of the system was a square-section extruded aluminum pole that could be assembled between a floor and a ceiling and held there by springs. There was no connection to a wall.

> “The poles were designed to hold any number of components between them—shelves, storage cabinets, files—and could be used in children's rooms, dining rooms, living rooms, libraries, offices, or exhibitions. It was a new step in a new kind of furniture, one of the first examples of which had been the Nelson firm's own StrucTube system, developed in 1948, a simpler system of tubes sliding over round aluminum rods, joined to horizontal members with slotted connectors. (StrucTube had originally been free-standing, but later modifications had added the floor-to-ceiling mounting feature.)” (Abercrombie 1995, p. 123)

Nelson offered this new system with a name as Omni. His office introduced the design with a trademark, a letterhead, bills, tags, shipping labels, and graphics for trucks. Nelson explained his thoughts that everybody just could go to the lumber yard and get these aluminum poles and shelves and brackets for needs of storage for their houses.

A mock-up of the Omni system was built in the Charlotte factory. Seven or eight possible configurations and uses of omni pole system were introduced. Nelson invited Herman Miller executives Hugh and Max De Pree to a presentation. Dunlap hoped that Herman Miller would agree to take over the distribution of the system, but they did not. Finally, Dunlap took up the marketing effort himself, and Omni started to be saled in Marshall Field's and other retail stores. Nelson used it himself in the Spaeth house, in the Williamsburg information center, and in his own New York apartment. Herman Miller became interested after the product's apparent success, all, reminding Nelson of his exclusive contract with them and hinting at disloyalty. Dunlap proposed that Nelson design another such system for Herman Miller, reasoning that if there were several pole

systems around they would become more familiar and more marketable. The result was Herman Miller's highly flexible CSS (Comprehensive Storage System). While it employed the same principle as Omni, the CSS was based on a tube with a quite different section and used different connectors.

Although it was considered as great innovation, there was some problem with its stability. For healthy installation, the pole systems were needed skilled workmen and they were never structurally perfect.

Figure 3.6 The Omni Pole System in the kitchen, by George Nelson, in the 1950s.

Consequently, The key point of these approaches was flexibility, in order to adapt to given spaces, available materials, possible uses with potential benefits and space savings. The designs were physically flexible in that they could be easily reconfigured according to the possible conditions, and needs. These concepts can also be adapted to several different materials and construction techniques.

3.2. MOBILITY AS ADAPTABLE CONCEPTIONS

After the World War II, with the sprit of the cultural climate of modern design some avant-garde mobility conceptions were emerged in modern spaces with the housing problem. The most striking examples were **the concepts of Gio Ponti**. As avant-garde Italian designer, Gio Ponti intended low cost production through the wooden culture. His sets lied in storable and folding furniture that was designed in order to allow the maximum convertibility and mobility for limited dimensions of space. (Bosoni, Picchi, Strina 1995)

The projects of Gio Ponti were discovered accidentally with some letters, photographs, and drawings. Gio Ponti had designed those unknown projects for standard industrialized furniture company, *Saffa*.[2] In these creative years of the war, in 1940s, a theory on mass production seemed as a solution in the housing problem. Ponti developed the standardized components for housing. He believed in the idea of developing the standardized housing *programme*, beginning with the furniture of right technology and materials. Towards the mid twenties, veneer-cutting machines had brought a new technology to Italy that was plywood. *Saffa* possessed a fair amount of poplar wood. From this production context there became a production patent, which named *Poulit*. This could be used to manufacture building panels. These new wood processing technologies led Saffa to guide its production towards prefabricated building components such as bindings, concave blocks, and window frames.

Consequently, The *Riponibili* that was based on the definition of standard furniture project, contributed in a wider *programme* of industrialized building units. Ponti started by undertaking the problem of furniture. He concentrated on centrally domestic culture and its needs. The similarity in conception and industry gave a chance to put the system into practice.

The conceptions of Ponti through the *Riponibili programme* had been consisted of the idea of efficiency within a limited space or in terms of minimum dimensions and maximum transformability and mobility. In order to express a modern concept of living, the idea of minimal furnishing, that could combine different functions, meet the needs

[2] "The story of Gio Ponti's Riponibili furniture, an episode in his oeuvre still unknown, has been reconstructed through the correspondence that accompanied the drafting of a programme that never reached completion. Little more than a catalogue and a few photographs of the prototypes remain to tell the story. It was made possible by the kind assistance of Mr Pietro Molla, who has collected and preserved this important material." (Bosoni, Picchi, Strina 1995, p.65)

of limited space and transport, and adapt to the most varied living conditions. As a result, Ponti identified many standard rooms. The reflections of Ponti emerged with two concepts in these standard rooms. The first was the concept of **"The house in a cupboard"**; Ponti stored the furniture in a sideboard. The other one was the concept of **"terms of transformable interior"**; Ponti folded the components of furniture at the side of the wall as dividers of domestic space. While the folding parts are in closed position, performed aesthetic quality of modern spirit, the support legs can be used as the frame for the drawing or photograph, simultaneously. (Bosoni, Picchi, Strina 1995)

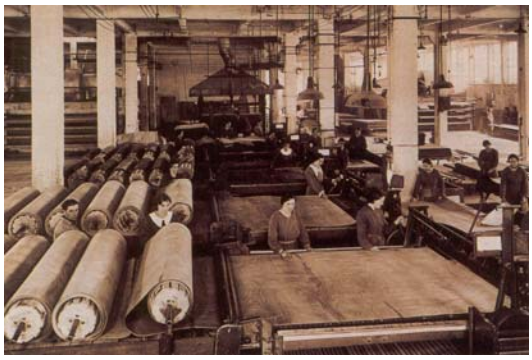

Figure 3.7 The firm INCISA, The first use of plywood technology in Italy, mid-1930s.

Figure 3.8 Drawing by Gio Ponti, in 1945 and crate Image from Saffa's advertising campaign

> "Ponti devised a unitary project that reconsidered the elements of the home to supply general not complete or definitive solutions, because furniture must not be a fixed, but a living entity. Each single item of furniture, as part of an interior regarded as completely free from the built organization of the house, sprang from a rejection of immutable compositions of furniture against walls. The idea of the standard furniture was that it should be stowable, folding, modular and stackable. The scheme included stowable standard rooms, among which was the dining room that could be stowed away in the sideboard, the kitchen in the dresser, along with the reversible pantries and folding tables." (Bosoni, Picchi, Strina 1995, p.65)

The intended low cost serial production required both the simplification of manufacturing systems and a standardization of furniture units. Ponti had created a series of types, quite the opposite of the idea of furniture as sets of weighty machines. Saffa promoted Ponti's concepts as **solid, rational, collapsible, plain and friendly,**

light and inexpensive furniture. Constantly changing, war-dominated economic and social conditions of 1940s shaped The *Riponibili* furniture *programme*.

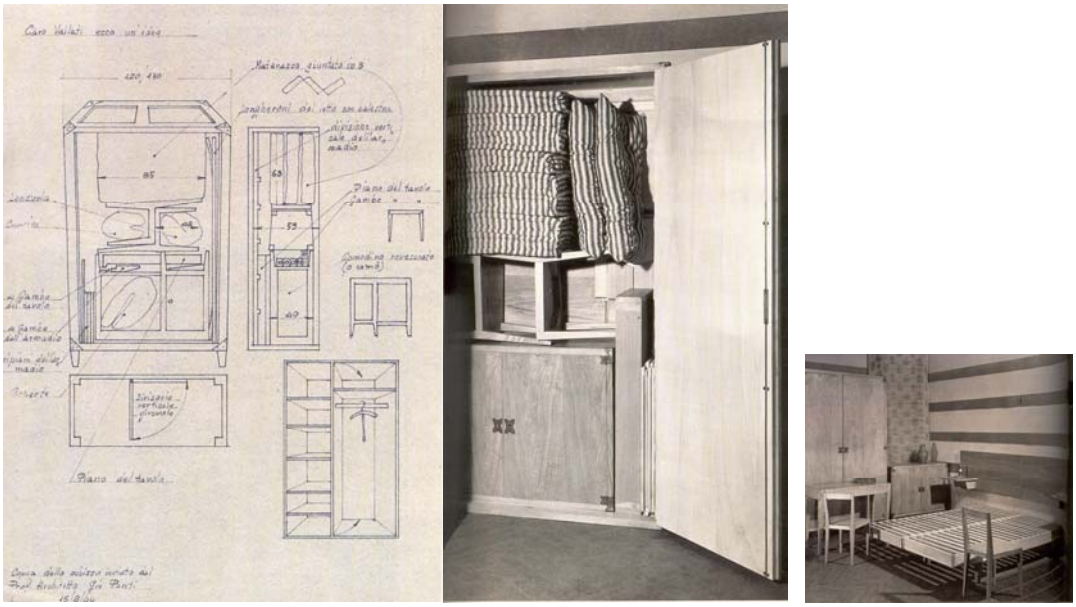

Figure 3.9Bedroom stored in a cupboard, by Gio Ponti, 1945.

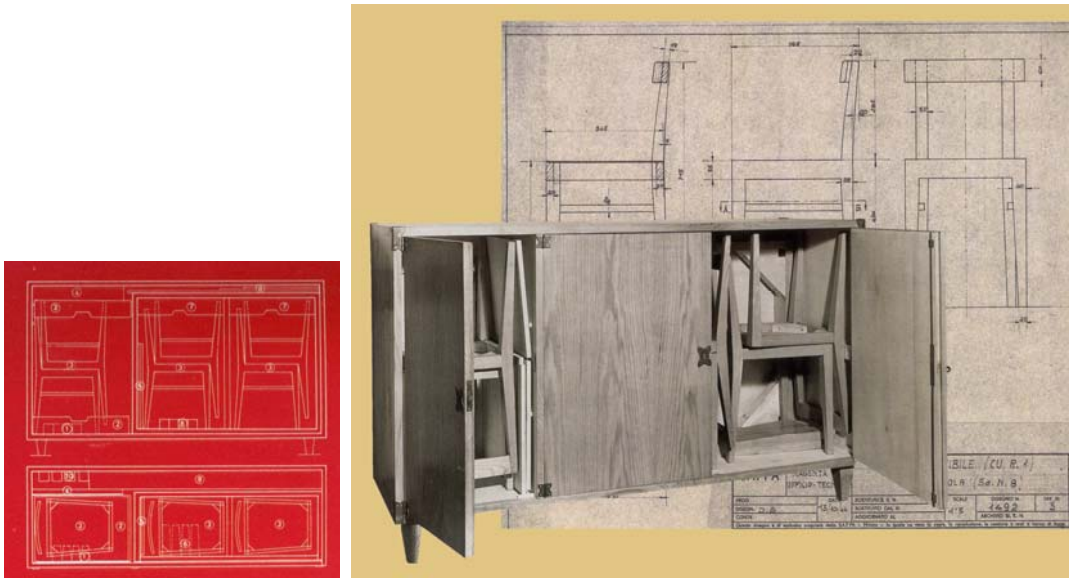

Figure 3.10Folding dining room, a three door sideboard, a table and six chairs.

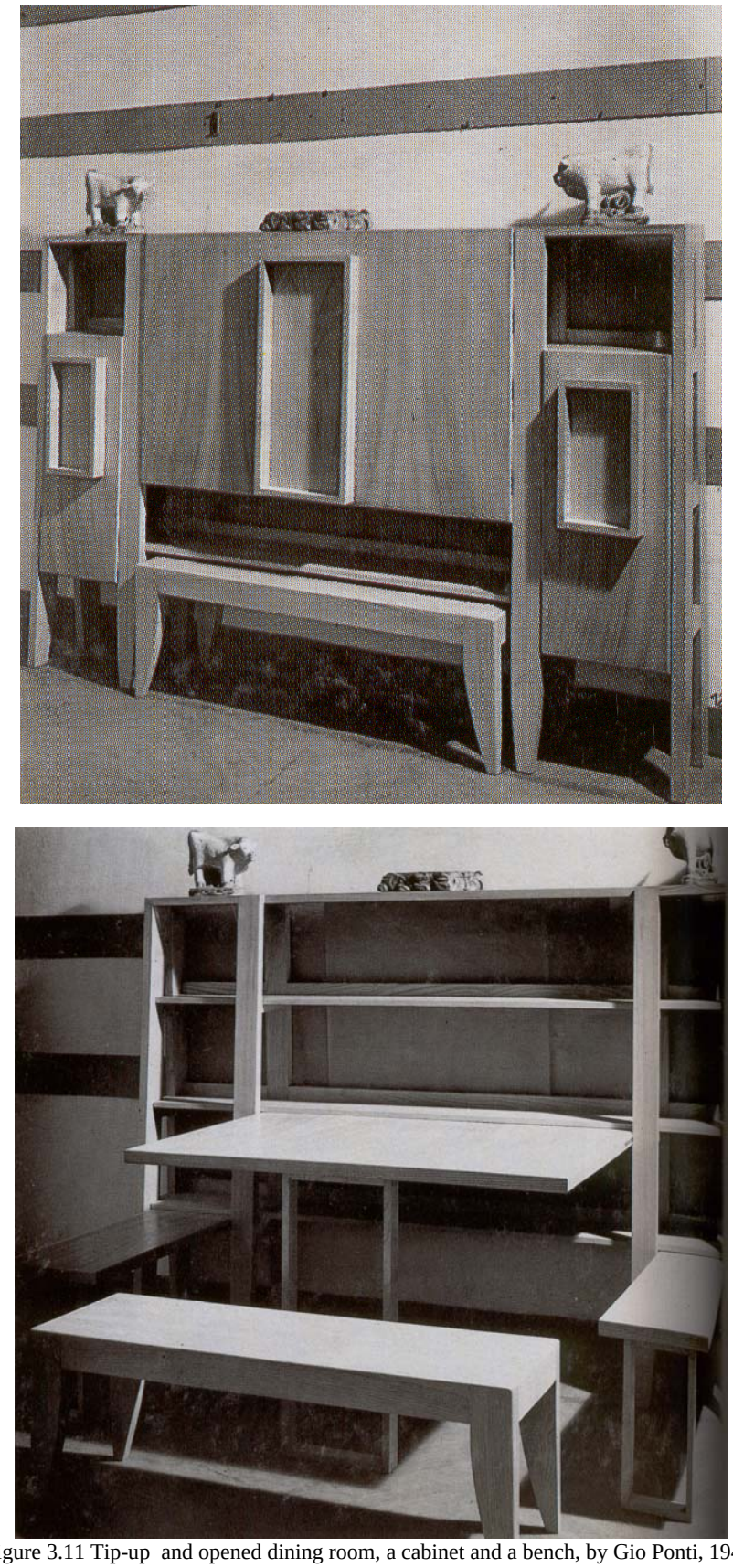

Figure 3.11 Tip-up and opened dining room, a cabinet and a bench, by Gio Ponti, 1944.

Figure 3.12 A Saffa advertisement,A Folding Dining Room, Stile no.1, 1945.

Eventually, Ponti's efforts certainly seemed as rigid oppositions in the company, where the austere character of the furniture and the principles were argued. Furthermore, with the effect of historical and social conditions, the furniture project was overshadowed by a decision of enlarging the terms of the programme to a full catalogue of small constructions of prefabricated parts: "homes… to be supplied complete and to be assembled by Saffa".

As a final point, the furniture was not produced, but nevertheless Ponti was considered as one of the first attempts adaptable design. He applied industrial organization to the wood furniture sector, with avant-garde mobility conceptions, which will lead the mobility conceptions of 2000s as new directions, in architectural space, kitchen design, and in contemporary art.

3.2.1. MOBILITY AS SPATIAL SOLUTIONS IN MODERN KITCHENS

In modern kitchens, the reflection of mobility articulates itself as practical and innovative ways without the use of heavy machinery or extreme costs. As a design solution, for efficiency, in modular coordination, mobility flexibly maximizes space in modern kitchens and converts dynamic, flexible and constantly changing needs into design. It creates easy site-specific adaptability, transportability, and the ability of connection, production and interaction with modularity. The key point of the mobility is its flexibility in the conditions of individual adaptability and innovative space saving and using capabilities. The other focal point of mobility is to decrease local labor in complicated uses. The goal is to create flexible and responsively adaptable spaces and objects. (Fox, 2002b)

Figure 3.13 Mobility in the kitchen area, by Spazio Vivo, 1968, Italy.

Being dynamics of architectural space, mobility supports attractive spatial experience and solutions, with responsive and intelligently active behaviors. The motivation lies in

creating spaces and objects that can physically re-configure themselves to meet changing individual, social and spatial needs. (Fox, M., Little, K. and Senbel 2002)

Mobility is used as a technological design strategy for kitchen designs that are efficient in form, lightweight, and essentially flexible with respect to the concept of modularity. These are some basic motivations of the concept of mobility in Modern Kitchen.

In mobile smart environments there are two important questions that how transformable objects can dynamically live in predefined physical space and how moving physical objects can share a common physical space to create adaptable spatial configurations. In today's modern kitchens, these theoretical questions are converted into design as free-moving objects with variable location, and moveable components with variable geometry and motion types, such as rotating, sliding, folding. Structural solutions are considered as solutions in pairing elements, which are the ways for folding, sliding, expanding, and transforming in both size and shape. (Aside from the area of modern kitchen, structural solutions may be performed among science of pneumatic, chemical, magnetic etc…) (Fox, Little, and Senbel 2002; Kimbrell 1991)

The articulation of mobility in design is similar to a body with a system of bones and muscles and tendons and a brain as a supplement of that body with which knows how to respond. The study highlights several examples of mobility in modern kitchens with adaptable spatial intelligence through identifying applications of both free-floating objects and moveable components.

3.2.1.1. FREE-FLOATING OBJECTS

Free-floating objects can be described as a class of mobility in which the object moves as a total unit. The idea of free floating in design, as a concept, comes from, through the history of man. Of course the motives in the past may have been completely different from the motives of today, in the past as migrant, people had to travel to find food and water. Today, any longer, people do not have to think about enough horses to move an object. With technological advancements, even great weights and masses can be moved effortlessly. Today the center of attention is to create the right way of movement and motive for efficiency and individuality. (Zuk, and Clarck 1970)

Basically, free floating takes place on or very near to the ground, on the water, or in the air. Because of the architecture and population settlements are generally bound to the

earth, as design problems, land-based mobility has been naturally the most developed. (Zuk, and Clarck 1970)

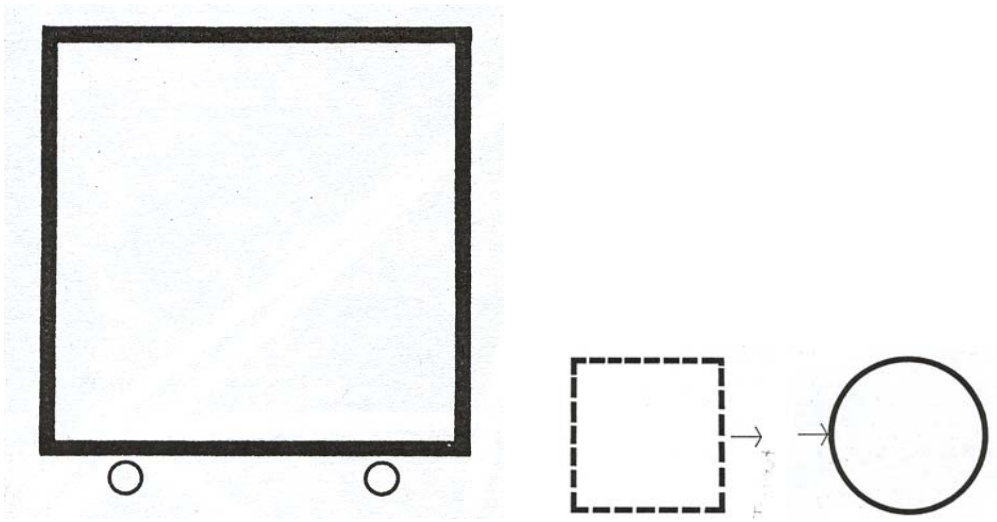

Figure 3.14 The concept scheme of mobility, by William Zuk and Roger H. Clark, 1970.

Land based mobility is realized with many kinds of movement. Pulling, pushing, lifting, rolling, sliding are just a few of the ways we move things. All movement is caused by force. A force is an action that starts or stops movement. Objects that are in motion want to stay in motion, and objects that are at rest like to stay at rest. This tendency to stay at rest or in motion is called inertia. The only way to stop inertia is using a force, which is related with mechanical devices. So, movement is controlled by mechanical devices that connect to the rules of geometry. (Hapkiewicz , Chapman and Azima 2001)

The most advanced way to move things is to slide along the surface. Motion of objects is affected by friction, although the grounds of modern kitchens are hygienic and smooth. Wheels, which were one of the first mechanical inventions and the most used practical devices, can decrease frictional force and increase speed. The action of sliding is easier for the objects by the wheels. (Field 2001)

3.2.1.1.1. EXAMPLES OF FREE-FLOATING OBJECTS IN MODERN KITCHENS

Free-floating objects can be described as a vehicle or supporting package. They can include furniture and appliances. They interact with the static objects, serving or being part of them. In modern kitchens, the most widespread free- moving objects are carts,

compact islands, and tables. They are adaptable to the individual, spatial, and functional needs in kitchens. They move sliding on the wheels, simply.

Free-floating objects are limited only by the basic dimensional restrictions, which become from the dimensions of kitchen space or coordination of modularity. So, these units are integral part of the whole design in both function and chart.

Free-floating objects can have capacity to include many component movements. So the concept of freedom movable units or objects has potential to convert into the compact moveable units. (Zuk, and Clarck 1970)

Two or more movable units or objects can be linked each other or many linked moveable units can become a kitchen or all the modular parts of kitchen can be moveable. It is apparent that very large objects in kitchen, even whole kitchen can be moveable as a package. The full potentials of such a system allow more flexibility in planning and even to think about it is also very fascinating.

In addition, moveable units create flexibility of spaces in kitchen or in house as well as offering the potential for changing the functional and physical relationship of the activities in both kitchen and house.

- **Kitchen Carts**

Kitchen carts are pushed by hand in order to carry things and to create extra counter space in kitchens. Although they seem simple counter space and storage on the move, kitchen carts are characterized by different concepts. While some of them have been performed as “kitchen assistants”, some of them are used according to the demands of special purposes, for instance as baking pantry... The others mean that the space can be reconfigured individually…

The example of kitchen cart, which is much more than just a cart, cook or mess officer deserves the title of “kitchen assistant”. It was introduced as “kitchen assistant” by the Italian kitchen firm ilCuciniere, in 1997.(Figure 3.15) These type of carts generate additional spaces for the storage of foods and dishes as well as table linens, the tools and accessories that are most frequently used. It offers pull-out baskets, a work top, and a cutting board in a plastic material, spaces for knives, bottle grills, roll holders and basins for residues. They move smoothly across the kitchen for easy table setting.

Figure 3.15 Kitchen Kart which were introduced as “kitchen assistant” by the Italian kitchen firm ilCuciniere, 1997.

As mentioned above, some carts are designed for special purposes, such as baking center. (Figure 3.16-17) As a matter of fact, they are mini workstations. Shelves and drawers provide storage for items that are used seldom. Compact baking center comes out of hiding, rolls to any part of the kitchen, then trucks away neatly in a counter end when work is done. The marble tops are great for pastry and candy making; metal lined tilt out bins below hold flour and sugar. Baking gear stores are in the lowest compartment. (Vandervort, and Kaufman 1990)

Figure 3.16 Kitchen Cart, by Sie Matic Company, 2000.

Figure 3.17 Kitchen Cart, by William B. Remick, 1981.

Most of the carts roll out from underneath counter to convert into a workstation. Some of them are modular constituent elements that are at the same height of counter and also are a part of counter, which is shown below. (Figure 3.18) They have the potentiality of reconfiguring the kitchen radically according to conditions of space and individuals. They are all adaptable to different sorts of storage needs.

Figure 3.18 Bulthaup System 20, designed by Herbert Schultes, 1999.

Figure 3.19 "Case System" free standing stainless steel modular kitchen, by Piero Lissoni for the Italian firm Boffi, 2001

Figure 3.20 Bulthaup, Combi, by Bulthaup team with Herbert Schultes, 2001.

- **Islands As Compact Workstations**

Kitchen islands are utilized as compact workstations. They play a major role in modern kitchens. These workstations are added into kitchen space in two ways; first as a storage providing utility and second as an abundant counter space. Mostly, they are great for food preparation as shown below. (Figure 3.21) In this example, beneath lavish array of gleaming cookware, there is a butcher-block table fitted with casters. As a result of a modification, the workstation, including a lift out metal bin with cover, sliding blade storage tray, wire basket, and even towel pegs, moves from one kitchen work center to another. For a home where children are present, knives and food processor blades would be best kept elsewhere. (Vandervort, and Kaufman 1990)

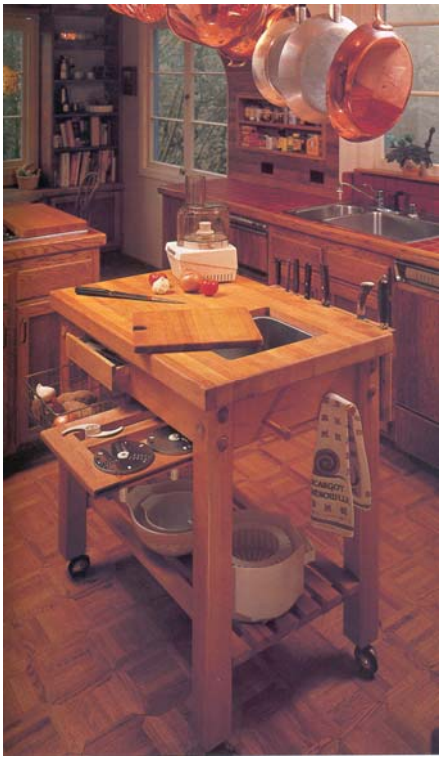

Figure 3.21 Moveable Compact Island, by Peter W. Behn, 1981.

- **Multi-Purpose Tables**

With the innovatively used multi-purpose tables, kitchens which are shown in this part have the potential of individualism. These two kitchens have been established as an idea of interaction and relation in modular coordination. Kitchen environments have been planned in accordance with the specific needs of the individual. The uses of multi purpose tables underscore different functions and maximum compositional freedom.

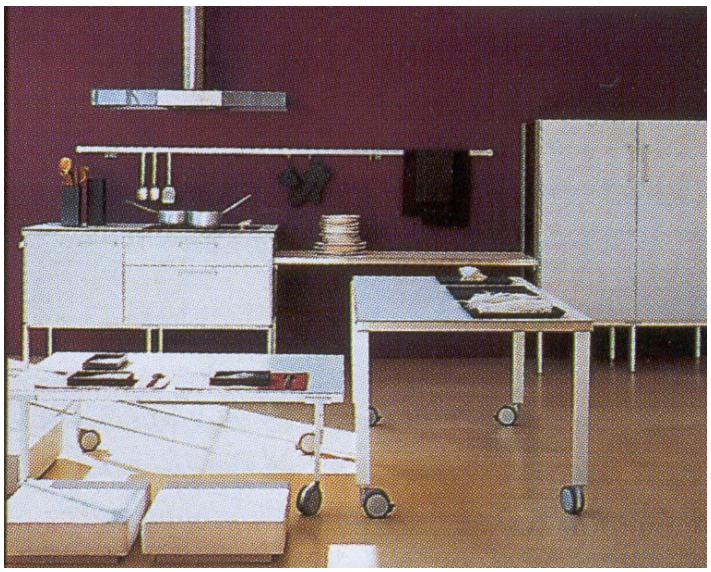

Figure 3. 22 “Regula”, Progettisti Designers,2000.

As one of the most striking examples, following kitchen design has been made up of two multi purpose tables and storage walls. The space has been considerately kept as free as possible. There is just a stainless steel table, with a hob and sink, and next to it a cloned wooden version on wheels that can easily be moved around to adapt other needs.

For two projects on this page, the criterion of the relation is established by connecting task islands with one another and with connecting tops, which are in fact simple tables.

Figure 3. 24 Transparenze Funzionali, by François Roche, 1998.

3.2.1.2. MOVEABLE COMPONENTS

As mentioned before, the invention of the wheel could be accepted as the exact beginning of mobility, because of its capacity of making movement smoothly. As similar to free-floating objects, wheel had great importance in component movement too.

As examples of component movement, perhaps movable stones, logs, or skins covering cave or hut openings could be accepted as the first items of adaptation or mobility. Wooden pivots or hinges of leather for swinging doors maybe developed next. Such closures for portals were adaptive devices for security, as well as for weather protection. Soon, the introduction of advanced metals, pivots and hinges of iron and brass raised the appearances of moveable components in aesthetic quality and made them more effortless mobile. But for thousands of years, mobility in modern spatial designs never advanced beyond the simple principles of moving door or window, although, amazingly advanced mobile or adaptive systems as used in machines. Technology was perceived as a vehicle. Advanced mobility systems were not used more than necessity, so that the modern design has articulated itself in efficiency and necessity. (Zuk, and Clarck 1970)

The increased use of movable, collapsible objects was the evolutionary process of mobility. The principal of the sliding door or small folding partition that was extended to large-scale use, was governed spatial design. The concept found great application, where spatial arrangements were subject to frequent changes. (Zuk, and Clarck 1970)

Consequently, moveable components in kitchen design could be originated from the basic principles of the moving door and window. So these included such items as rotating, sliding, and folding components in variances of geometry, with the motions of pairing elements which contemporary man experiences almost every day and were routinely accepted as part of today's design.

3.2.1.2.1. EXAMPLES OF COMPONENT MOVEMENT IN MODERN KITCHENS

3.2.1.2.1. SLIDING COMPONENTS

As understood from the title, the movement of sliding components was based on sliding which was one of the most used motion types. So the meaning of the sliding is needed to be emphasized simply. As description, sliding is a slipping movement, which makes

object go smoothly on a surface, on a structure or on a path. Otherwise, sliding is just a scrolling effect or moving the layer, by using looping functions. The geometry of sliding path that can be straight, curvature or any shape, is the most effective feature of component movement in spatial solutions and complicated uses. (Steinman 1998)

Several numbers of examples to curvature and straight sliding components exist in modern kitchens.

3.2.1.2.1.1. CURVATURE SLIDING COMPONENTS

The geometry of sliding path is curvature as mentioned before. These components move on a curvature path. Movement is controlled by simple mechanism, which is lift mechanism, simultaneously. These components are added to modern kitchens as extra shelf or table in order to use space efficiently, as in the following two examples.

- **Curvature Sliding Multi Purpose Counters**

These components stretch the modern kitchen's usefulness with specialized simple lift mechanism. Spring up shelf serves as storage area when it is down or work surface when it is up. As hardware is relatively expensive, such a shelf is very handy for food processor or heavy mixer and can be adapted to cabinets. (Figure 3.24)

At one end of contemporary kitchen, typewriter swings out and up from base cabinet. Files hang in special file drawer in cabinet at right; phone sits on counter. When not in use, this minimal home office completely disappears into cabinetry. (Figure 3.25) (Vandervort, and Kaufman 1990)

Figure 3.24 Mixer shelf as curvature sliding component.

Figure 3.25 Mini home office, by Gilbert Oliver.

3.2.1.2.1.2. STRAIGHT SLIDING COMPONENTS

The geometry of straight sliding path can be parallel or perpendicular to the component. Straight sliding components move on a straight path. Components slide on a full-extension structure glide with the assistance of rolling functions. These components are added to modern kitchens as space extenders or labor savers, as shown in the following examples. (Vandervort, and Kaufman 1990)

- **Straight Sliding Multi Purpose Counters and Tables**

As it is mentioned, the first example is generated from multi purpose layers. The top of the layer is a teak table that slides on the other that is a hob including everything else needed for cooking. So top of the layer serves as both a dining table and a work surface. This moveable top concealing performs as a space extender. (Figure 3.26)

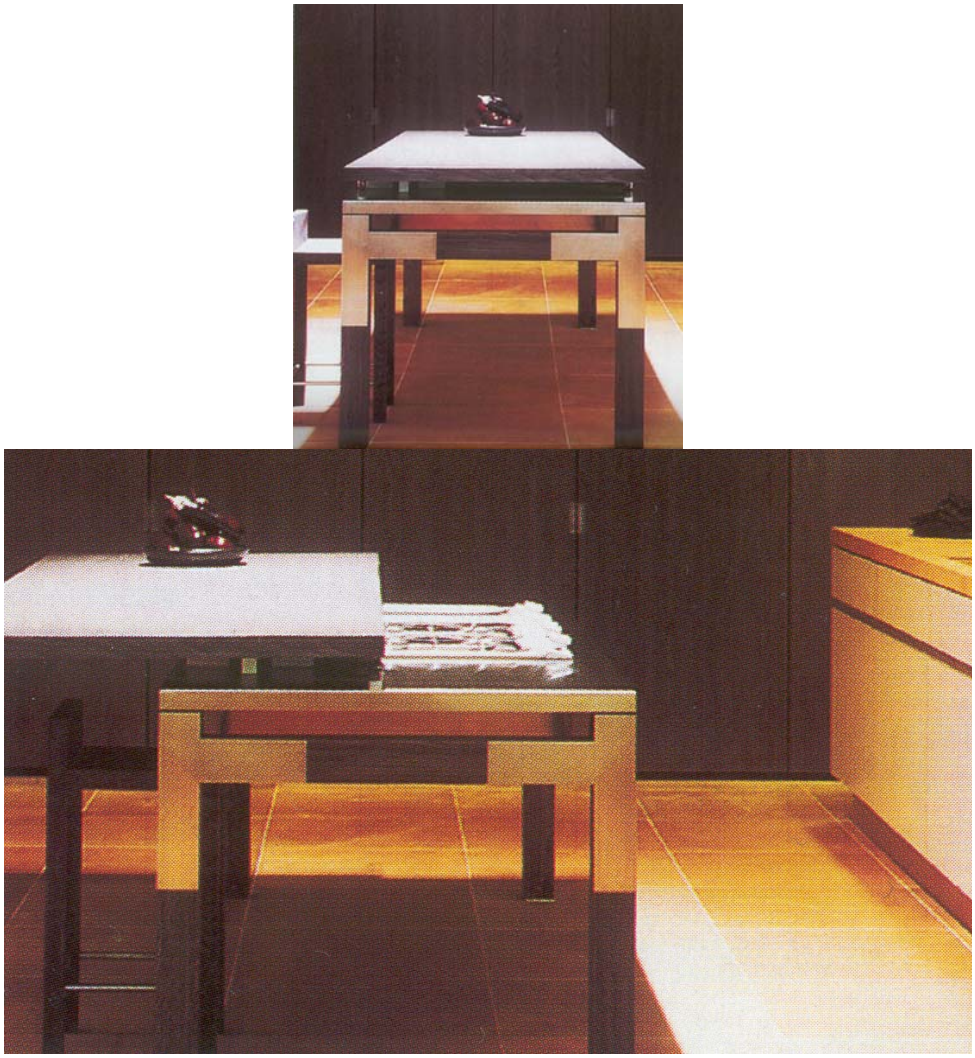

Figure 3.26 Multi purpose table, Obumex, Block Central Y, by Claire Bataille e Paul lbens, 2001.

These following examples also serve as space extenders. Disguised as part of the cabinetry, tabletop is pulled out of the base cabinet. When fully extended, this simple table will seat up five people. (Figure 3.27) Black plastic laminate counters hide a pull out ironing board and in adjacent tall cabinet they hide a washer and dryer. (Figure 3.28) Pull out counter is handy near microwave and ovens. (Figure 3.29) Cutting board pulls out for chopping next to preparation sink. (Figure 3.30) (Vandervort, and Kaufman 1990)

Figure 3.27 sliding extra table, 1980s.

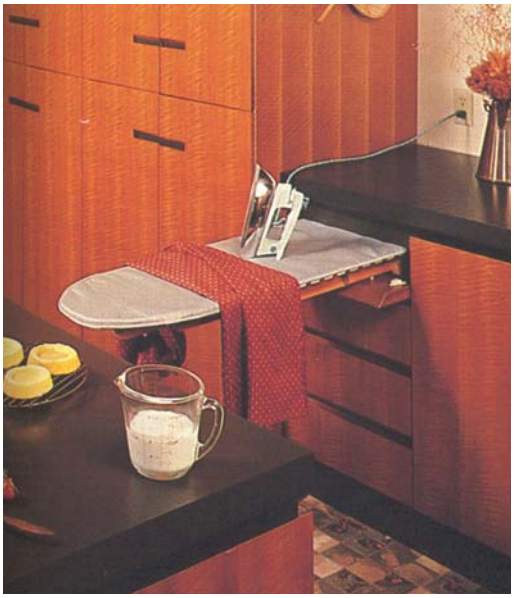

Figure 3.28 ironing board, by Nancy Brown,ASID, 1980s.

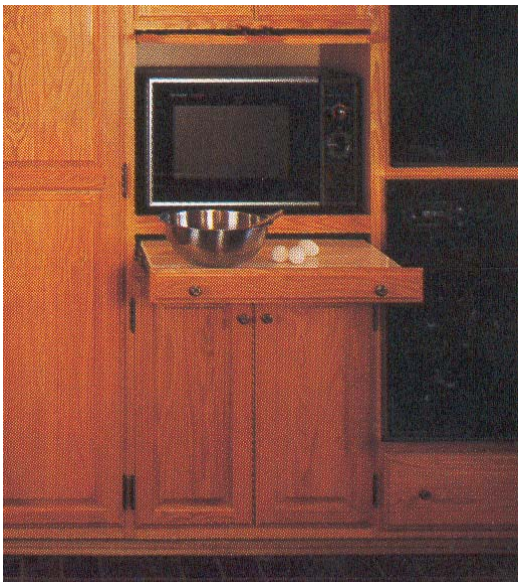

Figure 3.29 Pull-out counter, by Laurie Candelora, 1980s

Figure 3.30 Pull-out cutting board, by Laurie Candelora, 1980s.

The last example is big stainless steel kitchen unit that becomes a moveable top concealing, a sink and hob. In the base unit, there are an oven, fridge and dishwasher. The base unit also provides storage for food and crockery, simultaneously. The moveable top, which moves sliding smoothly, serves as an ordinary table when closed. (Figure 3.31)

Figure 3.31 Stainless steel kitchen unit,Idea, by Norbert Wangen, 2001, Germany.

- **Straight Sliding Trash Drawers**

Sliding trash drawers added into kitchens as labor savers and recyclables organizers. (Figure 3.32-33) When planning cabinets, it's easy to give a trash and recyclables a place of their own. Drawers slide on full-extension drawer glide. Small drawer front drops down to reveal pull out chopping block. Beneath it, waste bin slides out when you pull open cabinet door. So, pull out deep trash drawers can be richened such as a slotted chopping block to let food scraps drop to a waste bin below. (Cerver 2000)

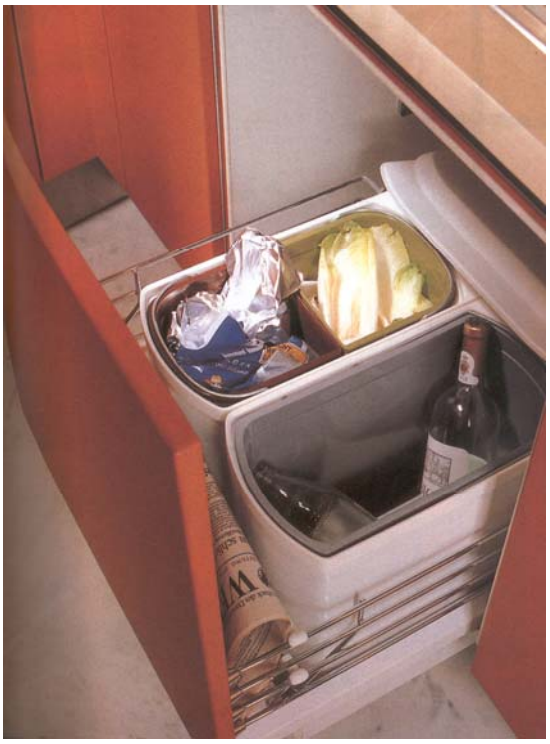

Figure 3.32 Recycle drawer, by SieMatic, 1990s.

Figure 3.33 Dynamic duo, by Wood-Mode, 1980s.

3.2.1.2.1.2. ROTATING COMPONENTS

These types of components move by turning around a fixed point. So, rotating components change position from one to another with the action of rotating. Appliance garages carousels and Lazy Susans are the most used rotating components in modern kitchens.

- **Carousels and Lazy Susans**

Carousels and Lazy Susans added into kitchens in order to enable access to hardly reached cabinet spaces. In the first example, difficult corner cabinet is handled with an

L-shaped door that opens both sides of the corner. Built-in Lazy Susans' pivot enables complete access. (Figure 3.34)

In order to create the most useful space that would otherwise be lost in a blind corner, coated wire shelves are let swing open, then pulled out to provide complete access to contents. Infrequently needed bowls are appropriate to store in carousels. (Figure 3.35) (Vandervort, and Kaufman 1990)

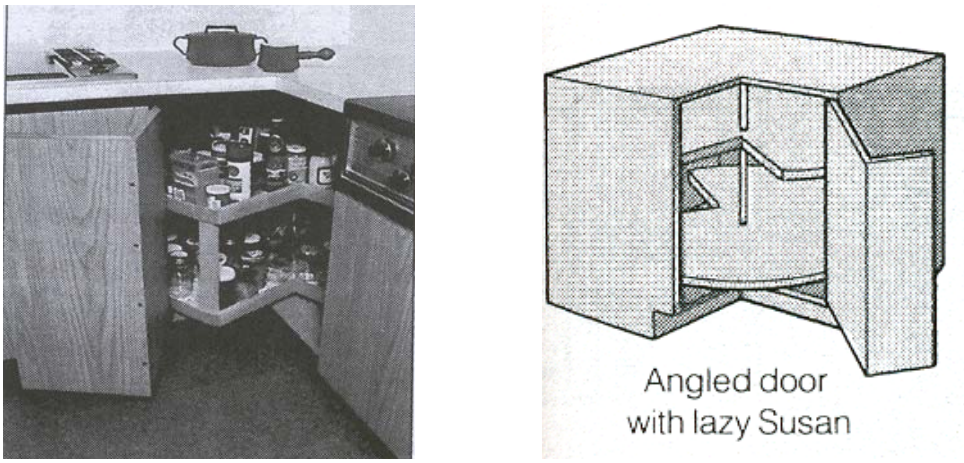

Figure 3.34 Cabinet roundabout, by Ron Yeo, 1980s.

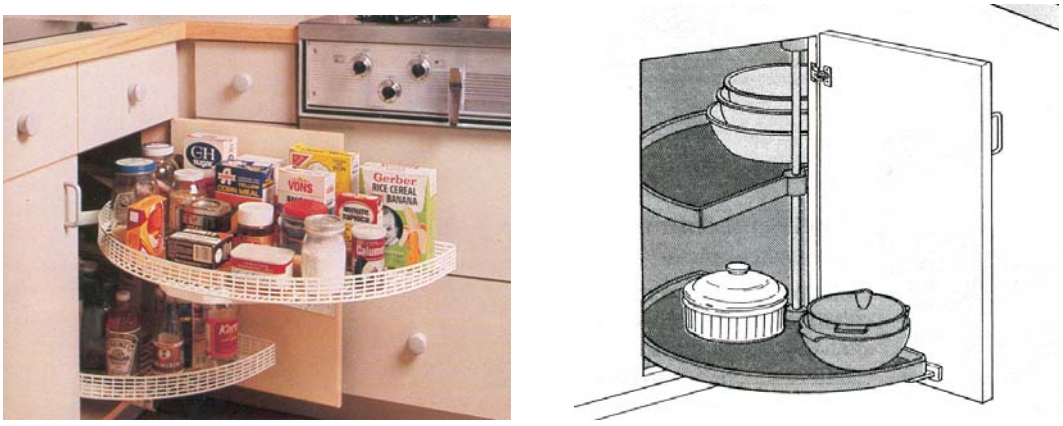

Figure 3.35 Semicircular swing-outs, by Bob Easton Design Associates. 1980s.

The simple principle of carousels is adaptable to variable cabinet conditions like variable dimensions and style of kitchens…. (Figure 3.36-37-38)

In short, access to corner cabinet's full depth is made possible by corner carousels.

Figure 3.36 Corner solution, by Contralto, 1988.

Figure 3.37 Effetti, Misura, by Giancarlo Vegni, 2001

Figure 3.38 Floor to ceiling lazy Susan, by William B. Remick,

- **Appliance Garages**

As labor saver, this appliance garage has interaction with dining area and the serving area of the kitchen. Multi-purpose island begins where the wall ends, thus appliance garage swings out of semicircular storage unit separating kitchen counter from dining area. (Vandervort, and Kaufman 1990)

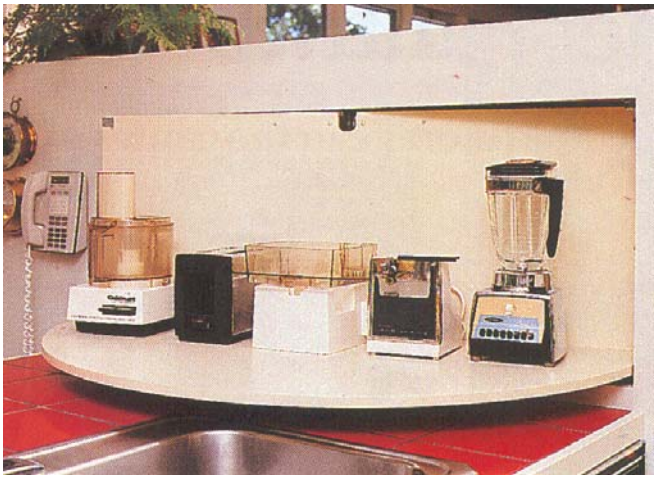

Figure 3.39 Pivoting appliance garage, by Craig Roland, Roland/Miller/Associates, 1980s.

3.2.1.2.1.3. FOLDING COMPONENTS

Folding components are used widely in modern kitchens as bending or pressing back one part of the object that can be planar or spatial, onto the remaining part.

- **Folding Pantries**

Unfolding like a child's puzzle, folding pantries make maximum use of standard cabinet dimensions. Door mounted shelves, two sided swing out shelves, and more shelves at the back of the cabinet ensure access to every bit of space.

Folding pantries are available to store boxes, cans, and jars. They have several layers of shelving that mounted on the back wall, attached to the door, and pivoting on hinges at cabinet center. They are used especially where the storage space is very tight. (Vandervort, and Kaufman 1990)

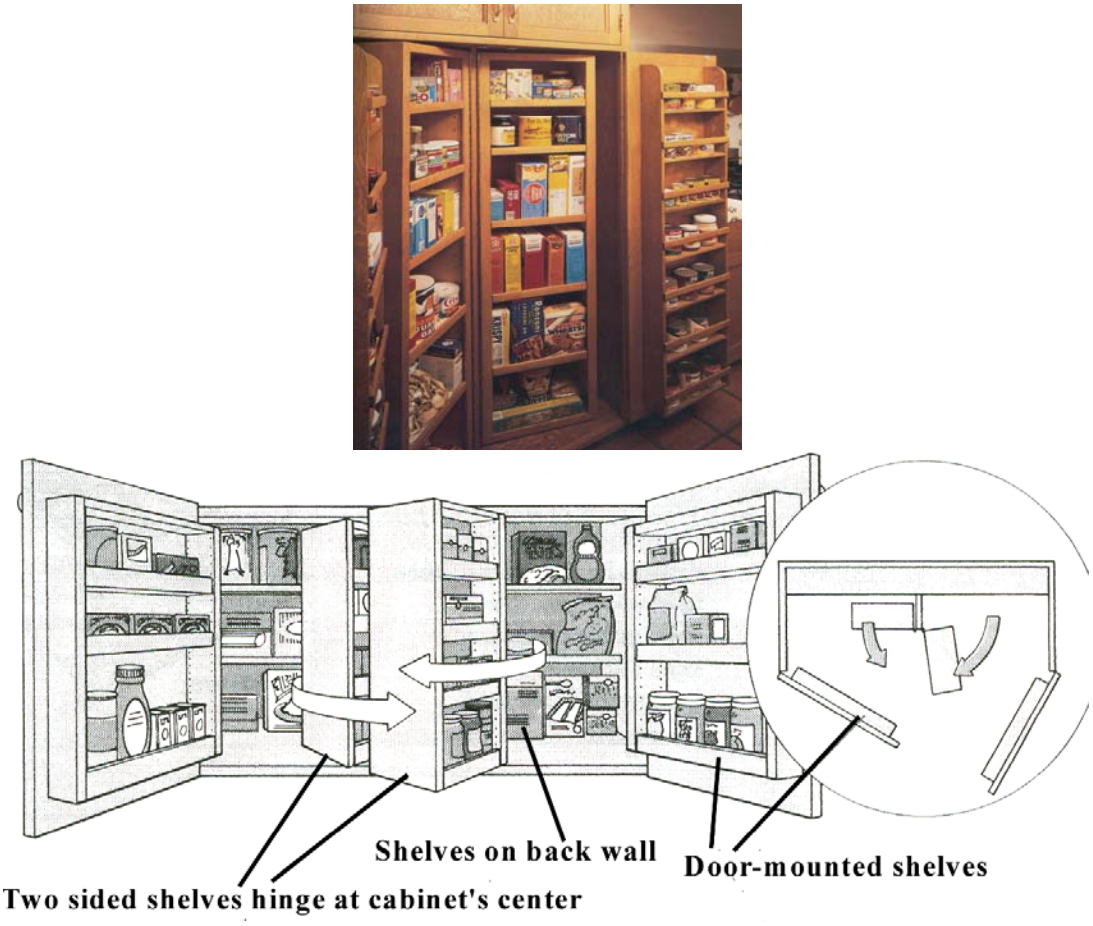

Figure 3.40 Folding Pantry, by Sarah Lee Roberts, 1980s.

- **Folding Tables**

Counter dependent folding tables are added into kitchen as extra working surface or breakfast table. There is a rotating supporter beneath the table surface.

Figure 3.41 Folding table, 1980s.

3.2.1.2.1.4. MULTI-MOVING COMPONENTS

Multiple moving components perform many types of motion, including rotating, sliding, folding, etc…. In general, these motion types are not simultaneously realized, at least in the same joint. They are usually realized in planned range, controlled by the force of mechanical joints.

- **Multi-Moving Trashes and Recycle Organizers**

This recycle organizer that is mounted in the bottom of the cabinet turns on a platform. The platform slides on a linear structure out of the cabinet, locally. So the movements like sliding and rotating are realized in planned flexibility. (Figure 3.42) (Cerver 2000)

Figure 3.42 Recycle organizer, by Sie Matic Company, 1990s.

In the last example as shown below, when the cabinet door is opened, lid automatically lifts as door-mounted trash pivots out. So, simply door dependent trash rotates and lid slides, simultaneously. The majority of this trash does really save the time, as it does save labour. (Figure 3.43) (Vandervort, and Kaufman 1990)

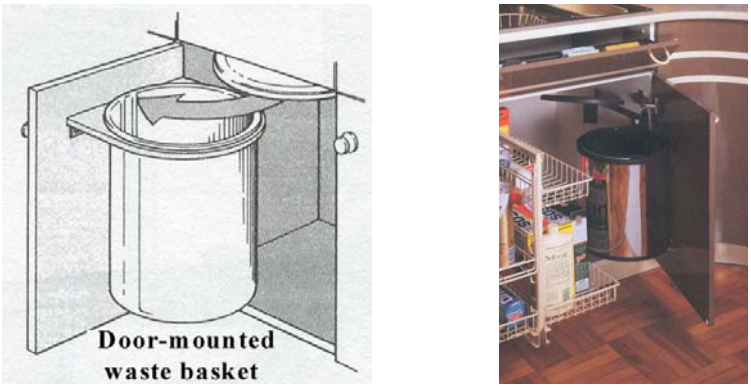

Figure 3.43 Door mounted trash, date of design is unknown.

- **Multi-Moving Drawers**

This sliding and rotating drawer plays a major role in efficiently space using. On the one hand, it has great storage capacity; on the other it has great visual appeal. Under and one side of the drawer, there are two linear metal structures. During the pulling out of the drawer, it slides on the two structures simultaneously. After the pulling out, the drawer rotates at the end of the structure that is posited at one side of the drawer. So, two types of movements are realized on the structures. The structure, which is posited under the drawer centrally, allows only the movement of sliding, the other allows sliding and rotating. (Figure 3.44)

Figure 3.44 Multi moving drawer, by SieMatic Company, 1990s.

- **Multi- Moving Doors**

These type of doors moves like the musical instrument accordions. They are opened or closed simply by folding one on another. The motion of sliding and the motion of folding are realized in different joints, simultaneously. (Figure 3.45-46) Doors can be mounted on sliding hinges so they pivot open, then slide into cabinet to remain out of the way. Doors mounted on one side work well for television cabinets, as shown here. Doors can be top mounted, too an excellent solution for countertop appliance cabinets. (Figure 3.47) (Vandervort, and Kaufman 1990)

Figure 3.46 Pantry door, Sarilla, Italy, 1998.

Figure 3.47 Door detail, Kuka, 1997.

Figure 3.48 TV cabinet door, by William B. Remick, 1980s.

CHAPTER 4

NEW KITCHENS IN CONTEMPORARY SPATIAL CONCEPTIONS: FROM MOBILITY TO *KITCHEN IN MOTION*

4. NEW KITCHEN IN CONTEMPORARY SPATIAL CONCEPTIONS

The alternative examples of kitchens in spatial conceptions are emphasized in this chapter. Taking place in spatial conceptions, these kitchens were considered as the reflection of the age of individual complexity. They served so as to provide opportunity of choice and adapt individual conditions.

In modernity, opportunity of choice and change meant individuality. In these conceptions individuality articulated itself as the possibility of variation, reconfiguration, capacity of changeability, capability of adapting different situations as transitions from one stable state to another through the mobility. Mobility that was assumed to solve problem became watchword in emergence of specific conceptions such as kitchen in motion, transformations of house, functional cells, …etc.

This chapter underlines the paradox of standardization and individualism that was stated as a problem in the beginning. In new alternative examples of kitchens, new options and horizons are permitted, freedom of movement is allowed, changing needs, desires and personal whims are encountered, and personal identity is encouraged in the context of individualism and standardization. So standardized daily objects are interacted with individuality.

4.1. "CRATE" CONCEPT

From 1970s to today, crate conception has been developed by Allan Wexler, who has worked as the contemporary artist, sculptor, architect, industrial designer and inventor.[1] As the old idea of the container for furniture objects, the studies of Allan Wexler were similar to Gio Ponti who stored furniture in a sideboard in order to express a modern concept of living in 1940s. The conception of Ponti was called as "The house in a

[1]His studies have included projects, models, furniture, and nonfunctional and functional structures, all of which explored extensive variations on conceptions and celebrate creative solutions to problems. The 96 works in Custom Built: A 20-Year Survey of the Work of Allan Wexler included photographs, paintings, and scale models of unbuilt projects.

cupboard". Ponti searched the minimum dimensions of modern living standards, in order to be solution to the housing problem.[2]

Apart from that, Allan Wexler intended crate conception as a 'survival unit' that made 'civilized life', according to western standards, possible in the smallest imaginable surface area (90.5" X 90.5"). As such, it could be considered as a solution to housing problems as similar to the conception of Ponti. In fact, with this conception, Wexler influenced the cabin in which the American philosopher Henry David Thoreau lived from 1845-47 at Walden Pond in New England. This positioned him definitely within a tradition of humane and ecological thought that goes back to Thoreau,[3] Emerson, and Buckminister Fuller.[4] He searched just what and how much one really needed in order to live outside of society. According to Wexler there was no one best solution, there was a range of solutions. So Wexler aimed to experience minimum living conditions of Western standards. (Fehr 2001; Schulz 1998)

In order to experience minimum living conditions of Western standards, the meaning of ritual and the symbolic power of daily life became the main theme of Wexler. He focused on both the social function and formal components of everyday objects of how things work. He influenced functional objects like chairs and tables. He altered people's appointment with them. Instead of comfort, these furnishings underlined the meaning of ritual and the symbolic power of everyday objects. The goal of Wexler's work was to deal with certain rituals such as dwelling, eating, watching TV. He succeeded in grasping obvious things such as the relationship to a bed in such a division manner that we can understand sleeping in bed as a specific cultural action. Wexler has understood that in order to feel good we need objects adapted suitably to our habits while we live dreaming of being able to simply push them aside. The conception of Wexler existed and perceived in everyday reality, real space, and real time. Wexler addressed the viewer to the reality by permitting interaction or at least making interaction conceivable. (Fehr 2001; Sloan, Garrison, and Kimura 2001)

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[2] See chapter 3 "Mobility As Adaptability Conceptions".

[3] Thoreau, Henry David, Walden or Life in the woods, 1854.

[4] Fuller, Richard Buckminister, Grunch of Giants, St. Martin's Press, New York, 1983.

As similar to Buckminister Fuller who thought up objects of practical use and life systems, for Wexler production took place within nature and the evolution was not to be found in any single best solution but in the generation of a range of possible solutions.

> "Wexler explored how a daily task such as drinking coffee can take on ritualistic and larger social implications. Consisting of four coffee cups connected by plastic tubing, the piece relied on participants to simultaneously lift their cups in order to drink." (Sloan, Garrison, and Kimura 2001)

Wexler partitioned the rooms conventionally in order to develop space. In this partition, he searched the certain forms of possible behaviors. Michael Fehr called this attitude of Wexler's works as "Structures for Reflection".

> "Structure does not mean here as 'form as a concrete object' but, as Umberto Eco put it, a "system of relations, of relations between different levels (semantic, syntactic, physical and emotive; the levels of themes and ideological content; structural relations and the structured response of a recipient; etc.)"."(Schulz 1998)

These structures were related to the idea of fittings as a strategic concentration of technical modules and a planned emptied out. So, all of these works of Wexler were to arrive at a greater isotropy and spatial indeterminacy. System had based on mass produced or industrialized elements sliding folding and collapsible panels, technical fittings, swiveling units, dismountable ceilings or partitions, etc. Partitions had the capacity of storage that generally based on modules of 60x60x204 that permitted to storerooms, cupboards, shelving. The possibility of a more fluid and transformative space encouraged the study. Convertible technical fittings or moveable objects served to individuals, offering variations of rearrangements, in open fluid space. (Gausa 1998)

Wexler used limited materials and dimensions and put them in robust manner. He used standards and standardized materials, such as two-by-four timber usually used in his buildings. Standardized elements were part of his language of conception, which he used to create various forms of articulation. After all, Wexler's works escaped the traditional terms of material, mass, negative volume, rhythm and composition and were more likely to be described with terms such as path, location, axis, interior and exterior. (Schulz 1998)

4.1.1. THE PROJECT OF *CRATE HOUSE*

Allan Wexler designed Crate House as entire living system for the Home Rooms Exhibition of Collection of Karl Ernst Osthaus Museum, Hagen, Germany, in 1991. Project was commissioned by Herter Gallery, University of Massachusetts.

Wexler divided the house into its parts: a bedroom, bathroom, kitchen and living room. In crate house, kitchen was converted into furniture as the other functions of house. Each function was isolated and restricted in its own crate on wheels. So crates were

converted into functional rooms. All the furniture and utensils were necessary for a two-person household, according to western standards. Kitchen was rolled into the empty structure as bedroom, bathroom, and living room. When a room such as the kitchen was needed, that crate was rolled in through one of the door openings. When the inhabitant wanted to sleep, the entire house became a bedroom, and when the inhabitant wanted to cook, it became a kitchen. So, the individual directed the daily habits. (Schulz 1998)

> "These basic activities that take place in the home-eating, sleeping, bathing and lounging-are pared down to those essential artifacts needed and desired at the end of the 20th century. What defines a kitchen? Which objects do we choose for each function? What actions do these objects imply? I view each create as if it is a diorama in a natural history museum-the pillow, the spoon, the flashlight, the pot, the nail, the salt. We lose sight of everyday things. These things I isolate, making them sculpture; their use being theatre." (Shulz 1998)

According to Brian O'Doherty, when the boxes were pushed out of the cube the boxes were pushed out 'into life'. If three of the crates were pushed out of the structure, then the fourth crate could be accessed and used easily and conveniently.

In other words, crate house was opposite of a normal apartment. Kitchen was positioned in the crate conception, in this most simple form, as part of a complicated machine, which locked the user into individual patterns of behavior.

Figure 4.1 Kitchen Unit in Crate House, by Allan Wexler for the Home Rooms Exhibition of Collection of Karl Ernst Osthaus Museum, Hagen, Germany, 1991.

Figure 4.2 Kitchen Unit of Crate House, by Allan Wexler for the Home Rooms Exhibition of Collection of Karl Ernst Osthaus Museum, Hagen, Germany, 1991.

Figure 4.3 Crate House, Living Room and Bedroom Unit, by Allan Wexler for the Home Rooms Exhibition of Collection of Karl Ernst Osthaus Museum, Hagen, Germany, 1991.

4.2. “FUNCTIONAL CELLS” CONCEPT

In functional cell conceptions, all the needed objects of a house divided into functions and they were designed as dynamic equipments rather than furnishings so as to integrate useable spaces. As one of the important functions of a house, kitchen was considered as dynamic equipment as part of such living systems. Mobility and flexibility have been watchwords of these equipments, which were needed in order to adapt the change of the habits of individuals that were obliged to change the interior of the house with them.

So, kitchens have been designed as cells in such projects as parts of living systems.

4.2.1. ENTIRE LIVING CELLS OF *JOE COLOMBO*

Joe Colombo who was the avante-garde Italian designer produced the initial examples of the conception of functional cells in 1960s. Joe Colombo, who believed in an anti-nostalgic future, had accepted it as 90’s in which we live in today. As entire living cells Joe Colombo designed completely new living models for mass-production and consumption. (Casciani 2002)

Under the concept of living cells he designed firstly ‘Visiona habitat of the future’ for Bayer, then “Roto Living Machine for Living” in 1969. In these forward-looking integrated designs, his special talent had consisted in the production of space saving and adaptability.

Visiona '69 was the first living cells project of Colombo, which was designed for Bayer. The system was designed as integrated functional stations. Kitchen was placed in the system as "Kitchen-Box" (kitchen+dining room). The other functional stations of the system were the "Night-Cell" block (bed+cupboards+bathroom), and the "Central-Living" (living room).[5] Traditional furniture items were fitted into kitchen units, and created dynamic and multi-functional adaptable conditions with the basic component movements such as sliding, rotating, folding… (Fiell 2002)

[5] These functional stations were articulated mapwise as well as sectionwise, as similar to the homes designed by Joe Colombo, where floors and ceilings go up and down, continuously accelerating and slowing down within the interior dynamism, where shelves hang from above and lights are deep-set in the floor.

Figure 4.4 Functional Stations: Kitchen Box, Night Cell, Central Living, by Joe Colombo, Bayer,Visiona 1969.

"Roto Living Machine for Living" was the next project of Colombo. The most striking feature of the kitchen unit was a mechanized dining table that rotated through the wall and into the kitchen.[6] (Fiell 2002; Art&Culture Web Site 2002)

Figure 4.5 Roto Living Machine for living, Mechanized dining table that rotated into the kitchen box, by Joe Colombo, Bayer,Visiona 1969.

[6] A lemon-drop sleeping apparatus that was yellow plastic canopy extended downward from a stainless steel headboard, became main feature of the white bedroom. A bright plastic curtain that suggested space-age inspiration, slided around the bed.

In this future vision of 1960s, Joe Colombo offered kitchen as an element of an independent system, which concentrated functions and which were finished and ready to use by individuals. So kitchen was transformed into a compact product design in a system package.

4.2.2. "FUNCTIONAL CELLS" OF *GERHARD KALHÖFER AND STEFAN KORSCHILDGEN*

Nearly 40 years after the living systems of Colombo, one more example of functional cells came from Germany, by Youthful architects Gerhard Kalhöfer and Stefan Korschildgen.

Gerhard Kalhöfer and Stefan Korschildgen projected the conception of functional cells in an old Normandy farmhouse. The owner has wanted to convert this house into a comfortable holiday home without destroying any of its old-world attraction. This restriction has increased the creativity of architects.

The bathroom and kitchen were in a very poor state. The architects operated a project on two levels. First, in order to preserve the past, the house was restored, traditionally. Second, architects built a black steel-framed structure with glass walls that looked like an agricultural silo or machinery shed-leans in the house, symbolizing the present and perhaps also the future. Inside, the kitchen, bathroom, toilet and open-air shower unit were fitted tightly into high-tech functional cells that made them sliding straight ahead. In the summer season, a freestanding bathroom and open-air shower unit (with storage space for gas cylinders) were slided into life of out of doors. The old and new or, past and present functional cells enabled interaction between private and open spaces. (Zerboni 1999)

Standardized materials were used such as particle board plywood, aluminum, industrial fabric with coloured markings in order to emphasize various functions. In this spatial context, kitchen that was positioned in one of the functional cells as part of standardized mechanical system was intended as a function concentrated industrial unit.

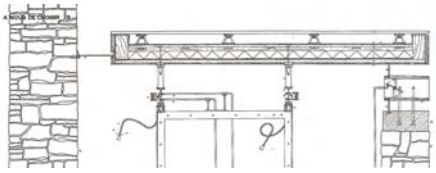

Figure 4.6 Functional Cells, Detail of Sliding System ,by Gerhard Kalhöfer and Stefan Korschildgen, , Germany, 1999.

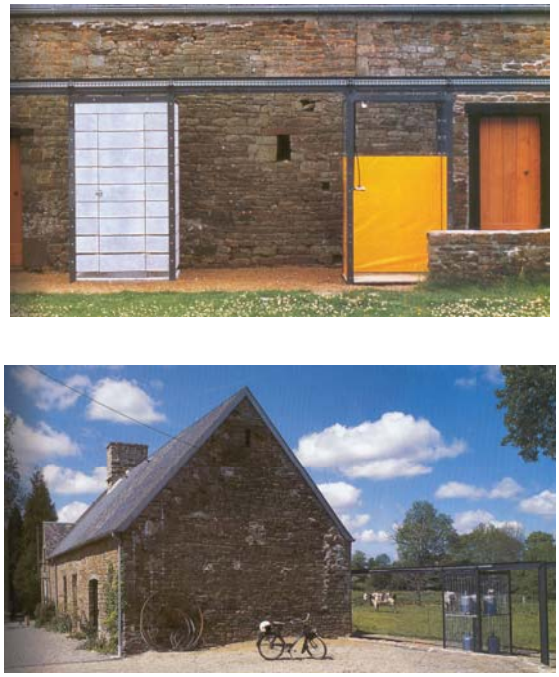

Figure 4.7 Functional Cells, Sliding Functional Cells in out of the door, by Gerhard Kalhöfer and Stefan Korschildgen, Germany, 1999.

Figure 4.8 Functional Cells, Kitchen Unit ,by Gerhard Kalhöfer and Stefan Korschildgen, Germany, 1999.

4.3. “KITCHEN IN MOTION” CONCEPT

The capacity of change of position and place had been considered, as watchword of this conception. The origin of the conception of kitchen in motion had been layed in the manner in which the body moved, as in walking. So this conception has been defined, as a meaningful or expressive change in the position of kitchen in order to adapt the changing individual needs.

4.3.1. KITCHEN AS COMPACT MINI BOX

The initial example of the conception from Joe Colombo, who designed this compact mini kitchen as a mobile package, is in 1963 for the Italian manufacturer Boffi. The main aim of Colombo was to convert a kitchen into a minimized compact box so that it could be capable of characterising and serving every single area.

Mini-Kitchen was consisted of a mysterious plastic-coated ashwood parallelepiped on wheels, measuring 75x75x90 cm, and a two ring electric hob, a spit, a grill, a refrigerator, a locker for 6 plates, cutlery and glasses that placed in special lofts to avoid breaking during transport, a locker for pots and pans, a series of small drawers to contain all the various tools, a locker for the cookery books, a kniferack at the side, a hanging tin-opener, the lid of the refrigerator which also acted as a chopping-board and the wooden lid of the stove which could also be used as a tray. All accommodated within an area of nearly one cubic meter. (Tambini 1996)

This mobile kitchen that was designed as industrial product design, has been intended for the future of differentiated people and spaces where decomposed objects constantly surrounded them.

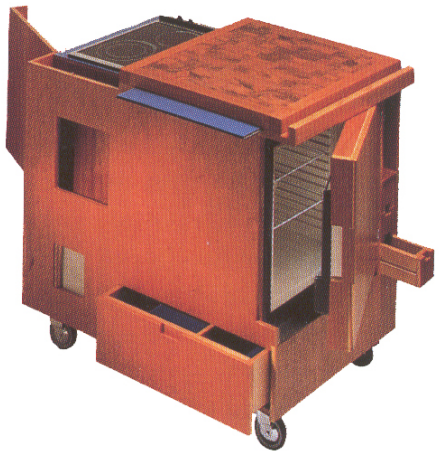

Figure 4.9 Compact mini kitchen, by Joe Colombo, for the Italian manufacturer Boffi, 1963.

4.3.2. KITCHEN AS MOBILE FEAST

As the second example of the conception, ‘Kitchen As Mobile Feast’ was designed by youthfull architects, Gerhard Kalhöfer and Stefan Korschildgen. They intended to slide kitchen in living spaces. This kitchen designed as a mobile feast usually intended as meal preparation for many persons and often accompanied by entertainment; a banquet.

In this ordinary terraced house, Kalhöfer and Korschildgen has aimed to transform the usual day-area, layout of separate kitchen, dining room and living room into a single open space. They redesigned the house totally. The only remainder of the original plan was the corridor wall that was used as a partition of sliding glass panels and a master wall that interacted rhythmically through the space. The aim was to create flexible open-plan environment. Continuous and incomprehensible broken lines on the floors motivated the architects in order to move kitchenette unit in this conception. These signs pointed out positions for the moveable kitchenette unit, and all the furnishings that were wheeled as entire system. The wiring flowed along the walls in coloured plastic ducts, and the spotlights hanged on ceiling tracks .The three kitchenette positions were located near gas, water and electricity outlets. The first was the classic position near the entrance with the living and dinning areas residing in the rest of the space. In the second, the kitchenette confronted the garden and the living area. The third option served for parties and entertaining, so every thing lined up along a wall. (Zerboni 1999)

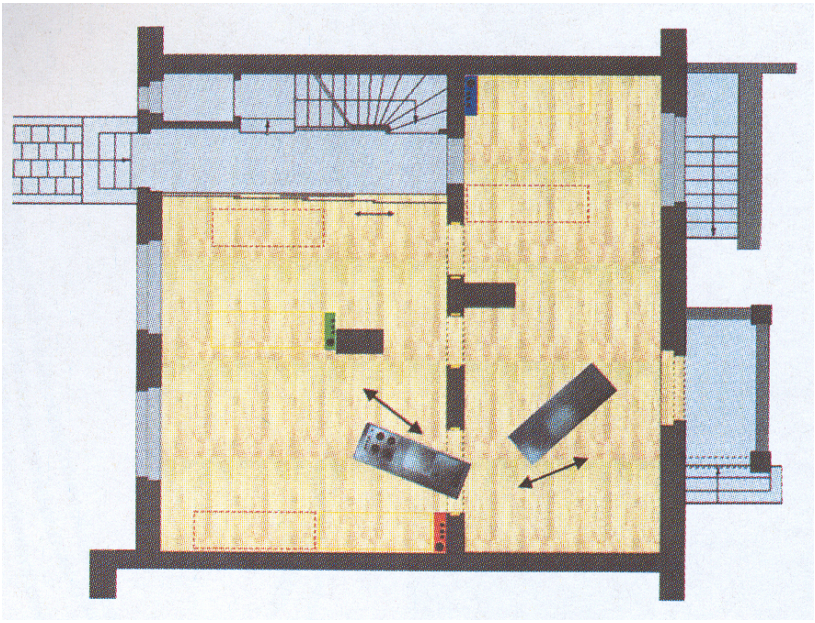

Figure 4.10 ‘Kitchen As Mobile Feast’, The kitchen can be set up in various positions in the spacious living area, by youthfull architects, Gerhard Kalhöfer and Stefan Korschildgen, Germany, 1999.

Figure 4.11 ‘Kitchen As Mobile Feast’, Kitchen units are mounted on wheels to make them easier to move from one position to another in the day area, by youthfull architects, Gerhard Kalhöfer and Stefan Korschildgen, Germany, 1999.

Figure 4.12 ‘Kitchen As Mobile Feast’, Coloured plastic bags cover the wiring and piping of the utilities outlets, Lighting consists of spotlights hanging on ceiling tracks, by youthfull architects, Gerhard Kalhöfer and Stefan Korschildgen, Germany, 1999.

4.4. “STORAGE WALL” CONCEPT

George Nelson had created the conception of storage wall, in 1944. It was considered as part of furniture and part of architecture, simultaneously.[7] Nearly 50 years later, in the following examples of the conception, simultaneously being a part of furniture and a part of architecture has become a focal point of conception that increased the creativity of designers. In this context kitchen has been fitted into storage wall.

The concept has been improved by mobility with basic motion types of components such as sliding, rotating, folding so that components of kitchen could be moved out of the storage wall towards the conception of transformation.

4.4.1. “STORAGE WALL” IN *THE HOUSE OF TRANSFORMATIONS*

With the conception of storage wall, Karel Vandenhende modernized his own apartment that was on the twenty-fourth floor of a tower block in Brussels, in 2000. In opposition to the spirit of Brussels, Vandenhende has intended a quiet, austere interior in order to allow movement.

So conception consisted in emptiness, for variation, and flexibility, which were defined as important needs of a creative person. Mobile standardized furnishings, which were consisted of 3 tables, 3 sofas, 3 sitting-balls and especially 10 multifunctional storage walls, acted important role so as to enable Vandenhende to change the interior when-ever he chooses. According to the way of daily works and individual habits, Vandenhende could get variations that enabled him to change spatial configuration. Kitchen that was fitted into one of the non-movable storage walls, only had component movement. So Kitchen was served to user as equipment wall with folding doors. The other non-movable pieces were toilet, shower and heating equipment. These were balanced by mobile storage walls that moved sliding on wheels as the other functions of house. (Heldens 2001)

Space could be easily changed with these storage walls, so that it could be adapted to the needs of occupant who wanted to feel himself independent.

[7] See chapter 3 “Modularity As Adaptable Conception”

Figure 4.13 Storage Wall Kitchen in House of Transformations, Kitchenette that was fitted into storage wall, by Karel Vandenhende, Brussels, 2000.

Figure 4.14 Storage Wall Kitchen in House of Transformations, Right: While Vandenhende was opening sliding doors to reveal kitchenette, Left: The apartment on the move by Karel Vandenhende, Brussels, 2000.

Figure 4.15 Storage Wall Kitchen in House of Transformations, Views of the apartment, by Karel Vandenhende, Brussels, 2000.

Figure 4.16 Storage Wall Kitchen in House of Transformations, Some of the configuration possibilities, enabled by moving the furniture around, by Karel Vandenhende, Brussels, 2000.

4.4.2. KITCHEN AS INTERACTIVE MODULAR STORAGE WALL

The Royal Institute of British Architects (RIBA) and furniture retailer MFI, organized a competition in order to explore kitchen in individual conditions conceptions. As the winner of the competition, ML Design Group emphasized how a future kitchen may become fully integrated into the life style of its users, individually. This conceptual kitchen that aimed to reflect changes in society, technology, and ecology, could be adapted how occupants work and interact with family and friends.

This kitchen has been designed as a part of an interactive modular storage wall with a pull-out sliding module and fold-down elements so as to give maximum flexibility of use. Paneled fronts to these elements were utilized either independently or combined to form display screens, and they could be modified by the user to perform a multitude of functions. (Brown and Booth 2002)

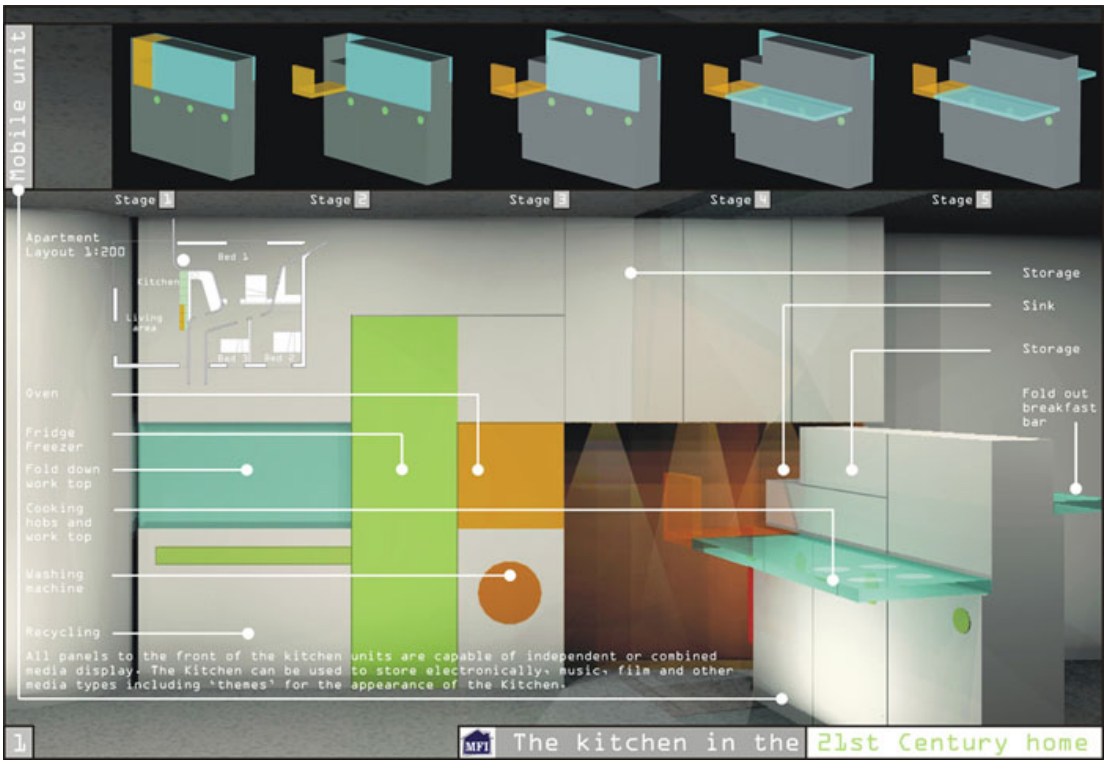

Figure 4.17 Kitchen As Interactive Modular Storage Wall, Pull out sliding kitchen modul and stages of use, by ML Design Group, 2002.

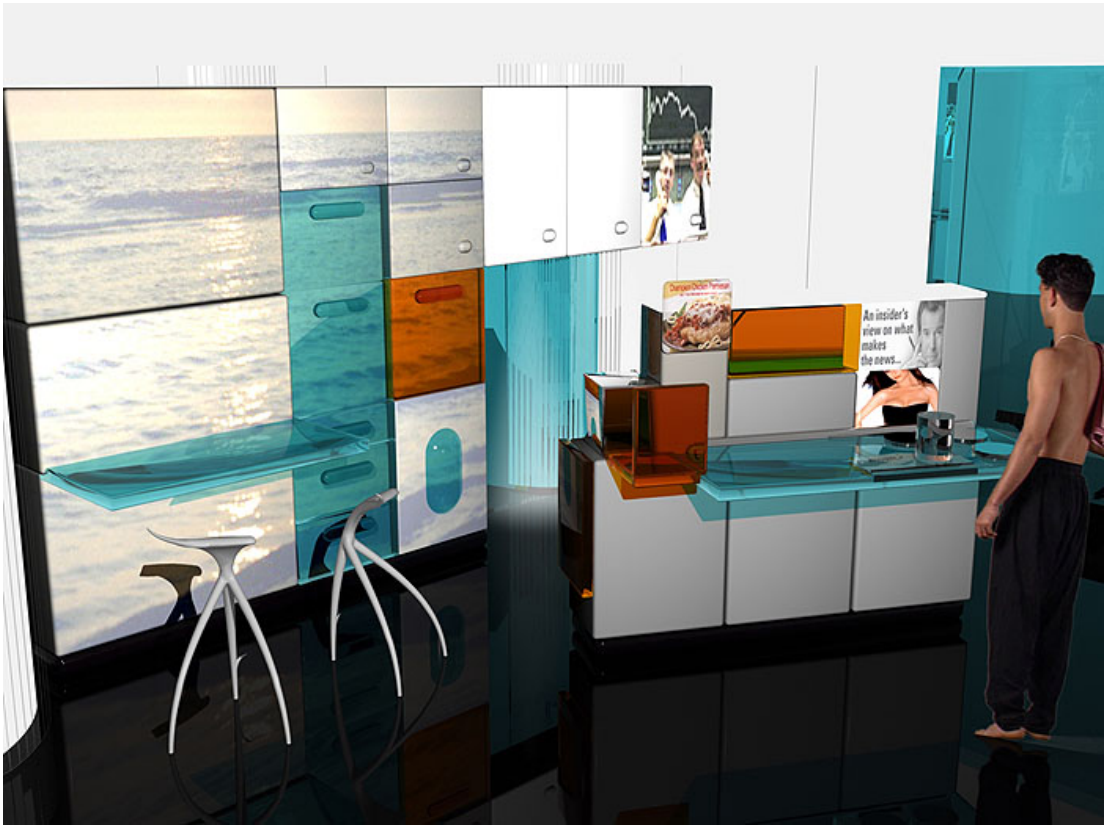

Figure 4.18 Kitchen As Interactive Modular Storage Wall, Convertion of storage wall module into independent mobile kitchen unit, by ML Design Group，2002.

CHAPTER 5

CONCLUSION

In the scope of this study, industrialization process has been analyzed and domination of standardization on modern life and people has been studied. Standardization has been viewed as the cause of the loss of individuality and provoked the desire of being individual in a modern society. Modern life that cycles itself in a paradox of standardization and individualism was considered as an important criterion and this idea formed the base of this study. In addition to that the evolution of modern kitchen was questioned and indicated as sampling.

The conclusive assessments have been viewed as the followings:

1. Basic tools, which combine the contradiction of standardization and individualism in a whole, are:

1.1. Mechanization and Interchangeability

Mechanical production has depended on the realization of two phases. First phase is the continuous rotation and the second phase is the **reproducing of objects**. In the realization of reproducing of objects, the idea of interchangeability gains great importance. With interchanging of parts, standardized components are utilized for several types, so that variations and broad product-range could be carried out. Thus, main aim of interchangeability is to increase the variety of production. Variations and broad product-range that increase the chance of choosing, was determined for being individual with standardized objects in the problem definition of this study. According to that, interchangeability serves as one of the basic tools that combine the paradox of standardization and individualism.

1.2. Mobility

Although, mobility especially in joining elements have been used since the 17^{th} century, conversion of this usage into a notion that meet the dynamics of modern life has been realized by industrial production process. Movable objects have become the characteristic vehicles of modern individual so as to modify itself and its environment. From the beginning of 20^{th} century, on the one hand, objects have been stabilized and standardized by norms and behaviors, on the other objects have been

mobilized as possibility and promise of decomposition and freedom. Therefore mobility is an important tool for modern man in the direction of individualization.

1.3. Modularity

Modularity is a system that is realized repetition of similar units in flexible methodology. Modules that can be easily fixed, reconfigured and mobilized, offers variations. Every module can be enriched with the mobility of components such as sliding, folding, and rotating motion types or the modules can move as a whole. So, modularity serves individuality in the context of the study.

2. Preconditions, which gather the contradiction of standardization and individualism in a whole, are:

2.1. Conditions relating to industrial production process

Industrial production process of an object has been designed as the design of the object for **efficiency and economy**. This is accomplished by determination of standards and integrating various operations with each other. **Division of production process, division of labor and assembly line** are most effective characteristics of this integration. **Determination of technical standards** was necessary for interchangeability. Technical measurements and specifications for connections are determined by national standards.

Industrialization could have reached maturity level with inventing its scientific methods around 1900. Frederick Winslow Taylor developed **scientific management** in order to decrease cost and raise productivity. He studied on limit of elasticity in human efficiency. He defended that best workers must have been picked and fixed the task accordingly. He searched the one best way of performing tasks and sought to eliminate superfluous movement. Maximum efficiency, minimization and qualification of labor and stretching capacity of workers have been viewed as main characteristics of Taylorist methodology.

Industrialization is based on efficiency and economy. Although every phase and tools of industrial production process are standardized and determined, they all allow variations and flexibility. This logic of industrialization has been effected society deeply and created rationalized **new people type.** Creation of new people type and society has been determined as precondition that gathers the contradiction of

standardization and individualism in a whole.

3. Basic statements in relation to the kitchen sampling in the context of standardization and individualism are:

3.1. "Kitchen is a part of home where is the only place the modern man expresses himself as an individual".

Home is the only private place where people want to express themselves as an individual. Kitchen is a part of home moreover kitchen is production and working space of home. So, kitchen is a place where it is favored as being individual and standardized.

3.2. "Kitchen is a work place that was converted into a mini factory and standardized completely according to industrial production processes".

In maximum efficiency, minimization of labor and conversion of mass production into maximization of goods have sprawled every phase of modernization, especially production of home. This mechanistic look of automobile industry immediately applied into home. **Home was divided into its parts such as spaces, constructional objects, and behaviors, so that it could be converted into a design object.**

Kitchen that is the only working place and production center in home has become best place in order to apply this mechanistic look and its scientific methods. Making the usage of kitchen scientific, in the context of **rationalization and efficiency** (C. Beecher 1880s), relating these behaviors with **Taylorist methodology** and beginning of designing kitchen as industrial object in **assembly line concept**, (L. Gilbreht 1910), **dividing user behaviors and determination of components of behaviors** (M. Schütte 1926), were important processes of modern kitchen.

Modern kitchen has been converted into a mini factory and modern woman has been performed like factory worker. So, modern kitchen has been realized according to industrial production process and its scientific methods.

4. Some consequences on the extensions concerning the age we live in:

Experimental spirit of today and emergence of conceptual kitchens in contemporary architectural spaces can be accepted as the extensions concerning the age that we live in. These conceptual kitchen examples strengthen the paradox of standardization and

individualism. This paradox is experienced in maximum degree. Compared with the conditions one hundred years ago, today, the ground is more suitable to combine this paradox in one whole. By the help of modern techniques the activity of consumption with the promise of individualization is very effective today. So, contemporary kitchen conceptions underline the problem of the study.

In contemporary examples, basic standards of modern kitchen that are saved could be pointed out as the continuity of a process. The further side of it, in various new architectural space conceptions, kitchen has the potency of changeability or it has changed the architectural space conceptions, simultaneously. So in this context, new contemporary examples should be considered differently and pointed out a discontinuity.

As the spaces of dwelling have the possibility of configuration by prefabrication and flexible modular planning, kitchen is considered as fixed equipped wall (Gausa 1998). As a following stage, in the project of *House of Transformations,* serving spaces that have been designed as mobile equipped walls moved in a homogeneous dwelling space and defined spaces of dwelling, offering many variations. In *Functional Cells* project, functions have been transformed from equipped wall into cells, which moved on to determined structure. The importance of cell project was that as one of the serving spaces, kitchen has become a box. On the other hand, in *Moveable Feast* project, kitchen has been reduced into modular counter unit that has been moved more flexibly, in order to enable various serving positions in dwelling. As the last stage of modern kitchen, in the project of *Crate House*, all kitchen functions have been fixed into a cupboard. So, breaking relationship between kitchen and the space of dwelling has been proposed in this project. From this perspective, as the result of promise of freedom, individuality in this project can be considered as the starting point of **discontextualist kitchen** conceptions, perhaps, that are not needed in a home.

As a result, some realities have appeared, according to the historical process of modern kitchen: Today, becoming entirely moveable and independent from the context, kitchens have entered **into a direction of transformable conceptions.** So, in contemporary conceptual examples, **kitchens have been transformed from stable architectural space into independent discontextualist design objects**. These

kitchens have made the reality of being standardized concealed behind the plurality of variations. Every one of the new designs has divided the stable parts of the former design so as to produce new variations. In this direction towards transformable kitchen, the concept of mobility seems active, in the 21st century, too.

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