AN ANALYSIS OF THE EVOLUTION OF MULTI FUNCTIONAL KITCHEN MIXING TOOLS

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ABSTRACT

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The topic of this master thesis is the historical investigation of kitchen tools that evolved towards a multifunctional nature. The history of kitchen tools will be discussed with particular attention given to industrialization, technological developments and the effects of mechanization.

Following this analysis, there will be a classification that could serve as a resource material for future studies, made according to the activity flow within the kitchen, in order to understand the interrelations within and between these products.

This classification will be put forward in the form of a visual table that includes morphological analyses of specifically mixing and beating tools under the topic of food preparation, how they developed historically following the industrial revolution, and how they carry a tendency to become increasingly multifunctional.

According to this table, the dispositions and interrelations of these products will be considered, concluding with a situational analysis and previsions for future designs and studies.

Keywords: Multifunctional Kitchen Tools, Historical Development of Kitchen Tools, Classification of Kitchen Tools

ÖZ

ÇOK FONKSİYONLU MUTFAK KARIŞTIRMA ALETLERİNİN EVRİMİ ÜZERİNE BİR ANALİZ

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Bu yüksek lisans tezinin konusu, mutfağı oluşturan araç ve gereçlerin tarihsel süreç içerisinde çok fonksiyonluluğa doğru evrimleşmesinin incelenmesidir. Mutfak ürünlerinin tarihi sanayileşme, teknolojik gelişmeler ve mekanikleşmenin etkileri dikkate alınarak anlatılacaktır. Ardından, ürünlerin birbiriyle olan ilişkisini daha iyi anlayabilmek için mutfaktaki aktivite akışına göre gelecek çalışmalara ışık tutabilecek nitelikte bir sınıflama yapılacaktır.

Bu sınıflamanın yemek hazırlama başlığı altındaki karıştırma işlevini yerine getiren mutfak ürünlerinin zamanla bir araya gelerek çok fonksiyonluluk eğilimi kazandığı görüşünü ortaya koymayı amaçlayan, ürünlerin sanayi devrimi sonrası tarihsel gelişimleri araştırılacak, morfolojik olarak analiz edilecek ve görsel bir tabloya dönüştürülerek ortaya konacaktır.

Bu tablo kapsamında, ürünlerin eğilimleri ve birbirleriyle olan ilişkileri göz önünde bulundurularak bir durum saptaması ve gelecek için öngörüler

yapılacaktır.

Anahtar Kelimeler: Çok Fonksiyonlu Mutfak Aletleri, Mutfak Aletlerinin Tarihsel Gelişimi, Mutfak Ürünlerinin Sınıflanması

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INTRODUCTION

1.1. Problem Definition

While the world evolves towards lifestyles for the conduct of which the use of multifunctional products becomes almost a common norm, it is the global era we are experiencing that is imposing on us the use of multifunctional tools and appliances. This tendency in the world has a considerable effect on the design of products.

Longman Dictionary defines tools as “something that you hold in your hand and use to do a particular job”, and hand tool as “a tool that does not use electricity”, whereas it defines appliance as “a piece of equipment, especially electrical one, used in people's homes” and product as “something that is grown or made in a factory in large quantities, usually in order to be sold” (2006). Under the guide of these definitions it can be said that tools are developed, mechanized thus evolved into industrially produced appliances.

Tools have been produced for human needs since ancient times and thus have been developed through the ages. The evolution of the craft of cooking tools and producing tools throughout the history is parallel to the cultural development of mankind. Tools, which could be defined as the objects reflecting the culture to which they belong, develop, alter and evolve, depending on their used time, place and conditions of life. Kitchen tools that are the subject of this study are not exceptional.

The development of a society can be traced by examining the tools that have been used throughout the history. Petroski (1993) claims that all the tools we use today are based on things made in the dawn of prehistory. There have been many tools designed since the dawn of the mankind to fulfill the human needs.

Hauffe (1996) states that the history of design is not merely a chronology of objects and their forms, but a record of the forms of life, because the relation of human beings are reflected upon the objects they produce and use, especially in the 20th century. As in the case of the evolution of human culture, products also resemble a similar cycle of evolution that is characterized by change, development, maturation, aging and dying through time, technological progress and the evolution of design. Indeed this is true also for the kitchen tools.

When designers attempt to develop new products to be added to the existing pool of tools and utensils, they follow a process of research and investigation of the accessible products within their area of interest. Besides they are required to know the direction of product disposition and trends within the market, in order to determine and upgrade the appropriate standards for the products to be designed.

According to Bayazıt (1994) problems are attempted to be determined before beginning the actual activity of design. Identifying the quality of products plays an important role in defining design problems. Today it is a challenging issue to respond to the questions regarding the form, appearance and character of the products given the diversity of products even addressing similar needs and to benefit from the continuously changing information and knowledge. That is why a designer has to be well informed and knowledgeable in order to make the right decisions and create a successful product. Having mentioned this, one can easily make the deduction that designers are in constant need of a systematic database to perform such research.

There are plenty of tools and utensils produced to satisfy every single need; therefore the number of tools in the kitchens is rising each day. It is observed that some of these products come together after a while to create a comprehensive multifunctional product which materializes more than one function at a time.

As a result of the abovementioned fact, it can be stated that the unification of tools begin to result in an increase in multifunctional products within the kitchen as well. This evolutionary tendency of kitchen tools towards merging different functions in one tool justifies a historical and morphological study to understand the development of multifunctional kitchen tools.

The way the products combine more than one function could be understood by examining the ways the dynamics of globalization affected the design and production of kitchen tools. In this current stage of design history where more and more products are evolving towards becoming cheaper, smaller, easier to use, more efficient and more useful, the existence of multifunctional products, their benefits, their places within the market and their future are the topics that are worth to be evaluated and discussed.

1.2. Aim of the Study

The thesis titled “An analysis of the evolution of multi functional kitchen mixing tools” aims to show that the development of multifunctional tools has also occurred with regard to the kitchen tools. The specific focus of this thesis is on the tools that are used for mixing purposes in the kitchen. To understand how kitchen tools for mixing purposes developed into multifunctional appliances, the historical evolution of mixing tools will be evaluated in terms of the morphological changes occurred.

Another aim of this study is to understand why kitchen tools unite by considering the historical progress of kitchen and its tools. The emergence of kitchen and its transformation into a specialized place in domestic environment and accordingly the tools affected by this development will be questioned. The changes in the kitchens will be indicated by examining the developing technology and the rise of product variety.

In order to reach a conclusion, the research questions below are tried to be answered:

- How have kitchen tools, mixing and beating tools in particular evolved in form throughout their history?
- What are the factors that have contributed to this evolution?
- How will these multifunctional products continue to evolve in terms of use and form?

1.3. Structure of the Thesis

Designers pursue the act of designing by careful consideration of product groups and their dispositions. Therefore, in this thesis, the first action that is attempted to be taken is a classification system that could aid this kind of research process of designers. In order to achieve this, a review of kitchen tools in the global market at the beginning of 21st century will be done.

Bayazıt (1994) states that one of the decision topics is the activities held in an environment. As supported also by her, a data-base of domestic kitchen tools, utensils and appliances is created according to the task fulfilled by the tools under the category of flow of activity in the kitchen; in order to aid future studies considering the relationships of kitchen products with each other. In the proposed classification, the activities and sub activities held in kitchens will be

determined.

After all, the main purpose is to create a historical and morphological analysis of a group of domestic products taken from this classification and to determine how this group merges with others, turning into another product under the name of multifunctional tools.

As a result of the classification created for the aforementioned purposes, the most varied product group and the most activities performed by such group has been put forth as 'preparation tools'. The subject is later narrowed down to the choice of one of the subgroups of this product group, which is constituted by the act of mixing. It is observed that the inclination of unifying is highly observed in this group. The stance of this subgroup in today's kitchens is historically examined, starting from the beginning of human history and the tools of the time for stirring and beating, and how these products have undergone their process of change after the industrial revolution. With the impact of industrialization, tools primarily attributed only to the rich aristocracy have been transformed to common use, and since this is considered the beginning of product differentiation, this process has been given considerable importance. Following this period, the situations of these products, from then until today, are analyzed through the Western global market. The situation in Turkish market is not investigated specifically. Due to its resemblance to Western market, it is evaluated within a general frame.

The state and usage of mixing and beating tools in today's market and their tendency of becoming multifunctional products will be questioned. The study mainly aims to elaborate on multifunctional kitchen tools with a specific focus on food processors, which means "a piece of electrical equipment used to prepare food by cutting and mixing it" based on Longman Dictionary (2006), which at the same time is accepted as a definition for this study.

The historical progress of the food processor has been found valid for exemplifying this process of function unification under the umbrella of a more generalized multifunctional tool. The time period to be examined is from the post-industrial revolution until today.

Discussions on the reasons behind this fact and the later effects of the existence of multifunctional food processors are going to be initiated. Future predictions are tried to be made by understanding the reasons behind the current situation.

Finally, it must be noted that the major concern of this study is the examination of the evolution of multifunctional kitchen tools in relation to technological aspects in today's world.

1.4. Method

The research method of this study is mainly based on literature search. In the second chapter the collected data on eating habits, formation of kitchens, development of tools and their use in kitchens are attempted to be put forth in relation to each other and will be explained in a historical framework starting from the pre-mechanized era until industrialized modern times.

In third chapter, the research method of the thesis is based on literature and market research in the West. The previous classifications made in the literature will be scrutinized and will be backed up with a market research which will be used as a source to support the demonstration of the increasing variety and quantity of tools. The collected material on kitchen tools and utensils will be reviewed once more, taking the classifications made by firms producing kitchen products into account. Depending on the flow of activity held in kitchens, a new classification will be established by considering the

present classifications within the market and the prior ones found in literature.

In the fourth chapter, a review of the evolution of kitchen tools will be made. The research method of this part of the study is based on market research and again a literature survey. In this chapter, the study progresses with the general idea of multi functionalism in tools. Samples from the market will be given to clarify the subject in depth by performing market research and participant observation.

While the concept of multi functionalism is questioned, the subsistence of mixing and beating tools classified under the subject 'preparation' will be examined. Tools will be evaluated with an emphasis on their development and transformation. Evolution of mixing tools is going to be visualized in a time based chart. The methodology used for this part is a situational analysis in today's world within a historical and morphological framework.

Food processor, as the appliance chosen as an example, will be examined according to its functions and with evaluations over products of certain brands which are the most prominent ones within the global kitchen products market. The product situation analysis will be made and future predictions will be added depending on the analyzed present circumstances.

CHAPTER 2

HISTORY OF KITCHEN TOOLS

This chapter describes the emergence of kitchen tools, their development process, then their mechanization and finally their evolution towards multifunctional products.

One of the basic activities of human kind is the act of eating. “Because of its necessity in sustaining life, the preparation and consumption of food has occupied a central place in the lives and shelters of human beings since earliest times” (Koontz and Dogwell 1994: 5).

To satisfy their eating requirements mankind first hunted and gathered, then with settled life, they produced their own nutrients, and later with the development of food production and cooking techniques, various kinds of tools began to appear in order to be used in the newly developing concept of kitchen.

In order to explain the historical development of kitchen tools and utensils, a profound study must be done by considering the eating habits of human and his way of transforming nutrients into meal. Then, the differences in variety of territories and their way of solving the problems should be studied. In this chapter, kitchen tools dependent on factors like kitchen development, technology and industrialization period is explained.

The preparation and consumption of food has occupied a central place in the lives and shelters of human beings. In order to understand human, it is obliged

to have a look at its eating habits and afterwards the tools developed, as “the human history evolves alongside eating habits” (Ubach 2003: 16). People started to create their tools firstly by using natural materials like bones, stones, leaves and trees, and in the course of time they developed various tools.

With the necessity of eating, cooking, storing and serving activities came into being as well as the production development of nutrients. All these activities needed a place to be done, which was later called kitchens. Man’s desire for shelter concluded with dwellings and the separation of a part of their dwellings for the activities related with food, concludes with the development of the kitchen and its variety of tools and utensils.

Kitchens and the tools are developed for the culture they belong to. In different parts of the world, food culture is different, which reflects on the cuisines, the tools developed and the kitchens in varying from each other. Every different territory has its special beliefs and traditions on food taking, which constructs their way of cooking and eating.

In every society, there are different rules and codes. The culture we live and the environment surround us and have large impacts on food intake. Observations can be made on food culture which can indicate how food types and food variety differ between populations which will direct afterwards the variety of tools produced.

As the years and centuries pass, the role of kitchen and the people within it change according to the necessities and life styles of that particular time and culture. Consequently, the tools used in kitchens progressed. This progression brought about evolutionary process in product life spans. In order to understand the process of tool development, it is necessary to have a look at first the history of kitchen, as the tools and the kitchen have a mutual development process.

2.1. History of The Kitchen

Kitchen is the place where food is prepared, cooked and stored; moreover it is placed in the center of the dwelling in which eating activity is done if there is enough space. Activities like storing the rest of the food and cleaning the dishes are also done in the kitchen.

It can be said that the development of the kitchen has a link with the development of the cooking range. Initial kitchen concept emerged with the fire placing at the center of the dwelling. “Early shelters consisted simply of open fires or central hearths located in the center of household and family activities” (Koontz and Dogwell 1994: 3). Kitchens took their place around the fire and hearths. Fire was being used to heat and cook at the same time. After years it finally divided its functions; heating in the place where people socially interact and live, and cooking in the kitchens. The open fire and the flame in the hearth ran through the ages. Until the eighteenth century, open fire stayed sole means of heating the food.

According to Ubach (2003) invention of kitchen was an important discovery, bringing pre-historic man a step closer to civilization. It can be concluded that the home and civilization was conceived around the fire and then around the kitchen. So, Ubach (2003) expressed that fire defined the first stage in the evolution of kitchen.

Pilaroscia and Ragan (1995) states that the evolution of modern kitchen design began after the invention of fire, when primitive people started to cook and brought a source of fire into their shelter. The changes in the fire sources and development of the cooking activity affected the design, the organization of kitchens and its appliances.

The kitchen was firstly used only for cooking; thereafter it turned into a place

where the meals are eaten. For Example according to Ubach (2003) that the Aztecs introduced the concept of the kitchen-dining room, situated in the center of the home where the fire remained permanently, like in many cultures.

According to Ubach (2003) food was cooked over the fire of the chimney during the Middle Ages. The thirteenth century marked the appearance of kitchens with ovens and tables. On the other hand, Gieidon's (1948) point of view with the awakening of a burgher consciousness the kitchen became a separate room of the house in the 15th century. But even into the 17th century it often served as the burgher dining room, often as the bedroom too, and occasionally as a social chamber. Afterwards, a deep renovation in rural architecture began to occur in the 16th and 17th centuries. There was a place under the roof for storing grain, and a room with a fire. The place reserved for the fire becomes farther from the center of the room little by little and becomes situated on a wall. The creation of the chimney appeared in the 18th century. The emergence of chimney made a change in the distribution of the house. Then the kitchen started to take its shape as its own space which later became an independent room in the dwelling. Although ventilated, it is separated and almost hidden from the rest of the house. Beginning in the late middle ages, kitchens moved from the living area into a separate room.

Giedion (1948: 527) states that the kitchen as we know today is "dependent on the development of heat sources". The open flame of the hearth, coal within the cast-iron range, and finally electricity followed one another as the heating agents.

Technological advances during industrialization brought major changes to the work done and appearance of kitchen. Myerson and Katz (1990) agree that the development of modern kitchenware began during the industrial revolution in England. The change from an agrarian to an urban economy brought about a major transformation in cooking and eating habits.

Heskett states (1995) that between 1880 and 1900 Frederick W. Taylor tried to achieve a standardization of working methods in order to maximize production. It was a rejection of the craft depending on skill. He tried to improve efficiency and production which lead to standardization. Standardization is a fundamental design concept and an aesthetic form in modern industrial production with its extension into modular units and their incorporation into working systems.

Standardization and rationalization found their most complete expression in 1920s and they considered as concepts relating to industrial and commercial efficiency.They were applied to domestic work, especially to domestic kitchen with the book of Catherine Beecher in 1896 “suggesting changes in the organization and layout of kitchens” (Heskett: 1995: 81). Her proposal was that “housework should be divided up so far as possible among the members of the family” (Giedion 1948: 516).

The kitchen called *Frankfurt Kitchen* developed in 1926 with a standard layout depending on previous research. It was built for two purposes: to optimize kitchen work to reduce cooking time and to lower the cost of building well-equipped kitchens. At first, people were not accustomed to the changed processes because it was so small that only one person could work in it. But the Frankfurt kitchen embodied a standard for the rest of the twentieth century in rental apartments: the work kitchen. It was criticized to prison the women in the kitchen, but there were economic reasons lying behind. The kitchen once more was seen as a work place that needed to be separated from the living areas because of practical reasons. Standard dimensions and layout were developed for the Frankfurt kitchen. And also the equipment used was standardized: hot and cold water on tap, a kitchen sink, an electrical or gas stove and an oven. The refrigerator was added as a standard item afterwards. Lastly, dishwashers and the microwave oven took their place in the kitchen.

As the civilization develops, the understanding did not change. Myerson and Katz (1990) puts forth the relation between the kitchen and the lifestyle of that era with saying "just as home was *a machine for living in* (Le Corbusier), so was kitchen a machine for preparing meals in". After long years, there has been a change in the function of kitchen from being just a place for cooking. It turned into a place in which not just food is prepared; but a part of home, with Roenisch and Conway's (1987: 168) words "kitchen is a sanctuary from the pressures of the workplace, and the outside world".

By the disappearance of servants at homes, changes occurred in the organizations of kitchens. Giedion (1948) mentions the servantless household formed the framework. The actual solutions depend on the mode of life. The process is not only limited to the kitchen but it is bound up with a changed conception of the house. According to him, disappearance of the isolated kitchen is connected with the disappearance of the isolated dining room. In the twenties, this trend was popular. In 1934, the space of the kitchen now called by Wright the work space is joined to that of the living room for the first time. "Frank Llyod Wright's solution implies that cooking need no longer be done behind closed doors, hidden from the eyes of the family or from the guests" (Giedion 1948: 624). As women started working, the time they spend at home reduced. So, they preferred to spend more time with their family when they were home. At that point the open floor plan became popular and the kitchen became a main part of the house instead a separate room.

While Giedion (1948) mentions the living kitchen, Raymond Fordyce wishes to make the kitchen an active center of household life, where the family can work, play, eat and spend their time. The living kitchen realizes this by combining four rooms which are separate from each other: the laundry, the kitchen, the dining room and the living room. Koontz and Dogwell (1994) agree that kitchen often serves as the location for the interaction between adults and children within the household. It can be stated that kitchens were

the focus of family activity and interaction.

While kitchens were counted as the center of socializing place of the house, different kinds of tools are produced in the meantime, parallel to the development of the kitchens.

Wikipedia Dictionary (2006) states that starting in the 1980s open kitchens appeared again and integrated more or less with the living room. The re-integration of the kitchen and the living area changed the perception of cooking: increasingly, cooking was seen as a creative and sometimes social act instead of work, especially in upper social classes. Another reason for the trend back to open kitchens is changes in how food is prepared. In the 50s most cooking started out with raw ingredients. The advent of frozen meals changed the cooking habits of many people, who consequently used the kitchen less and less.

The kitchen underwent a radical transformation through the years as it has been the central living space or socializing place within home. During the last century, our kitchens changed more than ever. The important changes were the use of gas and electricity, cooling and freezing techniques, thermostatic control for cooling and cooking.

According to Bozis (2000) in order to know the characteristic properties of a certain kitchen's style, it should not only be looked at its geographical and climatic conditions but also to the social and economic construction and the cultural roots of that kitchen.

There have been many developments and changes in kitchens according to the needs and circumstances of social life. In addition to that, it is possible to see many differences in local kitchens in different parts of the world. Regional differences in the approach of kitchen design also results from climatic, social

and cultural influences. All these factors might be studied separately, but in this thesis, a general overview of the emergence of the kitchens is tried to be given.

Changes, in whatever way it happens, as Mokyr (1990) states that in two centuries daily life changed more than it had in the 7000 years before. As the years pass, the role of the kitchen and the people within it, change according to the necessities and life styles of that particular time and culture. Consequently, the tools used in kitchen progress. This progression brought about evolutionary process in kitchen product lifespan.

2.2. Evolution of Kitchen Tools

The evolution as Mokyr stressed, is seen in daily tools. The term 'evolution' has many various but related meanings when used in different areas of expertise. In terms of biology, evolution is a historical development; in other words, it is the morphological and physiological transformation of an organism. In Mokyr's (1990) point of view, the difference between biological and technological evolution is that biological evolution is generally believed to be adaptation to a changing environment, whereas technological change is a manipulation of the environment. So, the evolution of one object can be explained as its changing power of its environment or adapting to the environment by changing itself.

In this thesis, the term 'evolution' is preferred to be used as an explanation of the changes and development in design, moreover the transformation of an object into another by simultaneously modifying its environment.

Heskett (2002) summarizes the evolution of a new stage in design with the layering over the old instead entirely replacing the one before. "In their origins, tools were undoubtedly extensions of the functions like grasp, cup, clench,

knead, press, pat, cop, poke, punch, claw or stroke of the hand, increasing their power, delicacy and subtlety" (Heskett 2002: 14).

Tools produced for the kitchen are dating back to early ages. Mankind with its observation over the nature realized that "the nature doesn't like the emptiness and tries to fill it" (Uhri 2003: 15). This idea of limiting emptiness with covering the sides and insulating it from its surrounding combines with his creation and develops first stone, wooden and then the clay cups.

Firstly, man must have discovered the emptiness with the cup-like shape of his hand palm. People must have started to drink liquids from their hands. Then, natural objects able to hold liquids inside, might had been used as eating utensils like shells, coconuts or horns of the animals as shown below (Figures 2.1, 2.2 and 2.3) . As Giedion (1955) defines human hand as a prehensile tool and an instrument which can seize, hold, press, pull and mold, it seems possible.

Figure 2.1 Shell

Figure 2.2 Coconut

Figure 2.3 Horn

Gürsoy (1995) mentions that, first knife, then spoon and lastly fork has taken a part in the history of table. According to Petroski (1993), it is a reasonable story that the evolution of the modern knife and fork develops from flint and stick and the evolution of the spoon from the cupped hands and shells. Whatever its intended function, an object's form suggests new and more imaginative forms, like the stick did the fork and the shell the spoon. The eating utensils are as familiar as our hands today. After manipulating our

fingers automatically, now we can manipulate knife, fork, and spoon.

Heskett (2002) states that the hand can be cupped in order to drink water, but a deep shell is in the same shape and is more permanent, besides it functions more efficiently. At this level, the process of adoption involves the capacity of the human brain to understand the relationship between forms and functions. "Over time, forms were adapted by intent or by accident, became refined, or were transformed by new technological possibilities and new stereotypes would emerge to be adopted as a standard" (Heskett 2002: 16). If it is looked at the historical evolution process of tableware utensils, it can be seen that this diversity progresses within innovation. And it can be observed how these products developed, varied and finally simplified according to innovation and new needs.

In the history of table, the evolution of the knife, fork and spoon can lead us to a theory of how all things of technology evolve. Exploring the tableware we use everyday provides a starting point for a consideration of the interrelated natures of invention, innovation, design, and engineering.

The discovery of fire had brought many changes and innovations in all fields of our lives. With the use of fire in dwellings, hearth concept emerged. Dwellings continued and develop around the fire place which is a source both for heating the dwelling as well as cooking the food. As fire was the cooking source, cooking tools were tried to be produced appropriate for the fire.

Tools were produced for gathering, cutting, chopping the raw materials and then for cooking the food on fire. In the meantime, utensils were developed to eat the cooked food. Dormer (1945) explains the state of basic tools that their shapes, forms and material requirements are determined by the narrow function they have to perform like cutting, slicing, grinding, bashing and ripping.

Norman (1989) states that the natural design process can be understood through the characteristic of products built by craftspeople. Handmade objects such as rugs, pottery, hand tools, or furniture; each new object can be slightly modified from the previous one. They developed by eliminating the problems and making small improvements. This process results with functional and aesthetically pleasing objects. Improvements can happen through natural evolution as long as the previous designs are considered.

2.2.1. Mechanization of Kitchen Tools

To explain with Giedion's (1948: 512) words, "mechanization in industry meant the change from handicraft to machine work. It is the use of machines to replace manual labor or animals".

Tools working manually before technological developments, transformed into mechanized appliances. Within time, production by hand, transferred into a process of mechanical production. With the advent of mass production techniques, more industrial tools began to be produced. Some of them hit the history by making revolutions with their use, some just helped in daily lives.

With the increase of product alternatives, users owned more goods than ever before. The abundance of products entering our lives caused some of them to lose their use, some to combine their power. These products combining their functions gave a rise to the existence of multi functional products (which will be discussed in Chapter 4). Thenceforth, products started to change from being single functioned into ones having many functions. In this context, designers who are going to design kitchen products should have a look at the trend and analyze the needs carefully to design new pieces.

Amount of time the tools need to be produced is important. That is why the

assembly line that reduces the production time is one of mechanization's most effective tools. Giedion (1948: 41) defines the mechanization as "the period between the two World Wars". Myerson and Katz (1990) add that kitchenware became increasingly mechanized and electrical in the years after World War II.

Gieidon (1948) mentions the change in the instruments. Household utensils and appliances like the axe, the knife, saw, hammer, shovel which remained static for centuries in Europe, started to shape anew from the first quarter of the nineteenth century on. In the 1920s, mechanization involves the domestic sphere. The house is overall mechanized, including the kitchen, the bath and their equipment. He states that more appliances grew into household necessities in the time of full mechanization than ever before introduced in the whole century. The mechanization of the kitchen coincides with the mechanization of nutrition. As the kitchen mechanized more, the demand for the ready made quick food increased. Kitchens are turned into mechanic places in which work is done quickly and practically instead of a social place that most of the time is spend.

The kitchen underwent a radical transformation following "its progressive reduction in size and the loss of its role as the central living space within the home" (Maldonado 1987: 23). With the lessening of kitchens, the storage area also lessened. It became difficult to keep increasing number and variety of products each day in kitchens. This situation might have given rise to the emergence of multi functional products occupying less space instead of many products.

Giedion (1948) states that in the latter half of the nineteenth century, with the widening of railroad, the growth in metropolis influenced the mechanization reaching deeper into life. "In the sixties the mechanism reaches its standard form. Invention of domestic coring, slicing, paring and dividing appliances was still in full swing during the nineties" (Giedion 1948: 553).

There are many factors affecting the design of kitchens and the development of tools like technology, culture, changing lifestyles, economic situation or the climate in twentieth century. In fact, the biggest and continuing development and progress eventuated within the industrial revolution.

2.2.2. Industrialization of Kitchen Tools

Economic, societal, and technological factors influenced the design of houses and accordingly the kitchens at the beginning of the 20th century. The most important of these factors was the successful rise of the industrial revolution. It not only transformed traditional crafts, but also established many new industries for the mechanized production of new forms as the technological innovations increased. The process of mechanization, standardization, and rationalization of the kitchen area makes differences in its functional specialization, its role in the dwelling as the center of the house, and afterwards its isolation from the living space.

It is said that the industrial revolution took part at the end of eighteenth century related with the steam engine and the next one happened in the second half of nineteenth century with the development of electricity, steel and fuel industry. It is called a revolution because it changed society both significantly and rapidly.

Industrial revolution was the replacement of manual labor by machines. The most immediate changes happened in the nature of production: what was produced, as well as where and how. Goods that had traditionally been made in home or in small workshops began to be manufactured in the factory. Montagna (2005) explains the era known as industrial revolution, as a period in which fundamental changes occurred in agriculture, textile and metal manufacture, transportation, economic policies and the social structure. This

period can be counted as a revolution by destroying the old manner of doing things by gradually changing conditions.

By the affects of industrial revolution, there has been a major change in the life styles of people due to the changes in economy, technology, mass production and mass consumption. Goods traditionally made in the homes or the workshops of craftsmen began to be manufactured in factories. The daily products started to be produced mechanically in big quantities. This change holds the roots for an evolution in product development process. With the effect of industrialization, assembly lines and factories were constructed. There had been a transition from the crafts to mechanized objects. Before the industrial era, it is assumed that a craftsman was producing one item in one hour; but after mass production, the machines started to produce one hundred or may be one thousand items in the same period of time.

Mass production and its developing techniques was one of the major factors that affect the production of kitchen tools in the industrialized period. In a mass production system, evolved from handicraft, it is doubtless that more than one item is produced at the same time. Production technology, benefited from the advantage of developing industry, makes a contribution in development of kitchen tools as well as in every other field. Production process became shorter and easier. More time remained for the production of new goods. During this period, continuously developing technological factors became the agents to reshape the product aspects.

As a result of industrialization, all the objects that we see around started to be produced by industrial ways. According to Bozbaş (2001) it can be seen that the entrance of industrial design to our homes is firstly from the kitchens if it is looked at history. Production changed from crafts to industrial in all fields one of which being the kitchen and its appliances.

During the last century, our kitchens and accordingly the tools have changed more than ever. The important ones are, using gas and electricity, cooling and freezing techniques, thermostatic control while cooling and cooking. Bozbaş (2001) states that kitchen, being a place for cooking food before, turned into a place, which is chic, smart and reflecting all kinds of technology today.

2.2.3. Design of Kitchen Tools

The evolution of kitchen described in Chapter 2.1 provided the discovery of design world and its rapid development.

Papanek (1971) claims that all things we do almost all the time can be named as design, so it is convenient to say that design is basic to all human activity. It has been in our lives since the man started to produce tools for himself. Dormer (1945) says that design and even the professionalization of it is not a new activity. All ascendant civilizations have used it before.

Design that is rising in the last quarter of 19th century became a part of everyday life. It is a social and material activity. It is "questioning our daily environment, creating new ideas and goods for some problems, or sometimes just for fun" (Roenish and Conway 1987: 133). Freidman (2003) summarizes design as solving problems, creating something new, or transforming less desirable situations to preferred situations. To do this, designers must know how things work and why. Understanding how things work and why requires us to analyze and explain. According to Frascara (2001) during the action of our world, design should bring new tasks and innovation to the world.

"The transition from predominantly agricultural/craft cultures to ones based on industrialization, with all the consequences for technique, form, organization and social significance, will therefore continue to be the main focus of

attention in any history of industrial design" (Heskett 1995: 115). In order to realize a design problem, it is a must to understand the design structure.

Every time we eat, a designer has something to do with how the food is served, presented, packaged, or cooked. Table top is a broad area inhabited by product designers. From the plate on which the food is served to the utensils, designers are involved. That is why they need information. While designing a kitchen tool, designers firstly establish its relation with its environment, which can realize through a classification on the flow of activities in kitchen.

There have been many technological breakthroughs that happened both in production techniques and in materials technology. Industrial revolution brought many changes in the production of goods. Professional industrial designers have paid more attention to kitchen products as the century has progressed and kitchenware became mechanized and electrical.

2.2.4. Technological Changes Reflecting on Kitchen Tools

Design cannot remain isolated from technology, markets and the culture. Technological improvements occurred gradually over the centuries, and they have affected the quality and way of life. Technology allows us to dominate many inputs in our lives. Güngör (1996) explains the history of technology as the historical process of the dominancy of nature over human, changing into a state of dominancy of human over human and nature.

> This century has produced a series of dramatic technological breakthroughs, which have radically transformed the kitchen, and the equipment used in it. New materials such as heat resistant glass, stainless steel and high-performance plastics have reshaped existing functions and created new ones; the advent of mass production techniques and domestic electricity has revolutionized life in the home, making domestic appliances more convenient, varied and available (Myerson and Katz 1990: 6).

Materials technology has been very dominant in shaping the direction of modern kitchenware design. New developments in each kind of material has significant role in changing design products. New materials have reshaped the existing functions and created new ones.

Myerson and Katz (1990) believe the biggest change has been caused by the development of plastics in materials technology. The first synthetic, plastic, bakelite appeared in the kitchen in 1907. In the 1920s it was used for colanders and egg cups but because of its unpleasant smell it was swiftly replaced by another material called urea formaldehyde. High density polyethylene was introduced in 1956 in Germany. It was tougher and more heat resistant. In the late 1950s ABS improved; this was expensive but very tough. In 1958 polyacetal was invented, a material which revolutionized the kettle. The invention of heat resistant glass, pyrex changed the use of glassware in the kitchen. Cast iron and tin sheet pots emerged in kitchens in the mid 19th century. In the meantime, aluminum had been developed in the late 19th century. But the most significant advance in metal kitchenware was the development of stainless steel in the 1930s.

Apart from the development of materials technology, changes might easily be seen in the cooking source developments. Ubach (2003) summarizes the evolution of kitchen materials throughout the 19th century by explaining the progress in cooking. In the beginning of the century kitchen stoves were made of bricks, and wood was used for burning. Later on, iron stoves with the burner incorporated appeared. The first gas stoves made their appearance around 1850 and they gradually started replacing the ones using coal. “The arrival of gas meant the beginning of the mechanization of the house” (Ubach 2003: 34).

Sparke (1986) agrees that electrical power was one of the major technological advances to influence new consumer machines in the second half of the

nineteenth century. Roenisch and Conway (1987) say, similar to Sparke, that the sources of power like gas and electricity gave rise to a new range of domestic appliances from gas cookers, to electric kettles. Design of the kitchen was influenced by the science applied in mid nineteenth century. Electricity was a big revolution for domestic appliances. The effects of electricity can be seen in the transformation of some manual objects to electrical ones. Electricity caused an evolution and development in the process of product lives.

It is mentioned that the most important reason in the increase of product variety is the use of electricity. Today's users benefit from electricity in saving their valuable time. Electrical household appliances, having many functions, became indispensable in our kitchens since they bring convenience. Multi functional food processors, kettles, automatic coffee or tea machines or toast machines not only provide time saving but also affect the quality of taste and increase in alternatives.

Figure 2.4 Turkish coffee pot

Figure 2.5 Electrical coffee pot

Turkish coffee pots had been made from brass for many years, but after the revolution of electricity, they began to be produced electrically from steel. It does not mean that the brass coffee pot lost its usage, but gained another rival in the market: the electrical one. Electricity, providing us the products that are working electrically, presented alternatives to us. The use of electrical products is more practical and easier than the others that make them

preferable. To say that manual tools have been replaced by their electronic counterparts is a rough

and baseless argument, but it can easily be said that electrical appliances have shaken the dominance of the manual tools.

If another example is given in this field, the change of manual bottle openers or corkscrews into electrical ones might be observed.

Figure 2.6 Cork screw

Figure 2.7 Electrical corks crew

With the developing technology many renewals are done that simplifies our lives. “We did not need anything different, but when newer things do become available, some of us can immediately see their benefits” (Petroski 1993: 246).

One of the technological developments in the field of cooking is using the radiation after the power of fire and electricity. It was an innovation in our lives: the microwave oven. Koonts and Vaughan (1994) also agree with the changing power of microwave oven to our approach to food preparation in conjunction with the lifestyle and societal factors.

After the use of gas and electricity, using microwave is a quick method of cooking raw food. With the help of it, it was possible to re-heat the pre-cooked food. In addition to that, it increases the use of frozen food. It makes easier to prepare meals and reduces the time spent. With the use of microwave oven,

cooking ways evolved and consequently the habits held in kitchen changed. It was a luxury when initially used, but afterwards the microwave oven had developed into a practical necessity for the world. Today, the magic of microwave is used widely around. By allowing us to cook food quickly, it offered the opportunity to make food we might not have because of our busy lifestyles.

2.2.5. Design and Technology

When the relations between designers and technological developments are observed, it is obvious that the designers benefit and inspire from them. "Advances in technology –transportation, space exploration, communication, and even the processing of the new plastics- inspired designers to create futuristic worlds and to develop products in new forms and colors" (Hauffe 1996: 12). By the innovations in the technology, engineers and designers are influenced. With the inspiration gained, they design new and different tools and try to benefit from different materials. And finally they started to create new problems to solve again.

Dormer (1945) states that the relationship between design and technology is not one sided. Technology does not dictate to the manufacturer what to produce nor the designer what to create. It only gives freedom to the designer to rework without dictating its own aesthetic.

Technology is not something out of our lives; on the contrary, it is in all areas of life. Mokyr (1990) states that technology is something we know like science, culture, and art, and technological change should be regarded properly as a set of changes in our knowledge. It is the pioneer source of change in design. Technology has never stopped developing in the following centuries. "Neither nature nor history can lock a society forever in a dead-end technology"

(Mokyr, 1990: 164).

Technologic development was the most important factor that changes the product life, user habits and accordingly our lives. As technology develops, new production techniques are applied, different materials are discovered, cheaper and more efficient methods are used in production, and consequently people meet new products and experience the results of the latest innovations each day.

To see the evolution in kitchen tools lifespan and the inclination of them towards unifying, an evaluation must be done by analyzing them historically.

CHAPTER 3

EVALUATION OF KITCHEN TOOLS

This chapter comprises a study on kitchen product groups, indicating the interrelations between each other, to establish a ground for an analysis through the multi functional tools trend. First of all, tools are needed to be classified to decide the group which is going to be taken as an analysis subject.

As Hagedorn (2001: 4) defines classification as "the process by which information, whether in document or data format, is clustered together to make it easier for the user to find it", this classification urges to assist people who are looking for the appropriate place to put the related piece of information into a classified structure.

Tools and utensils classification can be dependent on many features they have, like form, material, style, function or the flow of activities held in kitchen. In this study, many classifications made beforehand are reviewed and a new one is attempted to be done according to the use order of tools in kitchens.

Gaughan (1990) gives two answers to the question of 'what does the study of industrial design involve?' Firstly, concerning how artifacts come into existence: who designed what, when, how, where and why? This is important in establishing a basis for understanding about the activity of design. And secondly, the application of an object: who is it intended to be used for, who uses it, for what purposes, with what effect and what meaning. Different conclusions can be drawn from these two ways of inquiry. In this study, an

analysis questioning the use and functionality of kitchen tools is going to be held. Ekels (1991) states that function refers to the purpose of a product which is about the technical, ergonomic, aesthetic, semantic, business economic, social and other functions. They lead to the design specification. This is the list of all functions the product should possess to achieve its purpose.

Bayazıt (1994) claims the problems are tried to be determined before the activity of design. Identifying the quality of products plays an important role in determining design problems. The biggest trouble in design activity is benefiting from the present information. That is why a designer should know how to benefit from the information around to give decisions. She (1994) states that one of the decision subjects is the activities held in an environment. Decisions given on when, where, how, in what relations these activities are happening play a big role in design activity and of course the final product.

According to Heskett (1995), if concentrated on the kitchen as a working space and the place for preparation of food, basic fittings will include storage spaces and containers for food and equipment, with a table or cupboard-top surface. There will be hand-implements like knives, spoons, ladles, vegetable peelers, spatulas, jugs, cutting boards, and mechanical appliances such as a hand-whisk or powered mixer/beater to prepare food. For the activity of cooking there will be a stove, using gas, electricity or solid fuel, supplemented by appliances such as a toaster or electrical kettle. Appliances for cooking are the saucepans, frying pans, baking tins and casserole dishes, of varying shapes, materials and sizes.

To rationalize today's kitchen tools and utensils and their relations among each other, the products in the market are reviewed. What we have in our kitchens and in what order they are used is questioned.

In order to understand the lifespan of a product, the very best way is to analyze

it through its use in relation with the others. “A product is a material system, which is made by people for its properties. Because of these properties it can fulfill one or more functions. By fulfilling functions a product satisfies needs, and this gives people the possibility to realize one or more values” (Ekels 1991: 54).

According to Bayazıt (1994) one of the important steps in realizing the design problems, is the understanding of the design structure. The ones, who applied systematic design, initially separated the problem into sub problems. In systematic approach, the environment and the product which will be designed are taken into account together. She supports what Christopher Alexander stated that a product which will be designed is a whole with its environment and he believes that it should suit its environment. He sees the environment as a system made of patterns, which are sometimes independent from each other, but sometimes are related. When it is talked about design, the unique and real goal of the discussion is not the form itself, but the form and its environment as a whole. A good accordance between the form and the environment is a desirable situation.

The tools and appliances that are increasing in murder each day, and used in today’s kitchens can easily be analyzed through the market. The historical, cultural and environmental factors affect the food culture and the development process of kitchens. Similarly kitchen tools are influenced by many internal and external factors including our personality and style. We, as the owners of our kitchens, want to create a system of products from the pool of kitchen tools, utensils and appliances.

The earliest classification of the flow of activity in domestic kitchens is done by Catherine Beecher in 1869. In order to get the optimum efficiency from the housekeeping, spaces must be analyzed through the activities held in that specific place. “Organization of the work process was underway before mechanized tools became available. These were not universal even in

households of 1940. Household planning then began before household mechanization" (Giedion 1948: 518).

Giedion (1948: 519) mentions Cathreine Beecher's classification as follows: "In the mechanized kitchen of today, three working centers are acknowledged: storage and preservation; cleaning and preparation; cooking and serving. Two of these centers, preservation-storage and cooking-serving were clearly distinguished by her in 1869, and treated as units".

Before proposing a new product classification according to the activities, firstly the ones previously done must be analyzed thoroughly.

3.1. Classification of Kitchen Tools in the Literature

In the light of the classifications of kitchen tools and appliances of Güvenç (1992), Ağat (1979), Pak (1993), Demirel (2000) and Baytin (1980) a new classification is attempted to be done by mainly considering the three main working centers defined by Beecher in 1869.

The flow of activities held in kitchens is analyzed in order to make a reliable tools and utensils classification. The coordination of the kitchen activities and sub activities provide the continuity of the process during the work. Work in the kitchen brings an organization and the coordination of all the activities and sub activities performed.

The following five classifications are done according to activity orders and the use of products.

According to Güvenç (1992), the main activities in kitchens can be categorized as

1. Storing
2. Cleaning food
3. Preparing
4. Cooking
5. Serving
6. Eating
7. Cleaning the dishes and equipments

The activities are analyzed during the process of preparation of the meal until cleaning the dishes. According to Ağat (1979), kitchens are planned and designed according to these activity orders. The extensive and most time consuming activity held in kitchens are the ones related with the food. He made a classification as below:

1. Preparing the food
2. Cooking the food
3. Preparing the food for serving
4. Serving the food
    a. Setting the table
    b. Bringing the meal to table

5. Tidying the table
    a. Gathering waste
    b. Washing the dishes
    c. Replacing the empty cups to cupboards
6. Washing the dishes
    a. Washing
    b. Rinsing
    c. Drying

Pak (1993) summarizes that the activities taking place in kitchen generally

begin with the preparation of the meal and ending with cleaning dishes. These kitchen activities are in order and the kitchen is designed and planned according to these activities.

Ağat's classification composes a narrower timeline as starting from preparing the food, whereas Güvenç's classification is starting with the storing process which has a longer timeline than Ağat's. After these analyses, Demirel (2000) made a more detailed classification of the main and sub kitchen activities as follows:

1. Storing food
    a. Opening the packages
    b. Cleaning
        - Separating, Peeling, Washing, Draining, Drying
    c. Repackaging into containers
    d. Storing
    e. Waste disposal
2. Preparing the food
    a. Gathering food and utensils and equipment from the storage areas
    b. Taking out foodstuffs from the containers
    c. Separating
    d. Weighing, measuring
    e. Peeling
    f. Chopping, cutting
    g. Mincing
3. Cooking
    a. Boiling
    b. Grilling
    c. Frying
    d. Baking

4. Serving
    a. Preparing the tableware
    b. Preparing the serving dishes
    c. Warming food, containers, serving dishes
5. Eating
    a. Making the table
    b. Consumption of meal
6. Cleaning of the dishes and tidying the kitchen
    a. Gathering the dishes
    b. Waste disposal
        - Gathering wastes, throwing wastes and rubbish
    c. Cleaning the table
    d. Washing the dishes or putting them in dishwasher
    e. Draining and drying the dishes
    f. Storing utensils and equipment

Awareness of the types and flow of activity held in kitchens is important and beneficial in tool development as much as in organization of the kitchen.

Güvenç (1992) stated that the coordination of these activities and sub activities need the continuation of the procedures during the work. In order to determine user requirements and the activities this continuity must be accounted for. And accordingly Demirel (2000) made another classification of kitchen utensils and equipments like:

a. General equipment and utensils related to kitchen
b. Utensils and equipment used while storing, preserving and carrying
c. Utensils and equipment used while preparing and measuring
d. Equipment for cooking
e. Utensils used while cooking
f. Utensils for eating and drinking

g. Utensils for serving

The main and the sub activities held in kitchen are categorized according to Baytin (1980) as below:

1. Preparation
   Opening the packages, washing, peeling, grinding, cutting, adding water
2. Mixing
   Scaling, measuring, mixing
3. Cooking
   Boiling, cooking, oven, frying
4. Serving
   Pouring the food and cups, washing the food, drying and storing into cups
5. Eating
   Preparing the table, eating, tidying the table and cleaning
6. Washing
   Gathering the waste, washing the dishes, replacing the clean ones

This classification is also done according to the activity order. Preparation takes the most time and its basic element is workbench. The basic element of the cooking center is the oven. The storing function should be designed supporting the preparation, cooking and serving centers.

Beside this activity of kitchen classifications there are other kitchenware classifications. It is believed that not only literature search is enough to propose a new classification, but also companies producing kitchen products need to be evaluated to have better knowledge.

3.2. Classification of Kitchen Tools in the Global Market

In order to review the current tools produced and marketed in the global market classifications of the kitchen product companies are taken into account. The most benefited ones are the Oxo International (2006) and Tupperware (2006) in establishing the classification at the end of this chapter.

Myerson and Katz (1990) classified kitchenware as:

- Machine and appliances (coffee grinder, bread fryer, toast machine, mixer)
- Utensils and gadgets (fork, spoon, scale, can opener, sieve)
- Pots and pans (pats, plates, cups, colander)
- Kettles teapots (water heater, kettles, coffee machine)

One of the biggest kitchenware companies, Tefal (2005) classified its kitchen utensils as:

1. Breakfast world
    a. Preparing drinks
        - Coffee machine, water heater, kettle, espresso machine
    b. Practical kitchen gadgets
        - Bread fryer machine, toasted sandwich maker, fruit juicer, grating machine

2. Cooking world
    a. Preparing food
        - Toast machine, grill machine, kitchen robot, blender, mixer, chopper, hand blender, hand mixer, sandwich maker, and grounding machine
    b. Cooking with electricity
        - Deep fryer, steam cooker, automatic cooker, oven, stove,

microwave

c. Pots and pans

- Teflon pots, pressure cooker, cake moulds, glass cups, steel cups, accessories

d. Other

- Yogurt machine, can opener, electrical knife, coffee grinder, fruit press, scale

Another company Moulinex (2005) has made a classification as follows:

1. Food preparation
2. Cooking
3. Breakfast

In contrast with Moulinex, Braun's (2006) classification is more detailed under the category of food and drinks:

1. Breakfast
   Coffeemakers
   Coffee mills and grinders
   Water Kettles

2. Food Preparation
   Hand blenders
   Hand mixers
   Food processors

3. Blenders and juicers
   Jug blenders
   Citrus Press

If it is looked to the classification of Arzum (2006)

1. Food preparation
2. Cooking and frying
3. Drink preparation

Another beneficial categorization related with the kitchen tools is attained from Oxo International (2006). The company made a classification as:

1. Cooking

Baking
Can, jar and bottle openers
Fruit and vegetable openers
Graters and slicers
Grilling
Measuring
Meat and seafood tools
Steel collection
Strainers and colanders
Thermometers
Timers
Tongs
Utensils

2. Cutlery

Professional series
Knives
Scissors

3. Serving and entertaining

Bar and wine accessories

Graters and slicers
Ice cream
Steel collection
Tongs
Travel mug
Utensils

4. Silicone textiles

Pot holders
Oven mitts
Trivets

Another company producing kitchenware is Tupperware (2006) whose classification is seen below:

1. Serve

Bowls, snack up set, serving set, salt and pepper shaker, desert plates, server, round platter, goblet, cocktail sets, pitcher or tumbler set, cake server, chip'n dip set, olive oil bottle, oval server.

2. Refrigerate

Containers, pitcher, bowl set, fridge, cheese keeper set, molds, container set, storage containers.

3. Cook's tools

Chopper, measuring cup, measuring spoon, peeler, ice cream scoop, can opener, nutcracker, grater, spatula, colander.

4. Cutlery and cookware

Knife set, cookware set, saucepans, kitchen duos, fondue pot, wok.

5. Microwave

Micro steamer, containers, microwave luncheon, microwave cooker, micro pitcher, mugs, divided dish for microwave.

6. Preparation

Colander, container, salad spinner, measuring pitcher, mixing bowls, silicone mat, spatula, cutting board, bowl, juicer and measuring cup.

7. Storage

Types of containers, spaghetti dispenser, and canister set.

8. Kids

Meal set, tumbler set, toy, dish set with easy grip handle, canister set, ice tubes set, meal and snack set, beverage set, sandwich keeper, butter hugger set.

3.3. An Evaluation of the Classifications of Kitchen Tools

According to abovementioned classification samples of kitchen tools and utensils and the market search, a new classification is going to be proposed as follows. Dependent on the three main categories of Beecher's (1869), storage and preservation is considered as one and named as 'storage'. The second item, cleaning and preparation are separated from each other and counted as different categories. Likewise, cooking and serving are separated also and counted as two different categories.

To sum up, the products can be gathered under the titles of:

Storing , Preparation, Cooking/Heating, Serving/Eating/Drinking and Cleaning.

Table 3.1. Classification of Domestic Kitchen Products Based on Activity

STORING	PREPARATION	COOKING / HEATING	SERVING / EATING / DRINKING	CLEANING
Food Storing	Opening Packages	Cooking sources	Preparing tableware	Tidying, cleaning tableware
Drink Storing	Seperating	Cooking utensils	Eating utensils	Washing the dishes
	Chopping, mincing, grinding	Heating drinks	Drinking utensils	Rinsing / drying
	Weighing, measuring	Timing		
	Peeling			
	Mixing, beating			
	Grating, slicing, cutting			
	Smashing			
	Squeezing			

For today's product classification, if a situational analysis is tried to be done, the activities performed in kitchen must be identified initially and then the products might be classified according to their functions.

Certain functions of the kitchen do not change because the things people need to do in kitchens are similar. Demirel (2000) suggests that kitchen utensils and equipments should be evaluated by considering types of meals and cuisine related traditions. However in this study, it is attempted to evaluate according to the flow of activity in kitchen and product functions.

Gathering data for this study, according to the classifications, the kitchen tools and utensils have been categorized under the following titles:

Storing : The tools and storages used to store the unprepared food which are still in packages as well as cooked food and drinks.

Preparation : It is the process in which most of the activities take place. The main element is workbench. Here, all the packages are opened, washed, cleaned, cut, mixed, mashed, chopped, etc. before cooking.

Cooking/heating : It is the process done after the preparation session. The main element is the cooking source. According to user's lifestyle and desire the sources used for cooking and the tools used while cooking.

Serving/Eating/Drinking : After preparing and cooking the food, it is time to serve to eat and drink. All the tools and utensils used during eating a cooked meal, drinking an already prepared drink and serving prepared/cooked food and drinks.

Cleaning : After consuming the food and drink, it is time for cleaning the dishes, gathering the table and tidying everything.

Apart from these classifications, there are also cultural and local products that belong to a specific culture like chopsticks used in China, wok mainly used in Asia or a *ince belli çay bardağı* (Turkish tea cup) specific for Turkish culture which need to be considered in another study.

Members of the classification headlines might show differences in different places and cultures. The customs of kitchen and nutrition of the societies having different cultures might be various due to their geography, life style, religion and traditions. As a result of many different cultures, traditions and beliefs in all over the world, there are many different designed products available. But in this study, local products are not taken into account.

This table (Table 3.1) will be a beneficial source of information to decide which group is going to be evaluated to indicate the tendency of multifunctionalism.

Based on this classification, 'preparation' group is chosen to be taken into account as it is the one in which most activities are done. It has a large group of products which are becoming more multi functional each day by combining their functions (See section 4.3).

Under the preparation headline, 'mixing and beating' activity will be analyzed which can be counted as an unavoidable activity in kitchens having many products in its structure. Soup must be mixed, the egg must be beaten before pouring in the pan, salad is mixed after putting oil in it or the food is mixed while cooking after all the sauces are added.

Mixing and beating activities while preparation processes have a daily developing product group. Some of them are transformed from being a hand tool into an electrical appliance through time and took their place in kitchens

which are;

Whisk
Egg beater
Stand mixer
Hand mixer
Shaker
Bread maker
Food processor

When it is looked at the product tendencies of mixing tools, it can be observed that they continue their performance by coming together to form multi functional appliances which is the subject of this thesis, this makes this situation worth to analyze historically.

CHAPTER 4

AN EVALUATION OF FOOD MIXING TOOLS

The aim of this study and all research done until now is to clarify the multifunction trend in current tools. Based on Table 3.1, mixing and beating tools are going to be evaluated. These tools under the category of food preparation tools in kitchen are believed to be the group that has the tendency of uniting to form multifunctional tools. A historical research and evolutionary functional analysis then a morphological evaluation will be done among these tools by focusing on their development process. The evolutional steps in the product life of the mixing tools will tried to be clarified in terms of design.

Heskett (2002) claims that design, being a unique and unchanging human capability, has manifested itself in a variety of ways through history. Human capacity has remained constant, but his methods have altered, parallel to technological, organizational, and cultural changes. These altering methods concluded with differences and developments in product design history.

> The history of design can be described more as a process of layering, in which new developments are added over time to what already exits. This layering is a dynamic interaction in which each new innovative stage changes the role, significance, and function of what survives (Heskett 2002: 9).

In order to understand the reasons of diversity of objects and the layering process their historical evolution must have been looked into.

4.1. The Evolution of Food Mixing Tools

Preparation tools involve the biggest amount of products in kitchen. This section, in which most of the activities are done, involves products developing from the state of being a primitive tool -satisfying the basic needs- into a more qualified state. Tools are experimenting an evolutionary process.

The products under the 'mixing and beating' headline are the most basic tools like spoon and fork that do the function of a mixing stick. It is obvious that spoon and fork are not enough; but other products are developed instead of them like a whisk or an egg beater.

Mixing activity initially started with kneading to make bread. Kneading is the operation of the mixing together of yeast, flour, water, and air. J.B. Lembert's machine (Figure 4.1) designed in 1810 regarded as the beginning of mechanical kneading (Giedion, 1948: 170). Bakeries were using hand power for kneading, but after the mechanization period it was replaced by machinery. Large quantities of dough were performed by hand. With industrialization and expansion of cities, a demand for machine kneading arose. The mechanical kneader can produce more quickly. "Bread making reached the fully mechanized stage, mainly after 1910" (Giedion, 1948: 175).

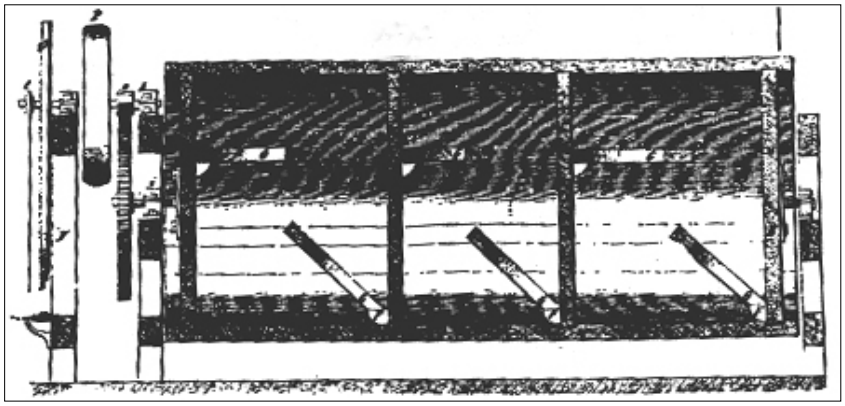


Figure 4.1 Kneading Machine 1810

With the developing technology, materials used for the products changed. Forms showed a small range of variety and likewise their functions had small modifications. Whisks, which can be counted as the simplest mixing tools can be given as a sample for this category.

4.2. Whisks

Whisk is defined by Wikipedia (2006) as a cooking utensil used in food preparation to blend ingredients smooth, or to incorporate air into a mixture, in a process known as whisking or whipping. Most whisks consist of a long, narrow handle with a series of wire loops joined at the end. Whisks are commonly used to whip egg whites or cream. A whisk may be constructed by taking two forks and placing them together so the tines interlock and make a cage. This is far more effective than a single fork at incorporating air into a mixture. Whisks have differently-shaped loops depending on their intended functions.

Home Werks (2006) defines the varieties of whisks (Figure 4.2) as follows:

Balloon whisk is used for beating all food with a thicker consistency. Balloon whisks are best suited to mixing in bowls, as their curved edges conform to a bowl's concave sides. A jug whisk is used for beating, mixing and whisking food and drinks in narrow glasses, cocktail shakers, jugs or similar containers. Due to the special shape of the wires the saucepan whisk reaches all edges and corners. Wonder Whisk is far more practical than a standard balloon whisk when making sauce in a small pan, and for whisking oil and vinegar for a salad dressing. A flat whisk is used for mixing small amounts, for folding cream, herbs and other items and it is useful for working in shallow vessels. A twirl whisk has one single wire that is spiraled into a balloon shape. The spiral makes it possible to work the entire surface around the base and into the

corners. It is ideal for use in slim containers.

Figure 4.2 Types of Whisks. Top left: balloon whisk. Center: jug whisk. Right: saucepan whisk. Bottom left: wonder whisks. Center: twirl whisk. Right: flat whisk.

4.3. Egg beaters

After having looked to the varieties of whisks, it will be appropriate to mention egg beaters and their historical background. It can be seen from the patents (Figures 4.3, 4.4, 4.5, 4.6) that the emergence of the eggbeaters is in the late 19th century. Although the purpose of beating and the working mechanism of the egg beaters are the same, they show various different forms.

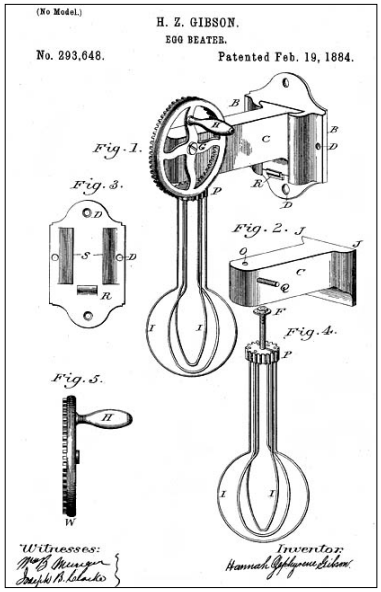


Figure 4.3 Eggbeater patent 1

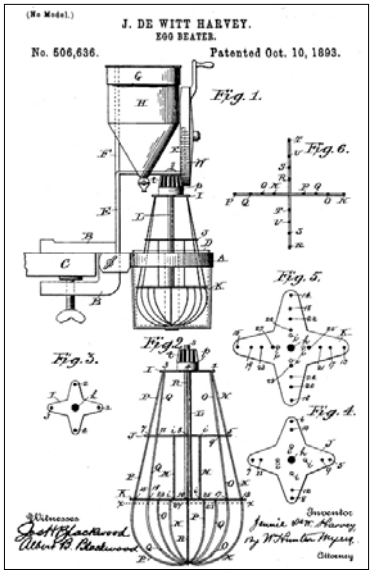


Figure 4.4 Eggbeater patent 2

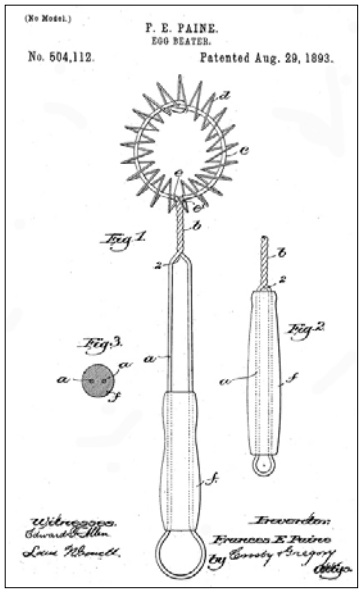


Figure 4.5 Eggbeater patent 3

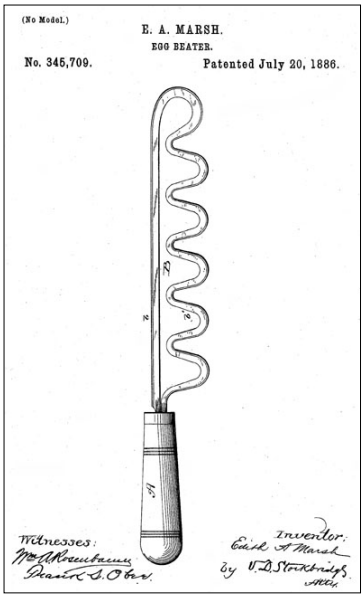


Figure 4.6 Eggbeater patent 4

When it is looked at the evolution process of beaters, the standard form of the

eggbeater (Figure 4.7) in the early 1970s can be seen in Giedion's book (1948). The final form resulted when the principle of revolving blades driven by two geared wheels was adopted. According to him the mechanical prototype of the egg beater is the drill.

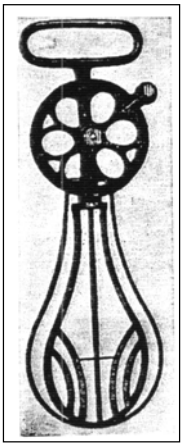


Figure 4.7 Standard Eggbeater

NAME : The Standard Eggbeater
PATENT : 1870

Egg beater is a tool doing the endless rotation of the hand movement done with a whisk or a fork. It is the mechanization of that repeated movement, one of which is the antique eggbeater as seen in Figure 4.8.

Figure 4.8 Ashley Eggbeater

NAME : Ashley Eggbeater
PATENT : 1860

Figure 4.9 Table Mount Eggbeater

NAME : Rare Table Mount Clamp
PATENT : 1885

Figure 4.10 Wall-Mount Model Beater

NAME : Wall-Mount Model Beater
PATENT : 1885

Wall mount model eggbeater (Figure 4.10) is used to beat eggs, churn butter, whip sauces, cream vegetables, and knead dough, mash potatoes and mix batter.

Figure 4.11 Express Eggbeater

NAME : The Express Eggbeater
PATENT : 1887

Figure 4.12 Triple Beater

NAME : Master Egg Beater Triple Beater
PATENT : 1932

When two and three revolving dashes are compared, Meeker and Meeker (2005) claimed that three revolving dashers were better than two, and in this patent application (Figure 4.12) it is claimed that with such a design the time necessary for beating eggs or whipping cream would be materially reduced.

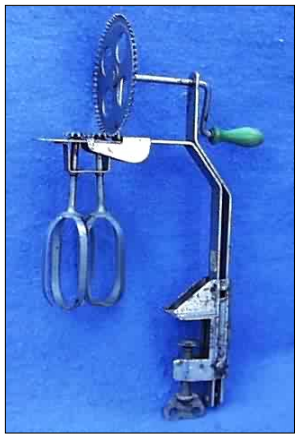


Figure 4.13 Antique Beater

NAME : Antique Beater
PATENT : 1949

The era of electric mixers was about to push this mechanically sort of beaters into obscurity, and Glass Bottom Mixer (Figure 4.14) is a prime example from that transition period. After a period of time, electrical beaters will be produced and whether they are preferred instead of mechanically working ones will be discussed in Chapter 4.5.

Figure 4.14 Glass Bottom Mixer

NAME : The Ladd Glass Bottom Antique Mixer
PATENT : 1952

Samples of these antique eggbeaters are developed and adapted to today's world with preserving their way of use.

Figure 4.15 Rotary Egg Beater

NAME : Kuhn Rikon Rotary Egg Beater
PATENT : 1960s

Rotary egg beater (Figure 4.15) is perfect for taking on cream, eggs, and light

batters. According to Armchair (2006) it is the classical hand beater. The gear mechanism is similar to one patented around 1920 and is superior to numerous other designs in terms of resistance to slippage and ease of use. “The patent office files egg beaters in the same category as other rotating or oscillating mechanisms, such as cement mixers, kneading machines, or butter makers” (Giedion 1948: 556).

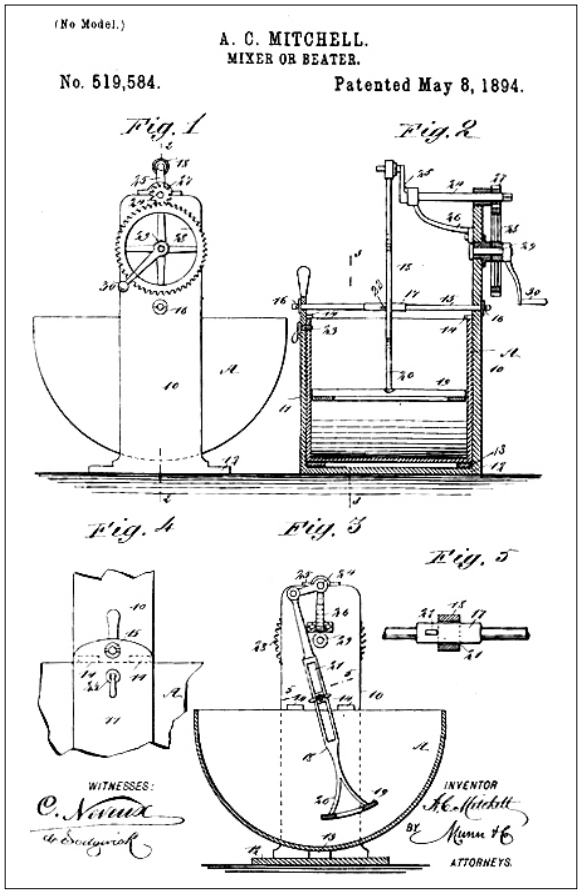


Figure 4.16 Mixer or Beater patent

It can be understood from the given patent (Figure 4.16) that mixer and beater are two products that are hard to distinguish one from another.

New York Times Company (2006) states that African American, Willis Johnson of Cincinnati, Ohio, patented an improved mechanical egg beater in

1884. In fact, what he had really invented was an early mixing machine and not just an egg beater. His device was not intended for eggs alone. Willis Johnson had designed his egg beater and mixer for eggs, batter, and other baker's ingredients. It was a double acting machine with two chambers. These two chambers could be used separately. Batter could be beaten in one section and eggs could be beaten in another section, or one section could be cleaned while the other section could continue beating.

4.4. Mayonnaise Mixers and Churns

Apart from beaters, there are two more mixing products which are mayonnaise mixer and cream maker. Their main purpose is the same which makes the working mechanism alike, but they are known as separate products.

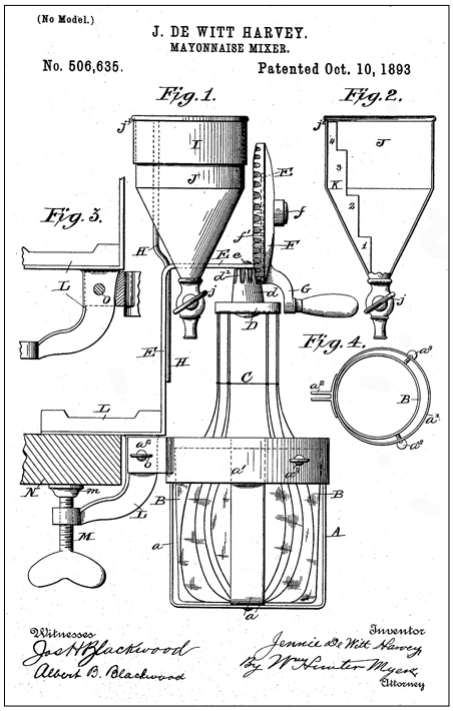


Figure 4.17 Mayonnaise Mixer patent

Figure 4.18 Mayonnaise Mixer

NAME : Vintage Electrical Mayonnaise Mixer and Jar
PATENT : 1950s

It is possible to find electrical mayonnaise mixers (Figure 4.18) after 1950s.

Another product is the churn as can be seen in figures 4.19 and 4.20. They are also known as tin mixers and date from the last century and were specifically designed to make syllabub, a holiday dessert that was popular in the States (Meeker and Meeker 2005).

Figure 4.19 Tin Syllabub Churn

Figure 4.20 Churn / Mixer

4.5. Electric Mixers

Mixing activity is initially assumed to be started with sticks, forks and spoons. Afterwards, whisk is developed slightly in the shape of a combination of two forks crossing each other. And following, two whisks like forms came together with an integrated turning mechanism to form the mixer in one body.

It is mentioned that the most important reason in the rise of product variety is the use of electricity. Today's users benefit from the electricity in saving their limited time. Electrical household appliances, having many functions, became indispensable in our kitchens since they bring convenience. They not only provide time saving but also effect the quality of taste and increase alternatives.

Electricity brought big innovations to the kitchen as in every aspect of life. It provided the emergence of electrical mixer. Mixers were merely having the mixing function, however they developed within time and some of them are transformed into food processors by increasing the number of functions they hold.

High speed mixer was used generally after 1902s. It usually consists of two arms attached to simple bars. Giedion (1948: 553) believes that the mechanization of the tools is inspired from "the action of the hand by continuous rotary movement".

The New York Times Company (2006) reports that the first patent issued for an electric mixer was in 1885. Few other patents were issued for electric mixers until 1910 and the majority came during the 20's and 30's. Many of them looked industrial. By the 1930's some mixers were glass-bottomed and had a motor built into the lid. After World War 2 the small, glass bottomed modeled mixers were replaced by more modern types, mounted on a stand with a bowl underneath. The new mixers were contained in a small plastic

case with a handle.

There are many mixers developed within coming years as follows. In 1919 Kitchen Aid Food Preparer -stand mixer- is introduced for the home (Figure 4.21).

Figure 4.21 Kitchen Aid Food Preparer

NAME : Kitchen Aid Food Preparer
PATENT : 1919

Figure 4.22 Sunbeam Mixmaster

NAME : Sunbeam Mixmaster
PATENT : 1955

Figure 4.23 Kitchen Machine-Braun

NAME : Kitchen Machine-Braun
PATENT : 1957

Figure 4.24 Kenwood Chef

NAME : Kenwood Chef
PATENT : 1960

When it is looked back to Kitchen Aid (Figure 4.21), it can be seen that the mixer's form remained unaltered. But it became possible to find colors except white since 1954. Another mixer is the Artisan Mixer (Figure 4.25) which is also possible to find many colors of it.

Figure 4.25 Crystal Blue Artisan Mixer

NAME : Crystal Blue Artisan Mixer
PATENT : 1965

4.6. Blenders

One other product before the emergence of food processor is the blender. In 1922, Stephen Poplawski invented the blender. A blender is a small electric appliance that has a tall container and blades that chop, grind and puree food and beverages. Stephen Poplawski was the first to put a spinning blade at the bottom of a container (About 2006).

Figure 4.26 Waring Blender

NAME : Waring Blender
PATENT : 1937

Another inventor, receiving financial support from Fred Waring, solved some engineering problems and presented the Miracle Mixer in 1937. This mixer was first demonstrated by making frozen daiquiris and soon became known as the Waring Blender (Figure 4.26). It was one of the earliest commercially successful blenders.

Sunbeam Products Inc. (2006) states that the year 1955 was a year of introductions. The Osterizer blender (Figure 4.27) was improved and the first two-speed model was marketed. In October of that year, the Osterett mixer, a forerunner of the portable hand mixer, was produced. This mixer was a great success and is still produced for South American and Central American markets.

Figure 4.27 The Osterizer Blender

NAME : The Osterizer Blender
PATENT : 1955

Cast metal and commercial styling make the Cuisinart SmartPower Duet

Blender/Food Processor (Figure 4.28) one of the most sophisticated appliances on the market. This multitasked has two appliances in one. It has the ability of crushing ice, blending, chopping, slicing and shredding.

Figure 4.28 Cuisinart Smart Power Duet Blender/Food Processor

Multifunctional machines claim to combine the functionality of a blender and a mixer. With replacing its blender container with its clear plastic bowl Osterizer turns into a food processor.

Figure 4.29 Osterizer Liquefier Blender

Features of Osterizer Liquefier Blender:

Whipping cream

Grating lemon peel

Chopping uncooked carrots and onions

Grinding batches of beef cubes into hamburger

Chopping three garlic cloves

Turns peanuts into smooth peanut butter

Puree soups

Consumer Reports (2003) explains the Bosch MMB 9110 UC (Figure 4.30) is part of the Porche Designer Series. It looks quite different from the usual blender, with a brushed-aluminum exterior on its plastic carafe and base. This is a design by F.A. Porche that combines strength with beauty.

Figure 4.30 Porche Design Blender MMB 9110 UC

This blender has the properties of the Osterizer Liquefier Blender (Figure 4.29) and furthermore it has an elegant appearance with brushed aluminum cover which repels fingerprints. With the changing fashion in kitchens, blenders are also affected and they became stylish.

Through time, use area of blenders, beaters or mixers started to enclose each other's areas. In the 70s a new multi functional product called 'food processor' is developed composing from the functions of these products and some others.

4.7. Multi Functional Kitchen Tools

The rise of multi functional tools occurred after the need of doing many things at the same time. If it is accepted that mankind is doing most of his work with the help of tools, gadgets and appliances, it is unavoidable that the number of products that are doing our work or the ones making our lives easier is increasing each day.

As the technological era develops, more functions come together and combine their power in one product. Papanek (1995) explains that since the 1970s it is seen how certain tools and products have refined themselves, changed shape and with the addition of new functions they become much less expensive.

Tasarım Yayın Grubu (2005) claims multifunctional designs including additional functions provide efficient use of space. The effort of the producers to add new functions to their design is a result of enlarging the target consumer area. The aim of multifunctional designs is to respond to consumer needs like mobility and flexibility and different scenarios of the product in various areas, to create new living areas.

The number of products for every other function is increasing. It is observed that the products are coming together and combining their functions.

Occupying a smaller place, making the time more efficient, they are combining their functions in one product. As in every field of life, there are multifunctional products some of which can be found below.

Figure 4.31 Copco Double-Face Container Grater

Copco Double-Face Container Grater (Figure 4.31) is used to grate and store at the same time. It has two functions. Similarly, Fork Up Bottle Opener (Figure 4.32) is a fork but does the function of a bottle opener at the same time.

Figure 4.32 Fork Up Bottle Opener

Figure 4.33 Pasta Pot Package

Pasta Pot Package (Figure 4.33) is a multi functional product made of a pot and a colander. It does both functions. If spaghetti is being cooked there is no need for an additional colander to drain the unwanted water; the pot does this function within itself from the holes on top.

Figure 4.34 Aladdin Thermos

One liter capacity Aladdin Thermos (Figure 4.34) features glass vacuum insulation and has two attached cups. It might be counted as a multifunctional product by having two functions of keeping the liquid in its body and serving it with two separate containers.

Figure 4.35 Swiss Army Pocket Knife

Swiss army knives are the best samples for multi functional products having many accessories which can do many functions integrated in one body.

Cuisine Elegance stainless steel scissor (Figure 4.36) opens the bottles and the plastic tips of the bottles in the meantime.

Figure 4.36 Multifunctional Scissors

The most appropriate product for this category from the kitchen is the continuously developing food processor.

4.7.1. Food Processor as a Multifunctional Product

Food processors are versatile machines that can chop, slice, shred, grind and puree many different foods. Some come with juicers, pasta makers, julienne disks, dough kneaders, and even mixers. Mini choppers are good for small tasks such as mincing garlic and chopping nuts. Hand mixers can handle light chores such as whipping cream or mixing cake batter. And powerful stand mixers are ideal for cooks who make bread.

A food processor consists of a plastic work bowl that sits on a motorized drive shaft. Foods can be added to the bowl through the feed tube on its cover. Most come with a set of standard attachments, which generally include an S-shaped

chopping blade and several disks for slicing and shredding. These are usually made from metal, not plastic, as they will stay sharper longer, though some models have both metal and plastic blades and disks. Manufacturers are pushing numerous speeds, higher power and intelligent models with programmed settings and recipes. There are many models in the market. They all have similar functions, but every item has different details than the other.

Pierre Verdan from WeHow Inc. (2006) observed the vast amount of time his clients spent in the kitchen chopping, shredding and mixing. He felt there must be an easier way and he produced a simple but effective solution. He designed a bowl with a revolving blade in the base which turned out to be a food processor. In 1960 this evolved into Robot Coupe, the first food processor. But the domestic market had to wait until 1972 for this. It now has over thirty years of experience in the design, development and manufacture of world famous food processors and vegetable preparation equipment.

Figure 4.37 Robot Coupe Food Processor R100

R100 has different discs to slice, shred, grate and julienne, besides stainless steel cutter blade designed for mixing, chopping, pureeing, blending and kneading.

Figure 4.38 Robot Coupe Food Processor R6VN Series D

This latest model of Robot Coupe Food Processor (Figure 4.38) has feed slicing, shredding, grating, French fry and julienne. Bowl attachment designed for vertical cutting and mixing: mix, chop, puree, blend and knead dough. When two versions of food processors of the same brand are compared to each other, it is seen that the latest one is more complicated and qualified than the older one. Furthermore, newer one has many more additional apparatus coming with it.

Another brand of food processor is Kenwood.

Figure 4.39 Kenwood Kitchen Machine KM001

Features of Kenwood Kitchen Machine KM001:

Stainless steel blade

Slicing

Shredding

Whisking

Mixing

Blending

Crushing ice

Dough hook

Mincing

Ice cream maker

Juicing

Kenwood KM001 has many features, and similarly FP 940 has also many specialties.

Figure 4.40 Kenwood Food Processor 940

Features of Kenwood Food Processor 940:

Spatula

Stainless steel chopping blade

Maxi blend canopy

Twin geared metal whisk

Mini bowl with mini blades

Dough tool

Citrus press

Stainless steel coarse slice / shred disc

Stainless steel fine slice / shred disc

Stainless steel julienne disc

Stainless steel rasping /parmesan disc

One of the other top ten brands for the food processor is Philips. It's small, compact and does not have many features compared to the others.

Figure 4.41 Philips Kitchen Robot HR7600

Features of Philips Kitchen Robot HR7600:

Metal knife

Grating, slicing discs

Whisking, kneading apparatus and spatula

Micro store apparatus keeping system

KitchenAid is one of the most prominent brands in food processors.

Figure 4.42 Kitchen Aid Model H

The model in Figure 4.42 is one of the first KitchenAid home mixers. According to KitchenAid (2006), the production of this model started in 1915 and continued until 1927.

Features of Kitchen Aid Model H:

4 bowls

Bowl lift handle

Pour chute

Splash guard

2 beaters

Whisk

Dough hook

Pastry knife

Juicer attachment

Food grinder

Pelican head with slicker

Shredder

Ice chopper

Can opener

Set of brushes

Already being an old version, it has many qualifications. But the name is still mixer, not a food processor yet.

Figure 4.43 Kitchen Aid 16-Cup Work Bowl

Among the functions of the Kitchen Aid 16-Cup Work Bowl (Figure 4.43) is to chop, mince, blend, mix or emulsify food.

Features of Kitchen Aid 16-Cup Work Bowl
Multipurpose Stainless Steel Blade
Dough Blade
4mm (Medium) Shredding Disc
4mm (Medium) Slicing Disc
Spatula/Cleaning Tool
Egg Whip
Accessory Storage Case
Large Bowl
Mini Bowl with Mini Multipurpose Blade
Polycarbonate Work Bowl
Instruction and Recipe Guide

It is observed that the newer products are given names related with the number

of bowls they have. The model in Figure 4.43 is a 16-bowl one. Another food processor in the market is the Magic Bullet, which advertises itself as the magician of the kitchen.

Figure 4.44 Magic Bullet

It has the functions of preparing milk shake, salsa sauce and margarita. It has cross knives, regular knives, blender, fruit squeezer and cups for parties.

Arçelik, also having one of the biggest kitchen appliance markets in Turkey has many different kinds of food processors which are evolving each day.

Figure 4.45 Arçelik K-1190

Features of Arçelik K-1190:

Chopping

Slicing, grating

Mixing, beating

Blender

Citrus Fruit Press

Hard Fruit Press

Kneading dough

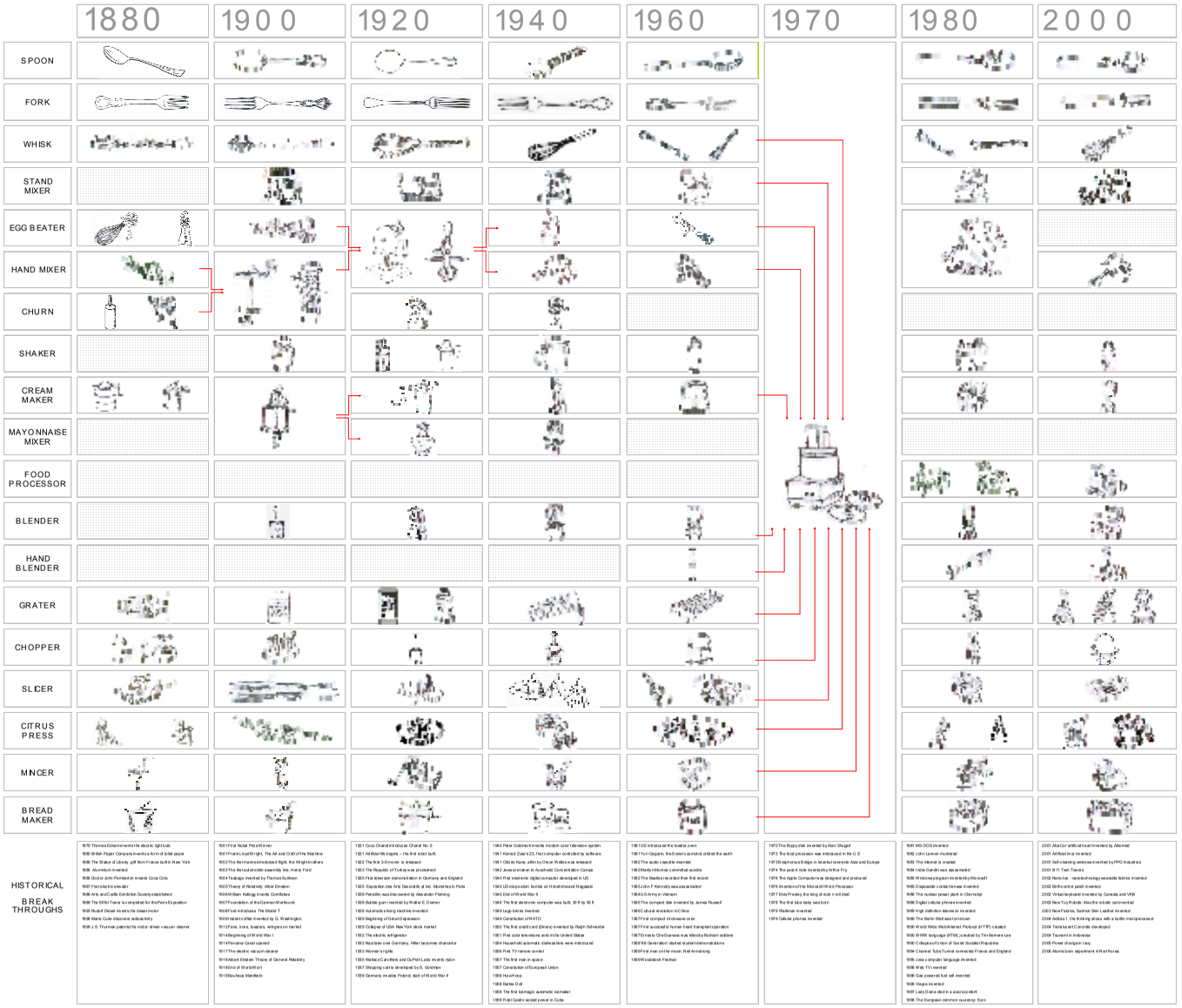
Ice cracking

Common properties of all these blenders, mixers, food processors and kitchen robots are that they are becoming more powerful, quieter, smaller, user friendly, and lightweight. They have features as many as possible. All kinds of extras as well as tasting, smelling and cooking facilities are integrated. In the near future, ‘a singing food processor’ might not be a surprising product.

If it is tried to display the evolutionary formal development of abovementioned tools and appliances turning into a multifunctional food processor, a visual table is needed.

Table 4.1

KITCHEN TOOLS WITH HISTORICAL BREAKTHROUGHS



4.7.2. The Evolution of Mixing Tools into a Food Processor

All the products related with food processor are tried to be visually organized in historical order to show the development process of each of them and their interrelations among each other.

While reading the table of 'Kitchen Tools with Historical Breakthroughs' (See page 79) it must be taken into consideration that, on the products column, whisk, stand mixer, egg beater, hand mixer, churn, shaker, cream maker, mayonnaise maker and food processor are the members of the mixing tools, whereas the spoon, fork, blender, hand blender, grater, chopper, slicer, citrus press and mincer are the ones belong to other tools groups.

On the table, it is tried to be shown which tools come together when, to form another tool and what happened next. Tools come together to establish a new compound product, which does many functions related with preparing section of the kitchen.

With the developing technology and endless desires of humankind the future of these multifunctional tools should be questioned in terms of their functions.

When it is looked at the development process of mixing and beating products, it is observed that some of them are still preserving the form that they used to have, some left their use to other tools and some of them unified with others to form a new product group.

The fork has experimented a long evolution process until the beginning of 1900s and has gained its standardized form with four tiles. Despite its form which is appropriate to be used for whipping, it will alleviate itself to whisk for this task. Despite the spoon's current use for mixing during the preparation of

soup like dishes, there are wooden spoons for that activity and furthermore the spoon used for eating and the spoon used for mixing is separated. Spoon and fork, counted as one of the first mixing tools in history are preserving their forms that they used to have 100 years ago. They haven't lost their use area, they preserved their place on table, but they are not observed to mix anymore.

When it is looked at the morphological development of the whisk, generally used for whipping egg and cream, it is observed that its form stayed constant but many varieties are added to the tools group through history. It is possible to find ten different whisk kinds in the market now. Whisk is seen as the simplest state of a beater or a mixer. It must have developed from a fork by a continuous whipping movement. One step further with the mechanization of tools, this movement lead the emergence of mixer or beater. Despite the preference of electrical kitchen appliances, whisks have not lost their usage in kitchens and their simple form. The production and use of it stayed without changing. If a whisk is compared with an eggbeater, it can be said that whisk is more practical since it can be used with single hand.

Tools called churn and eggbeater are counted as whisks as they perform the function of a whisk and it is observed that they are named as a whisk from time to time. Churn, initially designed to mix a special kind of dessert, looks like a stand mixer but could not last until today. It is observed that it disappeared through time and left its place to mixer.

Egg beater appeared after the synchronic circular movement of whisk like mixing apparatus with the help of a crank. Since its production in 1884, it is counted as a mixing machine and preserved its standard form. However, it combined with a cup and became electrical and turned into an electrical beater or a mixer. Globalization showed its effect in kitchens towards the millennium and the use of both tools converged to each other. Even in our electrified kitchens there is still a place for mechanically working egg beaters.

Mixer and beater since they were first patented, are named together. Despite the fact that their names are mentioned together, both managed to carry on their existence separately. Hand beater preserved its form but currently it combined with mixer and has now become an antique object. Although it is seen and observed that they are still in use in some local areas; their production in global market is not common.

Mixers are divided into two kinds: hand mixer and stand mixers. Stand mixer is still preserving its initial form, however hand mixer after combining with churn and egg beater from time to time, gained a specific form to itself.

Kitchen Aid's Artisan Mixer produced in 1919 is still in use in current kitchens. With its attractive design, many color alternatives have become available since 1954. This product turned into a prestige object with the effect of fashion in kitchens.

Despite the fact that cream maker and mayonnaise mixer seem that they are different products, they both continue working like a mixer with a cup. It is possible to come across a product called a mayonnaise mixer in the beginning of 1900s. It sometimes combined its function with a cream maker and existed together. But currently there is not a need for a mayonnaise maker, instead of it, cream maker, blender, mixer or food processor is used for this purpose. The reason behind it is the decrease of mayonnaise production at home dependent on the developing industry. With the mass production, mayonnaise makers are getting bigger and industrial type for factories and they become no more a domestic appliance.

Cream maker, since the first half of 19th century, has been used for making ice cream. It is produced in various forms but it did not have a specific and stereotyped form like a whisk or a blender. Firstly, they were bucket type but then they became smaller for domestic use and turned into a form like bread

maker. But again it is not a very well known product in global market.

Shaker is used especially to stir alcoholic drinks. As a principle, it works by hand shaking the mixing of the liquid held inside. The main point here is shaking with the movement of the hand with no temperature difference caused by electrical appliances. It preserved its initial form patented in 1936 and it is still in use. Due to the fact that it is generally used in bars, a domestic used food processor involving this function is not observed. Shaker is also redesigned by designers and some kinds of it turned into a tabletop prestige object.

When it is looked to the emergence of multifunctional tools under the category of mixing and beating, it is seen that the mixing tools come together first and then they combine with the blending tools.

By the adherence of the functions like slicing, grating, mincing, chopping and fruit squeezing, the product called ‘food processor’ emerged in 1970s. 1960s and 1970s, as can be seen from Table 4.1, affected the development and transformation in kitchens.

Blender has preserved its form since it was patented in the 1920s. Afterwards, it transformed into products like duet blender-food processor. With the extra cups, blender stepped forward to turn into a multi functional product. Besides its classical form, another product called ‘hand blender’ emerged in the 1960s. This product functions when it is inserted in a cup. It is more practical in use and has ease of use when compared to a classical blender.

Citrus squeezer, a tool from another group, emerged with the form created for the mechanical tool and preserved this form through history. The tool sometimes functions by squeezing the fruit by hand support, sometimes squeezing it between the parts of the product. Electrical citrus squeezers are

functioning in a similar way. Although many food processors currently have citrus squeezing function within their structures, Alessi's extraordinary lemon squeezer is still preserving its place in the market.

Grater which is also a tool from another group maintained its initial form without change. Although many food processors have the function of grating, graters preserved their place in the market. By the development of brand concept, designers kept on approaching the products from different angles, as a result products became more stylish.

Choppers are usually used to chop nuts, onion and garlic. Choppers with a glass cup, started their evolution process in 1920s as mixers and churns. Their current versions look like the form of food processors. Although it is possible to come across choppers as a different product group in the market, some food processors do that function.

Food processor aims to fulfill the abovementioned functions from the day of its appearance. It is possible to see little differences and additional functions in every brand and model.

When the initial and the current state of the food processors are compared, it is observed that they became more complicated and qualified with the continuously changing technology. Besides the additional apparatus they have is increasing each day.

This product, developing everyday by adding new functions in its structure, is preserving its place in market with the new versions. There are advantages as well as disadvantages of having many functions in one product. The product provides easiness by doing many functions at the same time. On the other hand, its enlarging volume and the additional pieces, the user is stressed in terms of usage and storage facilities.

Features combining, which are other than mixing and beating became too much for a product to preserve in its structure. That is why food processor chose to exist by only having mixing tools within its structure.

CHAPTER 5

CONCLUSION

The thesis titled “An analysis of the evolution of multi functional kitchen mixing tools” aims to conduct a situational analysis and prepare a ground for future studies and predictions by questioning the interrelations of kitchen products in global market, their areas of use, their functions and reasons to be used for. Firstly, a study is conducted for the classification of kitchen tools, and then a deeper analysis is attempted on a specific category, namely ‘kitchen mixing tools’.

The product classification within the third chapter of this study, made according to the flow of activity in the kitchen is foreseen to provide a useful resource for designers who would work on this subject and develop new kitchen products in the future. This classification (See page 43) is important both for its demonstration of activity flow between tools and for providing a framework for trend and product analyses to be done in the future.

The classification (See page 78) made in the fourth chapter focuses on mixing and beating, which constitute the widest product variety within the food preparation topic, and a historical research is conducted to create a morphological table that could provide a clearer understanding of the interrelations within these products. A designer who wants to design and develop a new tool for the kitchen can benefit from this table on multifunctional products as well as from the classification of the product groups in its structure. In addition to this, the research and development

departments of design companies could also benefit from this study.

5.1. The Evolution of Kitchen Mixing and Beating Tools in Form Throughout History

When it is looked at the evolution of kitchen mixing tools throughout the history, it can briefly be summarized as follows:

- Whisk, which is seen as the simplest state of a beater or a mixer, is observed to keep its form constant but many varieties are added to the tools group. The production and use of it stayed without changing.

- Churn could not last until today. It is observed that it disappeared through time and left its place to mixer.

- Egg beater since its production, is counted as a mixing machine and preserved its standard form. Then it combined with a cup and became electrical and turned into an electrical beater or a mixer.

- Mixer and beater since they were first patented, are named together. Both of them managed to carry on their existence separately.

- Mixers are divided into two kinds: hand mixer and stand mixers. Stand mixer is still preserving its initial form, however hand mixer gained a specific form by combining with churn or egg beater.

- Cream maker and mayonnaise mixer seem that they are different products but they both continued working like a mixer with a cup. Currently, there is not a mayonnaise maker production. And cream maker is not a very well known product in global market.

If the subject of this thesis, the daily use of mixing and beating tools is

considered, one could easily see that the assembling of tools of similar functions have provided facilitation in use. However, the fact that other tools from different groups have become more and more frequently added into these products has rendered these tools somewhat complicated. This results in a partial preference to use separate tools rather than using a whole food processor merely for grinding or to squeeze fruits.

5.2. The Factors that have Contributed to the Evolution of Kitchen Tools

When one questions the tendency of these products to become increasingly multifunctional, which is also the primary aim of this thesis, industrialization, globalization, the effects of advancing technologies and the relative evolution of social life surface as the main reasons behind this tendency. If the continuous changes, evolution and developments in products are considered, both of Petroski's and Mokyr's arguments could be accepted.

According to Petroski (1993) the shortcomings of an existing thing may be expressed in terms of a need for improvement. "It is really want rather than need that derives the process of technological evolution. We did not need anything different, but when newer things do become available, some of us can immediately see their benefits. Luxury, rather than necessity, is the mother of invention" (Petroski 1993: 43). However, Mokyr (1990) states that necessity is being the mother of invention is not true. Necessity always exits. In fact, another approach which is closer to truth is that "invention is the mother of necessity" (Mokyr, 1990: 151).

Even though the underlying cause for these innovations seem to be technological development, in reality, novelty usually follows necessity. On the other hand, although there are certain needs that would not regularly exist in our daily lives, these new products tend to create new necessities that in turn

conclude in an increase in the number of kitchen products purchased. Therefore, both these approaches could be accepted as valid.

With the advancements in technology following industrialization, and the emergence of new tools and production techniques, the number of products and their variety have increased. The fact that tools become electrically operated has provided an immense ease and convenience, and therefore there has not been a return to the past, and products have maintained their evolved new forms.

The reason for the tools to become multifunctional might be enlarging the target consumer area. For every activity, instead of acquiring a new product for each separate function, a compact product is acquired. Products providing ease of use and saving time are usually preferred. At the beginning of the 20th century, due to the kitchens getting smaller, instead of many products, multifunctional products might have been chosen. Afterwards, with the transformation of kitchens into socializing areas, the space designated for kitchens are widened, kitchen appliances have began to be exhibited on tables, number of products and the functions that are unifying have been increased.

The most important factor that influenced the design of kitchens and their appliance is the industrial revolution that took place in the 20th century. Production changed from crafts into industrial in all fields, including the kitchen and its products. As the technology developed, new production techniques were applied, new and different materials were discovered and more industrial tools began to be produced.

Another revolutionary effect was the discovery of electricity. It brought a big ease in every field. Almost all manual tools were switched with electrical ones. It is observed that the mechanization reached its ultimate point in 1920s, which also reflected on the evolution of tools.

If the reasons behind this merge were to be abstracted, in accordance with the developments and changes in the fast consumption society and the solutions required to fulfill daily needs it is obvious that there would be an increase in the number of products for each function. This merge, studied for the mixing and blending tools within the kitchen within the scope of this research, could also be seen in other product groups within the kitchen, and even for other tools in other compartments of the house.

5.3. The Direction in which These Multifunctional Products Continue to Evolve in Terms of Use and Form

The tendency of kitchen tools to maintain their original forms, only to assemble into a multifunctional tool has been studied for mixing and beating tools within the kitchen, and several conclusions have been deducted. This process of assembling which conclude in multifunctionalism has been made within the tools that belonged to the same product group, and then other tools from different classification groups have started to be included in this process. When it is looked to the emergence of multifunctional tools under the category of mixing and beating, it is seen that the mixing tools come together first and then they combine with the blending tools.

It can visually be seen from Table 4.1 how the products developed, changed, combined or separated from each other. When specifically looked of the forms of the tools rather than their functions, it can be observed that basic tools like graters or whisks are still preserving their simple forms but they diversified, tools transformed into electrical appliances are preserving their electrically working form. Food processor, which is mainly analyzed, firstly appeared as a compact product that comprises many functions, whereas it turned to be a complicated one within time with new apparatus increasing each day and could

not preserve its initial compact form.

Again, abstracted from another angle, even food processors themselves could be seen to have many different colors and forms, which would mean that these tools, just like fashion accessories, have become part of fashion and as is the case with many other kitchen products, they have become more of a table top prestige object rather than merely being a functional tool.

When it is looked to the current state of the food processors, it is observed that they became more complicated and qualified with the continuously changing technology. This product developed by adding new functions in its structure. It provides easiness by doing many functions at the same time. On the other hand, its enlarging volume and the additional pieces, stresses the user in terms of usage facilities. Features combining, which are other than mixing and beating became too much for a product to preserve in its structure. That is why food processor chose to exist by only having mixing tools within its structure.

For the near future, it can be presumed that food processors will continue their life by keeping the mixing and beating functions within their structure.

5.4. Suggestions for further studies

In this study, only mixing and blending tools are evaluated. The same research might be done for other groups in proposed classification for further studies to understand the current trend.

In today's world which is about to enter the space age, the subject of how products will change, evolve, merge, or disappear is a topic that is necessary to investigate. Considering all these facts, this study is foreseen to be a research that could cast light onto future researches and create grounds for questioning

for researchers, not only in the kitchen area, but for all industrial products to be used.

An industrial designer that aims to create products for actual life standards has to have good foresight, and this study is only a small part of research conducted in this format, which is to shed light onto the future product disposition.

Can a similar tendency towards multifunctionality be observed in other areas, if a similar research were to be conducted for other product groups? What kinds of kitchens and homes wait the next generations? A refrigerator, for example, which was something to be used to keep our food chilled therefore fresh has, in time, with the addition of deep freezing functions, started to be used both to keep food fresh and also to freeze and store food for later, which is a development that has changed our kitchen usage habits. In this context, who could say that there will not be a refrigerator merged with an oven to both store the food and also heat them up and prepare meals?

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