ISTANBUL TECHNICAL UNIVERSITY ★ INSTITUTE OF SCIENCE AND TECHNOLOGY

EVOLUTIONARY PERSPECTIVE FOR DESIGN: DESCRIBING THE CHANGE IN DESIGN OF CIGARETTE PACKAGES FROM TURKEY

Ph.D. Thesis by
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Department : Industrial Product Design

Programme : Industrial Product Design

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TASARIMA EVRİMSEL BİR BAKIŞ: TÜRKİYE'YE ÖZGÜ SİGARA PAKETLERİNİN ÜZERİNDEN TASARIMDA DEĞİŞİMİN TASVİRİ

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FOREWORD

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Elif KOCABIYIK

Industrial Product Design

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SUMMARY

This thesis investigates the change in the design of Turkish cigarettes and cigarette packages from the beginning of the 20th century up to the present utilizing an evolutionary point of view. By doing so it aims to add to the understanding of change in the appearance of designed objects over time.

Due to the similarities between the biological and man-made worlds, the conceptual framework of this thesis is based on: i) Evolutionary thinking and the biological view in science, ii) Darwinian evolution theory and the memes, and iii) The study of designed objects: Turkish cigarettes and cigarette packages. Evolutionary thinking and the biological view in science perceive the biological world as a complex system and define its features. Darwinian evolution theory provides an explanation for the evolutionary mechanism of the living organisms that is accepted worldwide among other theories. The memes define the idea patterns that get replicated in cultural evolution. The different types of memes –recipemes, selectemes, explanemes- define and simplify the complex system of the man-made world. Turkish cigarette packages provide a good example of complex systems in regards to the man-made world, with which fundamental questions of design can be illuminated.

The evolutionary perspective provides long range explanations for change in designed objects by bringing the effects of the designer, the design context and time together. The designed objects are the extensions of the ideas of the designers. The design context is the environment of the ideas of other people and the institutions. These ideas are the memes that replicate differently due to their types, and work at two levels. The micro level is the designed object level and the macro level is the design context level. All these memes follow the requirements of Darwinian evolution theory concluding the change in designed objects over time.

A collection, comprising of 1161 Turkish cigarette packages and dating back to the 1900s, was used for the design evolution study in this thesis. Following explanatory, descriptive and exploratory research purposes, a 'biological' case study was undertaken within quantitative and qualitative studies. Within quantitative study, the design related data that correspond to the recipemes at the micro level and the context related data that correspond to selectemes at the macro level were collected from cigarettes and cigarette packages by visual analysis. These were coded by pattern recognition and classified and organized in Excel tables, from which graphs and matrixes were obtained for a statistical analysis. Within the qualitative study, a board of time-lined cigarette packages, in which serial packages are grouped, was prepared. The data of cigarette package graphics that correspond to recipemes at the micro level were collected by visual analysis. These were coded by pattern recognition and marked on the board to obtain paths of marked codes and/or examined to see what they revealed in detail within the groups of serial cigarette packages separate from the board. The movement of these memes were studied together through time with other memes at the macro level whose data were gathered from the literature searches, fieldwork and interviewing.

In order to process these studies, a dating analysis method was developed to find out the unknown dates of the cigarette packages in the collection.

The change in the design of Turkish cigarettes and cigarette packages over time was investigated through the movements and the interactions of the memes to see if the change is due to Darwinian evolution theory and can be explained in terms of different types of memes. If so a wider conception of change in the appearance of designed objects could be achieved as the contribution to the knowledge base of design evolution and history.

The conclusions arrived at through this methodological framework are:

i) Rather simple designs as cigarettes and cigarette packages and a rather restricted environment as the state monopoly of tobacco in Turkey demonstrated a very complex system that justified the evolutionary perspective for the study of change in designed objects.

ii) A synthesis of Darwinian explanations fit the patterns of change demonstrated as happening to the appearance of designed objects studied in the collection of cigarette packages from Turkey.

iii) The change in design of cigarettes and cigarette packages cannot be regarded as a progressive change; therefore it is a Darwinian change.

iv) It was demonstrated through selected narratives of examples that different types of memes provided a path to follow for the investigation, description and discussion of change in designed objects. The recipemes at the micro level were directly related with the recipemes at the macro level, both of which competed in an environment of selectemes at the macro level together with other non-evolutionarily changing environment.

v) It was demonstrated that the variety in design of Turkish cigarettes and cigarette packages decreased through standardization in design over time, which was due to multiple-causes such as wars, inaccessibility to technological changes in the world, health regulations, fashions of American cigarettes, and changing economic policies while on the other hand, much more variety was observed within package configurations, package graphics, cigarette designs in the history of Turkey. New varieties of designs, specifically in cigarette design and package configuration have appeared recently after the regulations on package graphics as the continuation of the evolutionary process. The design of package graphics has changed due to the styles in the world, health regulations, decisions of the state monopoly and the transmission from an emperor to a republic.

vi) It was demonstrated that the context related data provided historical knowledge on the characteristics of Turkish cigarette packages.

vii) The methodological framework of this thesis and its application provided a basis that could be developed for other design evolution studies.

viii) A dating analysis method was developed for the unknown dates of Turkish cigarette packages in the collection that could be used as a basis and be developed for other research on finding the unknown dates of designed objects.

TASARIMA EVRİMSEL BİR BAKIŞ: TÜRKİYE'YE ÖZGÜ SİGARA PAKETLERİNİN ÜZERİNDEN TASARIMDA DEĞİŞİMİN TASVİRİ

ÖZET

Bu tez, 20. yüzyılın başından günümüze kadar uzanan zaman içerisinde Türk sigaraları ve sigara paketlerinin tasarımındaki değişimi evrimsel bir bakış açısı ile inceler. İzlediği bu yol ile tasarım objelerinin uzun zaman içerisindeki görünüşlerinin değişimine anlamsal bir katkı sağlamayı hedefler.

Biyolojik ve insan yapımı dünyaların benzerliği sebebiyle bu tezin kavramsal çerçevesi şu şekilde kurulmuştur: i) Evrimsel düşünce ve bilimde biyoloji anlayışı, ii) Darvinci evrim teorisi ve memler, iii) Tasarım objeleri üzerine çalışma: Türk sigaraları ve sigara paketleri. Evrimsel düşünce ve bilimde biyoloji anlayışı, biyolojik dünyayı karmaşık bir sistem olarak algılar ve bu sistemin özelliklerini tanımlar. Diğer teoriler içerisinde dünyaca kabul gören Darvinci evrim teorisi, canlıların evrimsel mekanizmasını açıklar. Memler, kültürel evrimde kopyalanan fikir örüntülerini tanımlar. Farklı tipteki memler –recipeme, selecteme, explaneme- insan yapımı karmaşık dünyayı tanımlayarak basitleştirirler. Türk sigara paketleri tasarımın temel sorularına ışık tutabilir; insan yapımı dünyanın bir parçası olarak karmaşık sistemlere iyi bir örnek teşkil ederler.

Evrimsel bakış açısı; tasarımcı, tasarım bağlamı ve zaman kavramlarını bir araya getirerek tasarımda değişime geniş ölçekli açıklamalar getirir. Tasarım objeleri tasarımcı fikirlerinin uzantılarıdır. Tasarım bağlamı, tasarımcı dışındaki diğer kişilerin fikirleri ile kurumsallaşmış fikirler çerçevesidir. Tüm bu fikirler, çeşitlerine göre farklı kopyalanan ve farklı düzeylerde çalışan memlerdir. Mikro düzey, tasarım objesi düzeyini; makro düzey ise tasarım bağlamı düzeyini temsil eder. Tüm bu memler Darvinci evrim teorisinin gereklerini yerine getirerek tasarım objelerinin zaman içinde değişimi olarak görselleşirler.

Tasarım evrimi araştırması için bu tezde 1161 Türk sigara paketini içeren ve 1900'lü yıllara uzanan bir koleksiyon kullanılmıştır. Bu tezde açıklayıcı, betimleyici ve keşfedici araştırma amaçları ile niteleyici ve niceleyici yöntemler içeren 'biyolojik' bir örnek alan çalışması ele alınmıştır. Niceleyici yöntemde, tasarıma dair veriler mikro düzey recipeme'ler olarak, bağlama dair veriler ise makro düzey selecteme'ler olarak, sigara ve sigara paketlerinin görsel analizi ile toplanmıştır. Bu veriler örüntü teşhis etme yöntemi ile kodlanmış, sınıflanmış ve Excel tabloda organize edilmiştir. Buradan istatistikî analiz için grafikler ve matrisler elde edilmiştir. Niteleyici yöntemde, içinde seri paketlerin gruplandığı ve zaman sırasına dizildiği bir tablo hazırlanmıştır. Mikro düzeydeki recipeme'lere tekabül eden sigara paketi grafiklerinin verileri görsel analiz ile toplanmıştır. Bu veriler de örüntü teşhis etme yöntemi ile renklendirilerek kodlanmış ve tabloda işaretli yollar oluşturularak incelenmiştir. Ayrıca bazı seri olarak gruplanmış sigara paketleri bu tablodan ayrı olarak incelenmiştir. Bu memlerin zaman içerisindeki hareketleri; literatür, saha çalışması ve röportaj yöntemleri ile toplanan diğer makro düzeydeki memler ile birlikte ele alınarak değerlendirilmiştir.

Bu çalışmaları gerçekleştirebilmek için, koleksiyonda tarihi bilinmeyen sigara paketlerinin tarihleri, geliştirilen tarih bulma analiz yöntemi ile saptanmıştır.

Türk sigara paketlerindeki tasarımın zaman içerisindeki değişimi memlerin hareketleri ve birbirleriyle olan ilişkileri üzerinden incelenmiş, değişimin Darvinci evrim teorisine göre olup olmadığı ve farklı tipteki memlerle açıklanıp açıklanamayacağı sorgulanmıştır. Eğer böyle ise, tasarım objelerinin görünüşündeki değişim daha geniş bir ölçekte algılanabilecek ve tasarım tarihi ile tasarım evrimi temel bilgilerine katkı sağlanması mümkün olabilecektir.

Bu metodolojik çerçeve ile varılan sonuçlar şu şekildedir:

i) Basit tasarımlar olarak değerlendirilebilecek olan sigara ve sigara paketi tasarımları ile Türkiye'de devlet tekeli ile görece kısıtlanmış bir çevrede çok karmaşık bir sistem bulunduğu gösterilmiştir. Bu durum evrimsel bakış açısı ile tasarım objelerindeki değişimin araştırılmasını desteklemektedir.

ii) Türkiye'ye özgü sigara paketleri koleksiyonu üzerinden tasarım objelerinin görünüşündeki değişimin Darvinci açıklamalar sentezine uyum sağladığı gösterilmiştir.

iii) Sigara ve sigara paketlerinin tasarımındaki değişim ilerlemeci olarak değerlendirilemez; bu yüzden Darvinci değişime uyum gösterir.

iv) Seçilen örnekler üzerinden farklı tipteki memlerin sorgulama, betimleme ve tasarımda değişimi tartışma için izlenebilecek bir yol sağladığı gösterilmiştir. Buna göre, mikro düzeydeki recipeme'ler makro düzeydeki recipeme'ler ile doğrudan ilişkili olup, ikisi birlikte makro düzeydeki selecteme'lerin oluşturduğu çevrede ve diğer evrim dışı değişim geçiren çevrede yarışırlar.

v) Türk sigaraları ve sigara paketlerinin tasarımındaki değişimin standardizasyona doğru eğilimi olduğu gösterilmiştir. Bunun birçok sebebi vardır; savaşlar, teknolojik değişimlere ulaşamama, sağlık ile ilgili kanunlar, Amerikan Sigarası modası, değişen ekonomik kararlar vs. Diğer yandan Türkiye tarihinde yer alan sigara tasarımları, paket konfigürasyonları ve paket grafiklerinin çok daha çeşitli olduğu gösterilmiştir. Evrimsel sürecin devamı olarak, yakın zamanda yürürlüğe giren yasalar ile özellikle sigara tasarımı ve paket konfigürasyonunda yeni çeşitlerin ortaya çıktığı gözlemlenmiştir. Paket grafiklerindeki tasarım değişiminin ise; stil, sağlık ile ilgili düzenlemeler, tekel kararları ve imparatorluktan cumhuriyet yönetimine geçiş gibi sebeplere bağlı olduğu gösterilmiştir.

vi) Bağlam ile ilgili verilerin, Türk sigara paketlerinin özelliklerine dair tarihsel bilgi sağladığı gösterilmiştir.

vii) Bu tezde kullanılan metodolojik çerçeve ve bunun uygulanması, diğer tasarım evrimi araştırmaları için geliştirilebilecek bir temel oluşturabilir.

viii) Tarihi bilinmeyen sigara paketleri için bir tarih bulma analiz yöntemi geliştirilmiştir. Bu yöntem, diğer tarihi bilinmeyen objeler için bir temel oluşturarak geliştirilebilir.

1. INTRODUCTION

1.1 Aim of the Research

This thesis investigates the change in the design of Turkish cigarettes and cigarette packages from the beginning of the 20th century up to the present utilizing an evolutionary point of view. By doing so it aims to add to the understanding of change in the appearance of designed objects over time.

1.2 Research Problem

The research problem of this thesis is “Why and how does the design of objects change over time?” This is about the evolution of designed objects that is undertaken among design evolution and/or design history studies of the design discipline. Since the evolutionary theories are undertaken to answer the research problem, this study is rather accepted and mentioned throughout the thesis as a part of design evolution studies.

A group of cultural, everyday, mass-produced, ordered over time Turkish objects that display changes constitute the characteristics of designed objects to be studied in this design evolution study. Cigarettes and cigarette packages are mass-produced everyday objects that are significant to Turkish culture, and furthermore are forced to undergo change today within cigarette bans and legislation. These properties and conditions of cigarettes and cigarette packages make their study fruitful in this thesis.

A collection, comprising of 1161 Turkish cigarette packages and dating back to 1900s, is used due to its ample size in this thesis. Furthermore, the collection has not been catalogued, published and exhibited as a whole, and it has not been used for any design research before.

Accordingly, the research problem of this thesis is refined within this subject matter as “Why and how does the design of Turkish cigarette packages change from the beginning of the 20th century up to the present?”, which is sought to be answered throughout the thesis.

1.3 Expected Contribution to Knowledge and Engagement with the Theory

This thesis seeks to add to the understanding of change in the appearance of designed objects over time by providing a wider conception of change in the design of Turkish cigarettes and cigarette packages from the beginning of the 20th century up to the present.

This 'wider conception of change' is also referred as a 'long-range explanation for change'. In design discipline, the change can be provided by an individual designer or can be based on the context in which designs are produced such as technological determinants, socio-economic constraints, trends and other direct and indirect environmental factors. Long-range explanations bring these two sets of explanations for change together (the individual designer and the design context) and adds the effect of time. By doing so, long-range patterns of change in design are perceived at a larger scale that can be tracked over a longer duration than the working life of an individual designer or the design context that might have been responsible for some aspects of change in design for a period of time (Wright, 2009).

Evolution is one form of long-range explanations for change where the influences of individuals and the environment are combined within time. It accommodates a common ground, where design can be placed in relation to other entities; other designs, humans, the man-made world, nature, the universe (Özcan, 2000). Therefore, evolutionary theories –Darwinian evolution theory, memes, and their different types: recipemes, selectemes, and explanemes- are used to answer the research problem of this thesis in the way of contributing to the knowledge in design discipline.

1.4 Definitions

Evolution is about change. Ernst Mayr (2001) identifies three kinds of changes that are regular cyclic changes, irregular changes and a particular kind of change that is the evolution.

Changes from day to night and back again due to the rotation of the earth, changes of the sea level in the tides due to lunar cycles, and seasonal changes due to annual circling of the earth around the sun are the examples of regular cyclic changes (Mayr, 2001). This kind of change can also be seen in the man-made world, i.e. in fashion and economy, where events are perceived to be repeating over time in a cyclical sequence such as "perception of fashion changing" and "fluctuating between a desire for opulence and a desire for austerity, and back again" (Wright, 2009).

Movements of tectonic plates, aperiodic climatic changes, and prosperity in an economy are the examples of irregular changes (Mayr, 2001). The last example can sometimes be cyclical due to fluctuation between prosperity and austerity as stated above. This kind of change is largely unpredictable due to its being subject to various stochastic processes (Mayr, 2001).

Lastly, there is evolution, a particular kind of change, which seems to be continuous and to have a directional component. It is this kind of change that is investigated in this thesis.

Evolution, in the broadest sense, is the process of change in all forms of life passing through generations. It is defined in Encyclopaedia Britannica as “Biological theory that animals and plants have their origin in other pre-existing types and that the distinguishable differences are due to modifications in successive generations” (Url-1).

The verb ‘evolve’ and the noun ‘evolution’ were first used in the 1640s, meaning “to unfold, open out, expand” and “an opening of what was rolled up”. Etymologically ‘evolve’ comes from the Latin *evolvere*, which means “unroll” (*ex-* ‘out’ and *volvere* ‘to roll’), and evolution comes from *evolutionem* as the noun of the action (Url-2).

Online Etymology Dictionary (Url-3) explains the modern use of the term ‘evolution’ in biology by revealing different viewpoints on the theory as follows:

> Used in various senses in medicine, mathematics, and general use, including "growth to maturity and development of an individual living thing" (1660s). Modern use in biology, of species, first attested in 1832 by Scottish geologist Charles Lyell. Charles Darwin used the word only once, in the closing paragraph of "The Origin of Species" (1859), and preferred *descent with modification*, in part because *evolution* already had been used in the 18th century for homunculus theory of embryological development (first proposed under this name by Bonnet, 1762), in part because it carried a sense of "progress" not found in Darwin's idea. But Victorian belief in progress prevailed (along with brevity), and Herbert Spencer and other biologists popularized *evolution*.

As explained above, Darwin did not want to use the word ‘evolution’. However, other biologists, who agreed on ‘progress’, have popularized the word. Since Darwin, himself, is as popular as the word ‘evolution’ among other scientists, people generally consider that the word ‘evolution’ matches with Darwin’s idea and it is progressive. This is a worldwide misconception, which is discussed further in the thesis.

Today, the word ‘evolution’ is widely and inevitably used in academic and daily language in a way that misconceptions and different viewpoints are accumulated into this one single word.

In order to avoid these misconceptions, different viewpoints on ‘evolution’ are emphasized with the scientists’ names, and when the word is used by itself, it refers to Darwinian evolution theory throughout this thesis.

1.5 Conceptual Framework

The conceptual framework of this thesis is constructed on three bases that are; i) Evolutionary thinking and the biological view in science, ii) Darwinian evolution theory and the memes, and iii) The study of designed objects: Turkish cigarettes and cigarette packages.

i) Evolutionary thinking and the biological view in science

‘Evolutionary thinking’ refers to the philosophy of Darwinian evolution theory and the ‘biological view’ refers to its reflection in science tradition.

Evolutionary thinking relies on answering questions about the origin and history of the world with the concept of ‘the world of long duration and forever changing’ (Mayr, 2001). It does so besides other ‘finalism’[1] and ‘essentialism’[2] ideologies, and the religious and the physics views.

Jean-Baptiste Lamarck’s, and his follower Herbert Spencer’s evolutionary thinking was also influenced by the finalism ideology that included purpose, progress and even perfection within the evolution of the biological world.

When Charles Darwin’s book “On the Origin of Species” was published in 1859, it made a big influence on our modern worldview besides biology. Mayr (2001) explains the reason behind this big influence as “...the acceptance of evolution meant that the world could no longer be considered merely as the seat of physical laws but had to incorporate history and, more importantly, the observed changes in the living world in the course of time”.

Darwin’s theory provided an explanation for the evolutionary mechanism, which can be defined in short as ‘descent with modification under the influence of natural selection’.

[1] Purposive thinking for the causes of the phenomena.
[2] The concept of ‘unchanging essence’, ‘the constant world’.

Wilson (2007) explains evolutionary thinking and the use of Darwinian theory besides other religious and physics views with an example as follows:

> Imagine that I place an object in your hand, perhaps a glittery rock or a furry mouse, and ask you to explain how it obtained its properties. Before Darwin you would have had only two options. You could say that God designed it according to His intentions. Perhaps the rock is glittery to please the eye and the mouse is a pet to teach us humility. Or you could dismantle it and explain the whole as a product of its parts. Perhaps the rock is glittery because it has quartz crystals and the mouse's fur is made of keratin. The big deal about natural selection is that it provides a third way of explaining the properties of the mouse, although not the rock. You could say that the mouse is endowed by natural selection with the properties that enable it to survive and reproduce in its environment.

The biological view is a view within the science tradition that is defined by Langrish (1999) as being opposed to the physics view. He states that the biological view is based on Darwinian evolution while the physics view is based on Newton mechanics.[3] The biggest difference between them is that the biological view welcomes variety and the physics view hopes for one theory for everything. Langrish (1999) identifies certain features of the biological view as being multi-casual, involving fuzzy patterns, requiring descriptive studies and historical analysis, not involving predetermined patterns and welcoming variety.

Evolutionary thinking and the biological view in science can be undertaken within the study of designed objects besides the study of living organisms due to the similarities between the biological and the man-made worlds.

Designing is the ability of the human kind, by which he/she “changes situations into preferred ones” (Simon, 1996). Human intentionality in the man-made world is the most apparent difference from the biological world where designed objects are the consequences of purposive actions of human beings. However, the outcomes of these actions are still uncertain over time.

On the other hand, the most apparent similarity between these biological and man-made worlds is that both are complex systems. The certain features of the biological view that are given above define a complex system, which also fits into the man-made world. Specifically, it fits into the design world, since design deals with the “multi-faceted qualities of objects, processes, services and their systems in whole life cycles” (Url-4). Furthermore, Basalla (1988) states that the diversity of artifacts is three times greater than all the living organisms in the world. This serves to indicate the richness of variety in the man-made world in regard to a complex system.

[3] Although these views are named after two disciplines in science, they don’t refer to studies in these disciplines; rather they are viewpoints where studies in biology and in other disciplines may fall into physics view and vice versa.

Basalla (1988) considers the variety in artifacts to be "…testimon[ies] to the fertility of the contriving mind and to the multitudinous ways the peoples of the earth have chosen to live".

Steadman establishes the pervasive impact that Darwin's evolution theory had on the diverse disciplines[4] of the human sciences. However, the impact was felt much later in design and architecture studies. This was due to other disciplines involving the "...areas of the study of man which were so much closer to biology" (1979). This delayed impact in design is interesting in the sense that design is considered separate, or in isolation from the human as opposed to Basalla's (1988) statement above.

In this thesis, designed objects are considered as the extensions of ideas of human beings –not apart from them. By doing so change can be studied within evolutionary thinking and the biological view in science as supported by the views of authors and designers given below.

Özcan (2000) proposes two scientific disciplines to support Langrish's (1999) biological view in science. He proposes evolution and quantum physics for providing a rich accumulation of dynamic generalizations for the world we live in and for the design discipline in spite of following traditional sciences with reductionist features.

Özcan (2000) also states that "The new approaches to evolution establish a common ground where design can be placed in relation to other entities; other designs, humans, nature, universe". Supporting this view, Yagou (2005) strongly suggests an evolutionary perspective in design history studies as follows:

> The evolutionary perspective propose[s] points to the need of actually re-evaluating our historical understanding of products, reinterpreting the history of industrial design, and indeed rewriting design history to accommodate a wider conception of the nature and role of arteficts… Rewriting design history from an evolutionary perspective appears to be a path which is intellectually and practically challenging, and certainly worth following.

Lastly from a designer's aspect, Philip Starck, a famous French product designer, emphasizes the understanding of the role of a designer in a continuously changing world, where new stories are still to come and the designer is only a part of co-evolving stories of his/her time (Url-5).

ii) Darwinian evolution theory and the memes

Darwinian evolution relies on two independent processes of change: 'transformation in time' and 'diversification in ecological and geographical space' (Mayr, 1991).

[4] Theology, religion, philosophy, the human history, the history of ideas, the growth of science, art criticism, linguistics, economics, the social theory, anthropology, sociology and psychology.

It is the ‘descent with modification under the influence of natural selection’ which takes place through variation, selection, repetition and heredity.

Darwinian evolution involves random and non-random processes that provide gradual, accumulated change over time. It is about change and adaptation, and does not necessarily lead to progress and never leads to perfection (Yagou, 2005) unlike the claims of other evolution theorists Lamarck and Spencer.

Langrish (1999) states that different population types such as the designed objects can be associated with Darwinian evolution theory besides living organisms if they are capable of fulfilling the following requirements:

1) The existence of variety
2) A competitive selection process of the ‘winners’
3) A reproductive system which leads to the replication of the ‘winners’ and the disappearance of the ‘losers’
4) A mechanism for the generation of new varieties (goes back to the first requirement) and the continuation of the process
5) A mechanism for changing the rules of the selection process

This statement of Langrish (1999) is followed in this thesis, and the change in designed objects is investigated within the requirements given above to check if it is compatible with Darwinian evolution theory.

One other apparent difference between the biological and the man-made worlds besides human intervention, which was mentioned before, is the inheritable character, the gene. Genes, which are responsible for the inheritance of change under natural selection, were discovered after Darwin in the late 19th and early 20th centuries. The term ‘neo-Darwinian evolution’ refers to Darwinian evolution studies with genes.

Gene studies have also influenced other disciplines besides biology. Richard Dawkins introduced ‘memes’[5] in 1976 as an analogy to ‘genes’ for defining the new kind of replicator in culture. He defined the term ‘meme’ as “the idea of a unit of cultural transmission, or a unit of imitation” by giving the examples of tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches (Dawkins, 1989).

Although it had started as an analogy, the modern neuroscience has proved the existence of memes in the brain today (Langrish and Abu-Risha, 2008). Memes are

[5] Dawkins adapted the meaning from the Greek root *mimeme* (something imitated), ‘memory’ and the French word *même* in the formation of the word ‘meme’ (1989).

ideas in the brains of people that replicate imperfectly over time while interacting with the ideas of other people and institutions in an environment.

Memes overcome the problem of the reproductive system of the designed objects. Rather than reproducing, they are the replicating ideas that produce the designed objects. Accordingly, Langrish (2004) states that “Design evolution is the evolution of the ideas, and the Darwinian evolution of ideas is called ‘memetics’ [the study of memes]”. Özcan (2002) also claims that memes are convenient to address design activities, and accordingly he states that “Whatever we design is an end product, a conclusion of our behavioural patterns, called as memes. Riding a bicycle is a behavioural pattern that makes us design bicycles”.

By taking the meme’s eye view in this thesis, the study of change in designed objects becomes the study of these memes that give form to the designed objects over time. It is these memes that follow the requirements of Darwinian evolution theory.

As it was mentioned before, the biological and the man-made worlds are complex systems where Darwinian evolution takes place in the biological world, living organisms change in a natural environment over time. Evolution in the man-made world is much more complex than this. Designed objects change in both natural and man-made environments over time. This natural environment can be described as including climate, earthquakes, and geography which does not change evolutionarily. The man-made environment would include things such as wars and events which do not change evolutionarily as well as aspects of the man-made environment such as economics, politics, legal issues, socio-culture, technology, styles, and what people want which *do* change evolutionarily. The ideas of designers that produce the designed objects interact with the ideas of other people and institutions that produce the design context while these ideas together go through an evolutionary process within these natural and man-made environments over time.

This complex system of evolving designed objects is simplified by the introduction of different types of memes by Langrish (1999), which are the recipemes, selectemes and explanemes. Recipemes are the competing ideas about ‘how to make things’, which replicate by imitation. Selectemes are the ideas about betterness, in other words, they are the competing ideas about ‘which is better than the other’, and they replicate by societal means. Explanemes are the ideas for the rationalization of selectemes. In other words, they are the competing ideas about ‘why this is better

than the other', and they replicate by learning, which requires a language or symbols (Langrish, 1999).

These different types of memes contribute to the description of interacting ideas in a complex system. Langrish (2005) explains it as follows: "Recipeme idea patterns compete within an environment of selectemes, the selectemes themselves compete for attention and attempts at rationality also compete as explanemes".

Within the study of memes that follow the requirements of Darwinian evolution theory, the different types of memes are investigated in this thesis for their contribution to describe the change in designed objects in a complex system over time.

iii) The study of designed objects: Turkish cigarettes and cigarette packages

The design discipline has derived different scientific methods and knowledge from other disciplines for both design process and design research in the 20th century. These are summarized by Bayazıt (2004) in her article "Investigating Design: A Review of Forty Years of Design Research". Steadman (1979) argues that attempts in these 'design methods movements' have carried a prevalent notion that "...to apply scientific or rational thinking in design must in some sense involve making the design process itself 'scientific'". Both Steadman (1979) and Bayazıt (2004) agree that these attempts contributed to improving either the design processes or their final results.

In addition, Steadman (1979) states that "...there is a great need... for thinking about the fundamental questions of design... which can be illuminated not by any attempt to make the process of designing 'scientific', but rather by subjecting the products of design –material artifacts...- to scientific study".

Material artifacts are subjected to scientific studies within different disciplines such as material culture studies, semiotics, media and cultural studies, philosophy, science and technology studies, anthropology, and design studies (Boradkar, 2010).

About design studies, Boradkar (2010) states that "The relatively limited attention paid to the application of theory and criticism toward the analysis and interpretation of objects opens up a significant arena of opportunity for design research", which still supports the argument of Steadman (1979) after thirty years.

Fallan (2010) explains that "Design history was conventionally considered the history of designed objects of high (aesthetic) quality and the designers, ideas, movements and institutions that conceived those objects". Besides continuation of

such topics, the subject matter of design history has become much complex and multifarious within increasing interest in issues such as consumption, mediation and use, and changing public perceptions of design (Fallan, 2010). He further explains that “Design history today is no longer primarily a history of objects and their designers, but it is becoming more a history of the translations, transcriptions, transactions, transpositions, and transformations that constitute the relationships among things, people and ideas”.

Although evolutionary perspective is not new in design studies, the use of this perspective as explained within two former bases of the conceptual framework opens up new insights for the understanding of change in the appearance of designed objects over time, and follows the new research movement in design history studies that is mentioned above.

In this thesis a collection, comprising of 1161 Turkish cigarette packages and dating back to 1900s, is subjected to investigations of change in designed objects over time.

The collection belongs to Tunca Varış, who worked as a tourist guide and has travelled extensively throughout Turkey to build up this ample size of his collection.

The collection has not been catalogued, published and exhibited as a whole, and it has not been used for any design research before.

All the cigarette packages in the collection are distinct. New cigarette packages, including those with differences in their designs, have been added to the collection which covers 110 years. Even a slight change in design such as the change in value of colour of a cigarette package is regarded as a differentiation in the collection.

The evolutionary study of living organisms and/or designed objects should not be considered as a strict process of kinds such as the evolution of ‘shark’, the evolution of ‘mobile phones’, or the evolution of ‘bicycle’. It should be rather considered as a dynamic and total movement of the whole universe where design is in relation to all other entities (Özcan, 2002).

In this thesis, the change in design of cigarettes and cigarette packages is studied with reference to Darwinian evolution theory where the influences of individuals and the environment are brought together within the effects of time. It is not the study of strict process of kinds such as the evolution of ‘cigarette and the cigarette package’.

The cigarettes and cigarette packages are the extensions of ideas of human beings fulfilling their ‘smoking’ behavioural pattern. They are the reflections of memes found in the brains of people, which competed with other memes in man-made and natural environments, got eliminated or replicated imperfectly over time and arrived at their latest forms as cigarettes and cigarette packages of today.

The cigarettes and cigarette packages themselves are studied within an environment in this thesis; not their photographs and/or advertisements. There is no other form of mediation that highlights the ideas of people embodied in these designed objects. They are direct, non-interpreted sources in this design evolution study.

Turkish cigarettes and cigarette packages are cultural, everyday and mass-produced products, which provide a good example of a complex system from the man-made world. Here they are regarding the field of cigarette and cigarette packaging design in a specific geography and culture where these products are significant. It can be considered that the collection of cigarette packages represents 110 years of the Republic of Turkey including the Ottoman Empire period.

Cigarettes, cigarette packages and ‘smoking’ are significant to Turkey within agricultural, economic, political, technological and socio-cultural aspects regarding the man-made environment of this study. Turks are represented by ‘smoking’ in western cultures through paintings, writings, even with idioms like “to smoke like a Turk” –an Italian idiom. Worldwide, Turkey is a known oriental tobacco producer (which is a type of tobacco specific to its geography). Other significance is the state monopoly system of tobacco since the Ottoman Empire period up to 2008 when it was totally privatized by the Turkish government. Although there has been an interruption for a period of time, Turkey had a closed economy system until 1984. All these decisions have affected production, marketing, economy, politics, and design of tobacco and its products, cigarettes and cigarette packages.

It is interesting to investigate the change in design of cigarettes and cigarette packages in a rather stable environment where different tobacco companies are not creating a competitive environment, which has totally changed recently in Turkey.

One other obvious environmental factor is the cigarette packages being forced to undergo change today within cigarette bans and legislation. This condition brings the ‘smoking’ up to a changing phenomenon of today, and investigating the design consequences of these ‘changed’ and ‘changing’ phenomena of ‘smoking’ becomes interesting and fruitful for this thesis.

1.6 Methodology

The methodological research aims of this thesis are based on the research problem asked and on the conceptual framework constructed within the relevant literature review as background to the research.

On the way to add to the understanding of change in the appearance of designed objects over time, the methodological research aims of this thesis are as follows:

1) To identify and examine changes in the design of Turkish cigarettes and cigarette packages;

2) To use data gathered from the collection of Turkish cigarette packages – including cigarettes- to test Darwinian evolution theory and to examine different types of memes;

3) To compare the data gathered and evaluated from the studies of Turkish cigarettes and cigarette packages with the literature studied in order to arrive at informed conclusions that would be 'an addition to knowledge'.

This thesis has descriptive and explanatory research purposes in regard to ‘how’ and ‘why’ forms of the research problem for describing and explaining the change in the appearance of Turkish cigarettes and cigarette packages over time. It also has an exploratory research purpose by discovering and setting out the characteristics of Turkish cigarettes and cigarette packages in the collection that have not been published before.

This research is a form of case study, in which the subject matter becomes one single case as in the studies of biology and history. Langrish (1993) identifies the aims of the ‘biological’ case studies, which is the methodological path followed in this thesis, as follows:

- To develop labels (codes) for use in a classification scheme
- To observe the movement of these labels (codes) through time
- To look for principles underlying this movement

Qualitative and quantitative methods are used in this thesis. Within the quantitative method; the data from the cigarettes and cigarette packages are collected by visual analysis, coded by pattern recognition and classified and organized in Excel tables, from which graphs and matrixes are obtained for a statistical analysis. Within the qualitative method, a board of time-lined cigarette packages, in which serial packages are grouped, is prepared. The data of cigarette package graphics are collected by visual analysis, coded by pattern recognition and marked in the board

to obtain paths of marked codes and/or observed in detail within the groups of serial cigarette packages separate from the board.

In order to accomplish these studies that require time-lining, the unknown dates of the cigarette packages in the collection are found through a dating analysis method of Turkish cigarette packages, which is developed in this thesis.

The movements of codes are observed within graphs, matrixes, the board of time-lined cigarette packages and the groups of serial cigarette packages. These movements are analyzed and tested to see if Darwinian evolution theory is the principle underlying them by checking the evolutionary requirements that were explained before.

The change in design of cigarettes and cigarette packages is described within these movements of codes. These codes are the memes, in specific; they are distinguished as the recipemes at the micro level in this thesis. Their movement reveals how they compete, eliminate or replicate imperfectly over time. Recipemes at the micro level correspond to ideas of 'how to make cigarettes and cigarette packages' such as '80 mm. long cigarette' or 'soft pack'. These recipemes are rather distinguished with the term 'micro level' in order to emphasize the ideas at the designed object level.

The environment is the inseparable issue of Darwinian evolution theory. The change in design of cigarettes and cigarette packages can only be explained within the movements of codes –the recipemes at the micro level- in an environment. These are the natural and the man-made environments that were explained before.

Some of the man-made environments –apart from the wars and events- change evolutionarily. These are the ideas of other people (besides the designer) and the institutions that provide the design context.

The technology and the styles are the recipemes at the macro level that are a part of this design context. They are distinguished as 'macro' in this thesis since they are the institutions that work at the 'macro' level enclosing the ideas at the 'micro' level – the designed object level.

The economic policy, the decisions of people and incorporated bodies, and the socio-cultural aspects are the selectemes at the macro level, which are also a part of the design context. The selectemes are the ideas for 'betterness'. The selectemes are distinguished as 'macro' and 'micro' in this thesis. Selectemes at the macro level correspond to the ideas of other people (besides the designer) and the institutions while the selectemes at the micro level correspond to the ideas of the designer,

such as ‘85 mm. long cigarette is considered better than the 80 mm. long cigarette’. However, although ‘85 mm. long cigarette’ might have been preferred, it still corresponds to the recipeme at the micro level.

The selectemes at the macro level provide an environment for recipemes at the macro and micro levels to compete, and the recipemes at the macro level provide an environment for the recipemes at the micro level to compete. All these memes also compete in the natural and other man-made environments that are not due to an evolutionary change.

The explanemes are the ideas for rationalization of selectemes. The explanemes are distinguished as ‘macro’ and ‘micro’ in this thesis in a way that the explanemes at the micro level correspond to the ideas of the designer such as ‘why 85 mm. long cigarette is better than the 80 mm. long cigarette’. The explanemes at the macro level correspond to a part of an evolutionary system which sometimes involves institutions such as science, regulation, law and government.

In this thesis, the data of natural and man-made environments including the recipemes, selectemes and explanemes at the macro level are collected from literature search, fieldwork, and interviewing.

The change in design of cigarettes and cigarette packages is described and explained within the movements of codes in an environment over time. This is tested through Darwinian evolution theory as the underlying principle and by examining and discussing different types of memes. This is presented through selected narratives of examples of cigarettes and cigarette packages as explained within the structure given above.

1.7 Structure

In Chapter 2, the literature is reviewed to explain the conceptual framework of the thesis in detail as a background to the research. This covers the evolutionary thinking and the biological view in science, neo-Darwinian evolution theory, the introduction of memes, the use of Darwinian evolution theory and the memes in design studies. It also includes the study of objects in design evolution literature, the study of the collection of cigarette packages as designed objects, the significance of smoking, cigarettes and cigarette packages in Turkey, which indicates the complex system of the environment.

In Chapter 3, the methodology of this thesis is explained through a flowchart of steps in the research, which include: i) Subjecting the cigarette packages to design

evolution study; ii) Data collection, organization and analysis; iii) Analysis of the results.

In Chapter 4, the dating analysis method, which is developed to find the unknown dates of the cigarette packages in the collection, is explained; and its results are given.

In Chapter 5, the results are given and analyzed. The results of the graphs and the matrixes are revealed as a quantitative study, and the results of the board of time-lined cigarette packages and the groups of serial cigarette packages are revealed as a qualitative study. The results are analyzed within the theories of the thesis in this chapter.

In Chapter 6, the key issues of the background to the research are highlighted, the methodology engaged within the theories are summarized, the research findings are emphasized and discussed, the findings are evaluated for the contribution to the knowledge, and the future research from this study is foreseen and listed.

1.8 Limitations

Only Turkish cigarette packages, which are the products of the state monopoly and the products of other companies that are only made in Turkey for Turkish customers, are studied in this thesis since the state monopoly system has ruled the country for a long time and provided sufficient data for this study.

The data from the collection of cigarette packages indicate the variety of ideas and their frequencies in the collection that replicate through years; not the sales amount of cigarette packages. The sales of cigarette packages are not studied in this thesis.

The data of natural and man-made environments, which are required for this study, are collected relevantly to test Darwinian evolution theory; the data collection for the environment is not processed any further.

This study does not discuss whether evolution theory is a fact; it only uses evolution theory as a tool to understand why and how design changes. Similarly, the propagation or anti-propagation of smoking is not an issue of this study. Smoking is merely the base subject matter.

2. BACKGROUND TO THE RESEARCH

This chapter focuses on the conceptual framework of the thesis, and explains it successively in five parts. The contribution to knowledge that this thesis makes is emphasized at the end.

2.1 Evolutionary Thinking and the Biological View in Science

'Evolutionary thinking' refers to the philosophy of Darwinian evolution theory and the 'biological view' refers to its reflection in the science tradition, these are explained in this part.

This part particularly focuses on Darwinian evolutionary thinking, and distinguishes and explains it among other traditional thoughts of the era and different viewpoints on evolution.

2.1.1 Ideologies in the 19th century

For three centuries until the publication of Darwin's book "The Origin of Species" in 1859, Europe had been through a continuous intellectual upheaval within the Scientific Revolution of the 16th and 17th centuries and the Enlightenment of the 18th century.

Two sets of external factors can be highlighted in this period: socioeconomic factors and ideological factors. Ideological factors, also affecting the socioeconomic factors, had a direct effect on evolutionary thinking, and prevented the universal acceptance of some of Darwin's new ideas for more than a hundred years. Even today, Darwinian ideas are still not yet fully accepted. The ideological factors that challenged Darwinian evolutionary thinking are: i) A belief in the philosophy of essentialism, ii) A belief in 'final causes' or teleology, and iii) A belief in an interpretation of the causal processes of nature as they had been elaborated by physicists (Mayr, 1991). This thesis briefly focuses on these secular ideologies, not the religious ones, due to its subject.

Evolutionary thinking relies on answering the questions about the origin and history of the world. Mayr (2001) classifies three views that seek to answer these questions:

i) ‘A world of infinite duration’ that relies on a constant world; ii) ‘A constant world of short duration’ that relies on a constant world created by an Almighty God as described in holy books; iii) ‘An evolving world’ that relies on the world of long duration and its forever changing.

The concepts of ‘constant world’ and ‘purposive thinking for the causes of the phenomena’ mentioned in these views on the origin of the world reflect the western philosophical and theological zeitgeist of the 19th century, and are found in the philosophies of essentialism, finalism and the physics view in science that are briefly explained below.

Essentialism philosophy of Plato had dominated western thought for more than two thousand years. It is the concept of the ‘form’ or ‘idea’ that is an eternal, unchanging essence, and that is imperfectly imitated by its earthly representatives. Variation has no meaning and only essences matter in this philosophy as Mayr (1991) states the variable phenomena of nature from an essentialist perspective as: “[Essentialists] considered species as ‘natural kinds’ [that are] defined by constant characteristics and sharply separated from one another by bridgeless gaps [i.e. a horse is characterized by its high teeth and a foot with a single toe]”.

Finalism philosophy finds its roots in the Aristotelian final cause thinking, where Aristotle argues the existence of an adaptation to an end, i.e. adaptation of the front teeth to be sharp for dividing the food and the grinders to be flat for masticating the food (Darwin quotes Aristotle’s *Physicae Auscultationes,* 1993). Accordingly, this philosophy associates the causes of the phenomena with purposive thinking and states that everything in nature moves toward a predetermined end such as from lower to higher, from simple to complex, from primitive to advanced, from imperfect to perfect, and as in the development of an organism from a fertilized egg to an adult –ontogeny.

The physics view was introduced in the 17th century. Physical scientists like Galileo, Newton, Lavoisier and Laplace produced a concept of science –dominated by physics and mathematics- that affected the philosophers like Bacon, Descartes, Locke and Kant in a way that the ideal of science should be to establish mathematically formed theories that were based on universal laws. According to this physics thinking, a good scientific explanation was tested by the possibility of proof and the exact prediction. Physics thinkers were essentialists and strict determinists searching for laws to explain the order and harmony of the created universe (Mayr, 1991).

The ideologies of essentialism, finalism and physics view incorporating together into Christian theology were observed in the *Scala Naturae* or Great Chain of Being, where all entities in this world were arranged in an ascending ladder. These entities did not change and reflected the mind of creator; they were ordered in a sequence leading toward perfection; and their study in natural science was all about cataloguing their links and discovering their order to reveal the wisdom of God (Mayr, 2001; Futuyma, 1986).

2.1.2 Different viewpoints on evolution

The discoveries and evidences in the 17th and 18th centuries gave rise to the idea of a changing world. By the end of the 18th century the concept of a 'changing world' was applied to astronomy, geology, and to human affairs, and even challenged the *Scala Naturae* or Great Chain of Being: Mayr (2001) explains it as follows:

> Eventually it was realized that the static *Scala Naturae* could be converted into a kind of biological escalator, leading from the lowest organisms to ever higher ones, and finally to man. Just as gradual change in the development of an individual organism leads from the fertilized egg to the fully adult individual – [ontogeny][6], so it was thought that the organic world as a whole moved from the simplest organisms to ever more complex ones, culminating in man.

While 'ontogeny' was associated with 'phylogeny' during the reinterpretation of the *Scala Naturae*, the ideas of progress and predictability of 'ontogeny' were transferred into 'phylogeny' as well. Today it is known that evolution is about 'phylogeny', and it should not be confused with 'ontogeny', which had concerned Darwin during his lifetime and caused him hesitation in using the word 'evolution' to explain 'phylogeny', which was previously used to explain 'ontogeny'.

Different viewpoints on evolution that were supported by the ideologies of the 19th century were produced within the emergence of evolutionary thinking –the idea that the 'world is not static but rather evolving'. Evolutionary viewpoints of Lamarck, Spencer and Darwin are given below and at the further parts of this chapter in comparison to each other.

i) Jean-Baptiste de Lamarck

The conversion of *Scala Naturae* was first articulated in detail by the French naturalist Jean-Baptiste de Lamarck (1744-1829), who proposed the first genuine theory of evolution in the *Philosophie Zoologique* in 1809. Lamarck's theory

[6] 'Ontogeny' is "The development or course of development especially of an individual organism", and 'phylogeny' is "The evolution of a genetically related group of organisms as distinguished from the development of the individual organism" (Url-6, Url-7).

prevailed up to 1859 among laypeople, natural scientists and philosophers, which sustained the idea that God had created the world in a way that every organism was perfectly adapted to its place in nature –essentialism- and the creation was a gradual, slow process, directed by final causes, culminating in the production of man –finalism. Mayr (2001) explains Lamarck's theory as "[he] adopted a weakened version of strict essentialism by allowing a gradual change (transformation) of the type over time".

In Lamarckian evolution, the change occurs due to environment and willpower of the organism, which is then inherited by the following generations. His two ideas to explain the evolution are the change of characteristics by striving for improvement, known as the 'Law of Use and Disuse' and the inheritance of acquired characteristics is known as 'Transmission of Acquired Characteristics' (Wright, 2009). These ideas combine to form an evolutionary theory, which is guided by the environment.

Futuyma (1986) explains Lamarck's theory as: "…a changing environment alters the needs of the organism to which the organism responds by changing its behaviour, and consequently uses some organs more than others. In other words, use and disuse alter morphology, which is transmitted to subsequent generations". A common example is the elongation of the necks of giraffes through generations due to their behaviour of trying to reach higher leaves.

Lamarck's theory highlights the improvement and the perfection in evolution, thus it is strictly one dimensional –invariable, directional and progressive (Dawkins, 2006; Mayr, 1991).

Lamarck did not provide demonstrable evidence for his theory, in the way he suggested it did (Wright, 2009). His theory also had a very poor explanatory power that was incapable of explaining the evolution of serious adaptive complexity (Dawkins, 2006). However, although his theories are refuted today, Lamarck influenced Darwin and other evolutionists of his time, such as Herbert Spencer.

ii) Herbert Spencer

Herbert Spencer (1820-1903) was a follower of Lamarckian ideas so that he also viewed evolution as a mechanism for constant gradual improvement. Spencer defined evolution (Dennett quotes Spencer, 1995) as: "Evolution is an integration of matter and concomitant dissipation of motion; during which the matter passes from an indefinite, incoherent homogeneity to a definite, coherent heterogeneity; and during which the retained motion undergoes a parallel transformation".

Spencer's evolutionary improvement was due to moving up in the evolutionary scale by the strong surviving and the weak necessarily perishing through a generally one-directional continuous trend towards a definite, coherent heterogeneity. This mechanism could only be achieved by an inherent progressive tendency of the nature, where all later versions of a subject would be 'better' or more ideal than all earlier versions. Being 'better' or more ideal was described as being 'fit for purpose' in Spencerian evolutionary thinking, rather than simply being 'fit', as in stronger, larger, healthier or more attractive. This purposive thinking of Spencerian evolution, which was found in the philosophy of finalism, indicated how things were predestined to become more complex and specialised as in the way that a caterpillar was predestined to become a butterfly (Wright, 2009).

In Spencerian evolution, being 'fit for purpose' brings up the differentiation of form due to emergence and progressive specialization of organic function. As being a philosopher and a sociologist, Spencer applied this functionalism thinking to his sociology studies and he was the first to use 'function' as a technical term for the analysis of society. For him, evolution was a process manifested in man, society and culture. His thoughts also influenced the architect Louis Sullivan, who coined the famous phrase 'form follows function' in the late 19th century. This was due to the 19th century functionalism and the modern movement that provided the basis for a simple 'ecological' analogy of a kind that is found in both animals and artifacts. Form was related to function, and function was related to environment (Steadman, 1979). Together with the idea of functionalism, Spencer applied his progressive evolutionary thinking to a number of subjects, including art, design and education (Wright, 2009).

Over time there was widespread acceptance of Darwin's theories through the studies in evolutionary biology. This was partly aided by the discrediting of Lamarck's theories, which in turn irrevocably damaged Spencer's evolutionary thinking with its reliance on Lamarckian ideas (Wright, 2009).

iii) Misconception of the ideas of Charles Darwin with Herbert Spencer

Although Darwin's evolutionary ideas are fundamentally different from Spencer's, they are sometimes confused with one another outside the academy of biology. Mayr (1991) identifies the differences between these two evolutionary viewpoints as follows:

> Spencerian paradigm is in several respects in complete conflict with Darwin's ideas. For instance, Spencer supported transformational rather than variational evolution; second his

> evolution was distinctly teleological; and finally it was based entirely on an inheritance of acquired characteristics, not involving natural selection in any manner.

Lamarck's evolutionary ideas both influenced Spencer and Darwin; however Spencer's evolution theory relied more on Lamarckian inheritance of acquired characteristics while Darwin proposed an original theory for evolution, namely the 'natural selection'. Despite this situation, the ideas of these two scientists are confused leading to a misconception of Darwin's evolutionary ideas worldwide.

The confusion of the ideas of Spencer and Darwin with one another might be reasoned to their both using the word 'evolution' and the phrase 'survival of the fittest' with different meanings; and also the naming of the movement 'Social Darwinism' after Darwin although it was based on Spencerian thinking. These reasons are briefly explained below.

As mentioned previously, Darwin preferred to use 'descent with modification' for his theory rather than 'evolution' since it carried the meaning of progress in the English vernacular. However, Spencer propelled the word into biology and it gained general currency so that it became inevitable for Darwin to use the word first time in "The Descent of Man" in 1871 (Gould, 1996).

The famous phrase 'the survival of the fittest' originates with Spencer. It was used by Darwin in the 5th edition of "The Origin of the Species", where he changed the title of Chapter 4 to "Natural Selection or Survival of the Fittest", and used the phrase several times in the text (Pallen, 2009). Actually, Darwin meant it as a metaphor for 'better adapted for immediate, local environment', not the common inference of 'in the best physical shape' (Gould, 1996), which misled the meaning to a progression. In addition, Pallen (2009) states that "If the fittest are defined as those best equipped to survive; the phrase becomes an uninformative tautology that obscures the essential features of [Darwinian] natural selection".

The phrase 'survival of the fittest' became the slogan for a form of social climbing, called 'Social Darwinism', in the late 19th and early 20th centuries in England and especially in America, which was widely used after 1940s (Howard, 1982). Pallen (2009) explains it as "the view that competition between individuals and between nations could, and should, drive social and economic progress in human societies". Although this interpretation of Social Darwinism was influenced by Thomas Malthus and Herbert Spencer, it was named after Darwin in a manner of increasing the misconceptions about Darwinian thinking. Steadman (1979) clarifies this situation and explains the difference of Darwinian evolution from Spencerian evolution as follows:

> The strange thing to realize in retrospect, despite all the talk of 'Social Darwinism', is how little the *Darwinian* theory really justified any such analogy. In the first place there was no *necessary* suggestion of progress in the 'survival of the fittest' –because fitness was always relative, and because the only *ultimate* criterion of overall fitness (as distinct from those qualities conferring relative fitness on competitors) was the fact of survival. In the second place, Darwin did not propose –as Spencer did- any *law of evolution* as such, any goal or state towards which it was directed; he offered only a mechanism for the operation of selection, dependent on certain assumed laws of heredity and variation.

2.1.3 Darwinian evolutionary thinking

This part of the thesis gives brief information about Darwin's life; explains major Darwinian evolution theories for a better understanding of his whole theory; and focuses on the conflicts between Darwinian thinking and the ideologies of the 19th century.

i) Charles Darwin

Charles Darwin was born at Shrewsbury, England in 1809. His family had an intellectual distinction in that his father was a physician and his grandfather, Erasmus Darwin, was the well-known author of "The Botanic Garden" (Eliot, 1993). While he was studying at Christ's College, Cambridge –after spending two years on medicine at Edinburgh University, he received an invitation from his teachers to join one of the Navy's survey ships, HMS Beagle, to survey the coasts of South America (Mayr, 2001). He returned from the expedition of 'Beagle' after five years in 1936 with first-hand knowledge of geology and zoology, a reputation as a successful collector, and with founding ideas of his theory of evolution (Eliot, 1993).

Although Darwin had outlined his theory of evolution as early as 1842, he postponed its publication due to amount of investigations he engaged in for the purpose of testing it. In 1858, A. R. Wallace sent him a manuscript, which contained a statement of an identical theory of the origin of species. These independent studies, the paper of Wallace and a letter to Darwin, where he outlined his theory, were read together and published by the Linnaean Society in 1858. Shortly after, Darwin's "The Origin of Species" was published in 1859 leading to a battle between the old science and the new one (Eliot, 1993).

Darwin devoted himself to scientific study for the rest of his life, and died in 1882, at the age of 73. He was a superb observer with insatiable curiosity that led him make so many scientific discoveries and come up with original ideas (Mayr, 2001).

ii) General overview of Darwin's evolution theory

Darwin built his evolutionary ideas on the foundations laid by other people in history. Aristotle, Buffon, Erasmus Darwin –his grandfather, Lyell, Malthus, Lamarck were a few of the influences on Darwin's evolutionary thinking that led him to propose an original theory for a mechanism of evolution, called the 'natural selection', in his book "The Origin of Species" in 1859.

"The Origin of Species" consists of two sorts of demonstrations as Dennett (1995) puts them forward: "the logical demonstration that a certain sort of process would necessarily have a certain type of outcome" and "the empirical demonstration that the requisite conditions for that sort of process had in fact been met in nature". Thus, Darwin explains the process of evolution with evidences from nature in his book.

Darwin's evolution theory is not a single monolithic theory but a whole bundle of theories, which consists of two independent processes: "transformation in time" –the acquisition and maintenance of adaptedness, and "diversification in ecological and geographical space" –the origin and role of organic diversity (Mayr, 1991; 2001).

In order to have a better understanding, Mayr (1991) partitions Darwin's evolutionary framework into five major theories, which are given below and shown in Figure 2.1. These theories formed the basis of Darwinian evolutionary thinking, and were referred to by authors as invariably being combinations of some of them.

1) Evolution as such: This is the theory that the world is steadily changing and organisms are transformed in time.

2) Common descent: This is the theory that every group of organisms descended from a common ancestor.

3) Gradualism: This is the theory that evolutionary change takes place through the gradual change of populations.

4) Multiplication of species: This theory explains the origin of the enormous organic diversity –populational speciation.

5) Natural selection: This theory explains the mechanism of evolutionary change, which comes through the abundant production of genetic variations in every generation. The relatively few individuals, who survive owing to a particularly well-adapted combination of inheritable characters, give rise to the next generation.

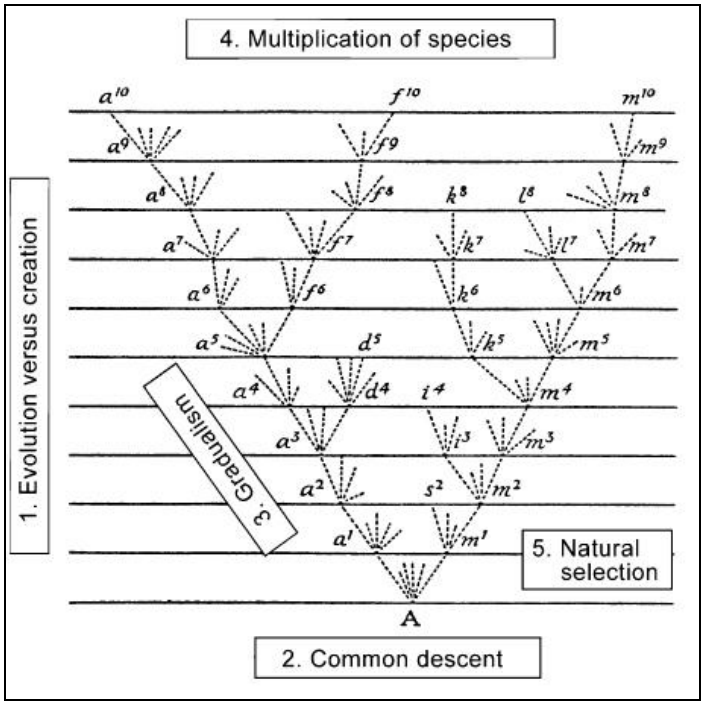


Figure 2.1 : Reproduction of a section from the original phylogenetic tree in Darwin's "Origin of Species" combined with the five theories extracted from his the book (Kutschera, 2009).

There are other theories of Darwin than the ones listed above, such as 'sexual selection', 'pangenesis', 'effect of use and disuse', 'character divergence', etc. Being the most novel theory of Darwin Natural selection deals with the mechanism of evolutionary change, and includes theories such as 'sexual selection'. Combined, all of these theories form a unity under the name of Darwinian evolution theory as an inseparable package (Mayr, 1991).

First two theories given above, namely 'evolution as such' and 'common descent' were widely accepted due to the abundant evidence already available in support of these theories. Mayr (2001) calls this wide acceptance of the theories as 'the first Darwinian revolution'. It is a revolutionary step because of the acceptance of man as a primate in the animal kingdom.

However, the other three theories, namely 'gradualism', 'multiplication of species' and 'natural selection', stayed controversial for almost eighty years due to the opposing ideologies –essentialism, finalism, Physics view- to Darwinian thinking. These theories were accepted after a widespread consensus brought up by so-called 'Modern Evolutionary Synthesis' between 1936 and 1947, which is called the 'second Darwinian revolution' by Mayr (2001). The previous development of populational genetics was a stimulus for this revolution as it showed that Mendelian genetics, which was demonstrated in 1900, was consistent with natural

selection and gradual evolution. In the following years the developments in molecular biology strengthened the Darwinian paradigm so that the synthesis is still, to a large extent, the current paradigm in evolutionary biology (Mayr, 2001).

iii) Darwinian evolutionary thinking against the ideologies

Essentialism, finalism and Physics view were not valid ideologies for Darwin's thought; his rejection of these ideologies developed his further thoughts.

The evolution theories based on essentialism philosophy explain evolution by 'transmutation (saltational evolution)' and 'transformation'. In transmutation, the production of new species is discontinuous due to the sudden creation of a new essence. In 'transformation', a gradual change occurs from one condition to another including direction, progress and perfection as in Lamarck's evolutionary idea (Mayr, 1991).

Darwin initiated a new way of thinking by replacing the philosophy of essentialism – the idea of constant types- with the idea of variable populations found among living organisms where every individual is uniquely different from each other. Darwin (1993) challenged 'essentialism' and its 'saltational evolution theory' with 'population thinking' and 'gradualism' theory by stating that "As natural selection acts solely by accumulating slight successive favourable variations, it can produce no great or sudden modifications; it can act only by very short and slow steps". Further Darwin (1993) stated that "If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down".

The concept of evolutionary progress including the processes of specialization, perfection and structural complexity is supported by the philosophy of finalism. This progressive evolutionary thinking is refuted today by the evidences from nature crediting Darwinian thinking and its evolution theory.

Darwin denied progress for a technical reason within his theory; not because of only a general philosophical preference. His evolutionary theory of natural selection was about 'adaptation to changing local environments' and it included no statement about progress (Gould, 1996).

'Culture', which sets humans quite aside from all other living organisms, has an objective validity among other criteria of progressiveness in evolutionary thinking. Mayr (1991) clarifies this criterion from Darwinian evolutionary viewpoint as follows:

> Parental care (promoted by internal fertilization) ... provides the potential for transferring information non-genetically from one generation to the next. And the possession of such

> information is of course of considerable value in the struggle for existence. This information transfer generates at the same time a selection pressure in favour of an improved storage system for such remembered information, that is, an enlarged central nervous system. And, of course, the combination of postnatal care and an enlarged central nervous system is the basis of culture, which together with speech, sets humans quite aside from all other living organisms. However, even if we would designate the acquisition of these capacities as evidence for evolutionary progress, it would not strengthen the case for final causes, since these developments were clearly achieved through natural selection.

Although the progress issue and any final causation of evolution were discredited in Darwinian thinking, final causes were more pleasing to a layperson than the random and opportunistic process of natural selection and they were greatly believed outside biology for a longer time.

One common mistake of science is in viewing evolution history as progressive. This is described by Gould (1996) as follows:

> Claims for progress represent a quintessential example of conventional thinking about trends as entities on the move. From life's infinite variety, we extract some "essential" measure like "average complexity" or "most complex creature" –and we then trace the supposed increase of this entity through time ... We label this trend to increase as "progress" –and we are locked into the view that such progress must be the defining thrust of the entire evolutionary process.

Besides this common mistake in science, the representation of evolution within two iconographies worldwide causes misconception over evolutionary progress among laypeople. One of these iconographies is 'the ladder of process or the march of progress' shown in Figure 2.2, which extracts and displays a single line of advance of the evolution of human being (Gould, 1989).

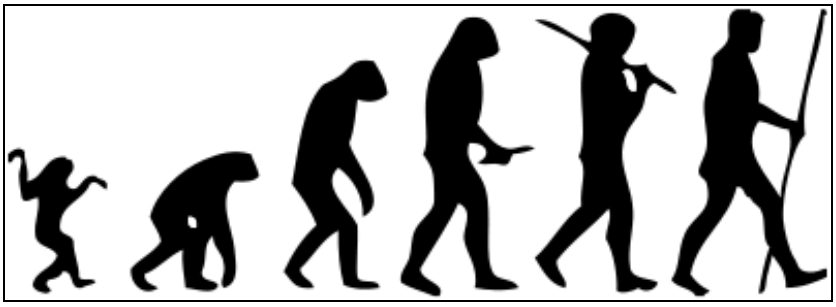


Figure 2.2 : A simplified, silhouette version of Zallinger's *March of Progress* (Url-8).

The other iconography of evolution that causes a misconception is 'the cone of increasing diversity –the tree of life'. It is criticized by Gould (1989) as it represents 'the common descent' and 'the multiplication of species' theories of evolution in a way that it only signifies increasing diversity; starting with simple, single ancestor, and then diverse and progress going upwards despite the fact that geometric possibilities of evolutionary trees are nearly endless.

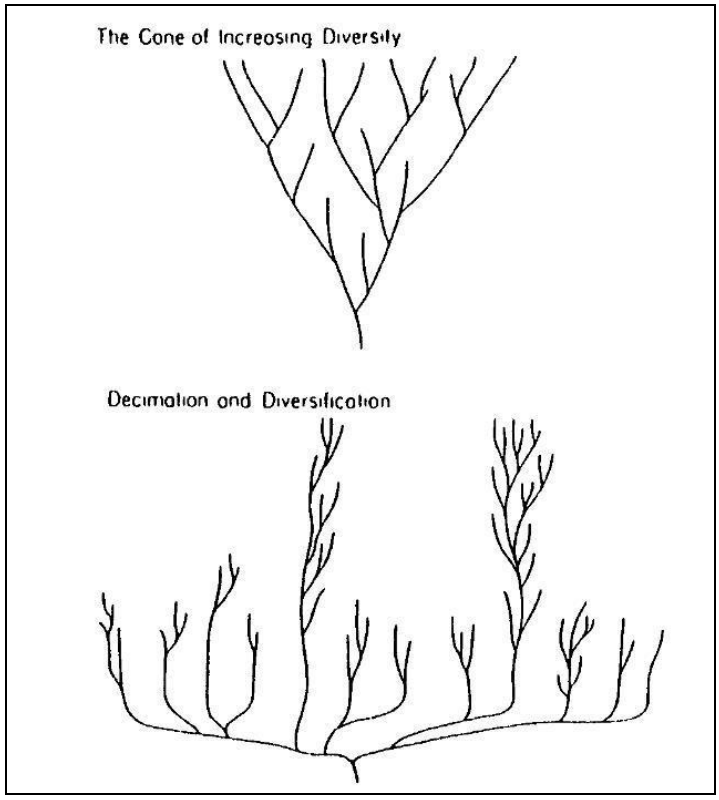


Figure 2.3 : Revised model of diversification and decimation against the cone of increasing diversity (Gould, 1989).

The only way to expect progress in natural selection is to expect a non-random sequence of local environments eliciting progressive advance through time. However, the sequence of local environments is only due to cyclical or irregular changes through geological time, such as seasonal climatic changes or aperiodic climatic changes. Therefore, Gould (1996) states that “If organisms are tracking local environments by natural selection, then their evolutionary history should be effectively random as well”. In addition, if there is progress in evolution, it is still not predictable and not goal directed since the achieved advances are random and highly diverse. Also it is not certain if newly acquired adaptations are of permanent value (Mayr, 1991).

2.1.4 Biological view in science

The ideology in science that Darwin’s ideas were conflicting with is the physics view. Physics view is based on the ideologies of essentialism and finalism carrying the ideas of ‘non-variability’ and ‘predetermined end’ to search for laws to explain the order and harmony of the created universe.

Darwin introduced the concepts of probability, chance and uniqueness into science discourse against the scientific methodologies based on mathematical principles,

physical laws and determinism of that time. Within these new concepts, Darwin's evolutionary explanation was largely based on empirical researches. His method was to observe numerous phenomena and always try to understand the how and why of the observations. When something did not at once fall into place, he made a conjecture and tested it by additional observations, leading either to a refutation or strengthening of the original assumption (Mayr, 1991).

Darwin's other contribution to science discourse was the historical perspective since a chain of historical events (found in evolutionary studies) could not be ascribed to simple laws as studied in physical sciences (Mayr, 1991). The study of history in the evolutionary biology depends on comparative studies of all phenomena and processes, which in turn are explained through descriptive studies, as Darwin's "The Origin of the Species" provides a conceptual framework for the studies of comparative morphology, descriptive embryology, palaeontology, and biogeography leading to the study of 'relationships' among living things through time –which is called 'systematics' (Futuyma, 1986).

Langrish (1999) gathers these Darwin's contributions to science discourse under the moniker of the Biological view (B). He defines and compares this Biological view (B) as opposed to the Physics view (P) in the science tradition as: "[B] view is based on Darwinian evolution… The [P] view is based on Newtonian mechanics… The big difference between the [B] and [P] views is that [B] welcomes diversity and [P] hopes for one theory of everything".

Although the views are named after two disciplines in science, they don't refer to studies in these disciplines. Rather they are viewpoints where studies in biology and in other disciplines may fall into the physics view and vice versa (Langrish, 1999).

The certain features of the biological view are identified by Langrish (1999) as follows:

1) There is no single cause for any event or process in biology –nonlinear approach.

2) Biological concepts are fuzzy patterns and advances are made through subdivision of these concepts.

3) Descriptive studies are needed in Biological view, which are collected and recombined in many years.

4) Biological evolution is not a gradual unfolding of a predetermined pattern.

5) Biological view welcomes variety, where Physics view reduces variety to 'deviation' from the 'norm'.

2.2 Neo-Darwinian Evolution Theory

This part focuses on neo-Darwinian evolution theory that is the advance of natural selection theory within the knowledge of genes. It also explains Darwin's sexual selection theory, which is another kind of selection besides natural selection that merely leads to greater reproductive success rather than struggle for existence.

2.2.1 Modern evolutionary synthesis

Although Darwin did not know about the inheritable characters –genes, he was aware of them; he claimed the change occurred gradually in living organisms, thus descent with modification. The nature of inheritance was not understood at all in the beginning of the 20th century until Gregor Mendel demonstrated particulate inheritance in 1900. However, this discovery did not lead to immediate acceptance of Darwinian natural selection as expected (Futuyma, 1986); rather it was seen as an alternative to it until the Modern Evolutionary Synthesis (Wright, 2009).

The Modern Evolutionary Synthesis –also referred as the Modern Synthesis, the Evolutionary Synthesis and the Neo-Darwinian Synthesis- is a widespread consensus of evolution by several biological specialties, which was produced between 1936 and 1947. Within this synthesis, the contributions of genetics, systematics, and palaeontology were forged into a new neo-Darwinian theory that reconciled Darwin's theory with the facts of genetics (Futuyma quotes Mayr and Provine, 1986), and founded the modern evolutionary theory.

In 1953, Watson and Crick proposed the structure of DNA, which provided deeper understanding of the nature of mutation and genetic variation that enriched and sometimes challenged neo-Darwinian theory (Futuyma, 1986).

Today, neo-Darwinian theory is accepted as the prevailing explanation of evolutionary change within the advances provided by genetics.

2.2.2 Darwinian natural selection and the genes

Darwinian evolution theory was introduced previously within five major theories for a better understanding of the whole evolution process despite the fact that the theories were inseparable. At the core of these theories lies the theory of natural selection as Darwin's most revolutionary contribution to biology. This thesis focuses specifically on this theory. However, when the term 'Darwinian natural selection' is used in the thesis, it is also used in reference to Darwin's other evolution theories due to their being inseparable.

Darwinian natural selection theory has been more effective in and outside biology for explaining the changing processes of all forms of living organisms over time among other evolutionary explanations. This theory is based on the facts that were already known in the 19th century and on the inferences of Darwin from these facts that are gathered in Table 2.1 below.

Table 2.1 : Darwin's explanatory model of natural selection (Mayr, 2001).

Fact 1. Every population has such high fertility that its size would increase exponentially if not constrained. (Source: Paley and Malthus)
Fact 2. The size of populations, except for temporary annual fluctuations, remains stable over time (observed steady-state stability). (Source: universal observation)
Fact 3. The resources available to every species are limited. (Source: observation, reinforced by Malthus)
Inference 1. There is intense competition (struggle for existence) among the members of a species. (Source: Malthus)
Fact 4. No two individuals of a population are exactly the same (population thinking). (Source: animal breeders and taxonomists)
Inference 2. Individuals of a population differ from each other in the probability of survival (i.e. natural selection). (Source: Darwin)
Fact 5. Many of the differences among the individuals of a population are, at least in part, heritable. (Source: animal breeders)
Inference 3. Natural selection, continued over many generations, results in evolution. (Source: Darwin)

The first three facts in Table 2.1 is the doctrine of Malthus, called the 'struggle for existence'. Darwin applied it to the whole animal and vegetable kingdoms within his first inference. He (1993) explains the 'struggle for existence' in nature as follows:

> ...as more individuals are produced than can possibly survive, there must in every case be a struggle for existence, either one individual with another of the same species, or with the individuals of the distinct species, or with the physical conditions of life.

Darwin (1993) explains his theory of natural selection within his second and third inferences given in Table 2.1 as follows:

> If under changing conditions of life organic beings present individual differences in almost every part of their structure, and this cannot be disputed; if there be, owing to their geometrical rate of increase, a several struggle for life at some age, season, or year, and this certainly cannot be disputed; then, considering the infinite complexity of the relations of all organic beings to each other and to their conditions of life, causing an infinite diversity in structure, constitution, and habits, to be advantageous to them, it would be a most extraordinary fact if no variations had ever occurred useful to each being's own welfare, in the same manner as so many variations have occurred useful to man. But if variations useful to any organic being ever do occur, assuredly individuals thus characterised will have the best chance of being preserved in the struggle for life; and from the strong principle of inheritance, these will tend to

> produce offspring similarly characterised. This principle of preservation, or the survival of the fittest, I have called Natural Selection.

As explained before, the introduction of genes[7] have supported Darwin's evolutionary explanation in the 20th century and led it to a neo-Darwinian theory. Recognition of the difference between the genetic material and the body of an organism in the 1880s was supported by the introduction of the terms genotype[8] and phenotype[9] by the early Mendelians. Mayr (2001) explains these terms as: "[Genotype] controls the production of the body of an organism and all of its attributes, the phenotype. This phenotype is the result of the interaction of the genotype with the environment during the development". For example, a given plant may grow differently under different conditions –and even under the same conditions- of fertilizing and watering.

Under the light of the knowledge of genes, Mayr (2001) explains neo-Darwinian evolution theory as follows:

> According to this theory, an enormous amount of genetic variation is produced in every generation, but only a few individuals of the vast number of offspring will survive to produce the next generation. The theory postulates that those individuals with the highest probability of surviving and reproducing successfully are the best ones adapted, owing to their possession of a particular combination of attributes. Since these attributes are largely determined by genes, the genotypes of these individuals will be favoured during the process of selection. As a consequence of the continuous survival of individuals (phenotypes) with genotypes best able to cope with the changes of the environment, there will be a continuing change in the genetic composition of every population. This unequal survival of individuals is due in part to competition among the new recombinant genotypes within the population, and in part to chance processes affecting the frequency of genes. The resulting change of a population is called evolution. Since all changes take place in populations of genetically unique individuals, evolution is by necessity a gradual and continuous process.

2.2.3 Requirements for Darwinian evolution theory

The term 'Darwinian evolution theory' is preferred to be used to name the theory of this thesis while the emphasis is still on the theory of 'natural selection'.

Langrish (1999, 2005) identifies five requirements for Darwinian evolution theory, which can also be associated with different population types –such as artifacts- other than the living organisms if they are capable to follow these requirements given below:

1) The existence of variety

[7] "A genetic unit (set of base pairs) situated on a particular locus on a chromosome" (Mayr, 2001).
[8] "The set of genes of an individual" (Mayr 2001).
[9] "The total of all observable features of a developing or developed individual (including its anatomical, physiological, biochemical, and behavioural characteristics)" (Mayr, 2001).

2) A competitive selection process of the 'winners'

3) A reproductive system which leads to the replication of the 'winners' and the disappearance of the 'losers'

4) A mechanism for the generation of new varieties (goes back to the first requirement) and the continuation of the process

5) A mechanism for changing the rules of the selection process

i) The existence of variety

As mentioned before, variety is very important in Darwinian thinking and in the Biological view as opposed to essentialism thinking and the Physics view.

Darwin (1993) explains variation in nature and its importance as follows:

> ... I look at individual differences, though of small interest to the systematist, as of the highest importance for us, as being the first step towards such slight varieties as are barely thought worth recording in works on natural history. And I look at varieties which are in any degree more distinct and permanent, as steps towards more strongly-marked and permanent varieties; and at the latter, as leading to sub-species, and then to species.

For Darwin, variety was the raw material for natural selection; it made the process possible. He knew that supply of variation was renewed in every generation, and he did not need a correct theory of genetic variation, which there wasn't at that time, to propose his theory (Mayr, 1991).

Futuyma (1986) states that "populations contain genetic variation that arises by random (i.e. not adaptively directed) mutation[10] and recombination[11]". Mutation is a sudden change of a gene that supplies new varieties and how recombination produces genetic variation is explained by Mayr (2001) as follows:

> ...the two sources of variation in a sexually reproducing population, superimposed on each other [are]: the variation of the genotype (because in a sexual species no two individuals are genetically identical), and the variation of the phenotype (because each genotype has its own norm of reaction[12]).

Thus, the variability in nature, which includes not only visible characters, but also physiological traits, patterns of behaviour, aspects of ecology, and molecular patterns, reinforces the conclusion that in one way or another every individual is unique, and this makes the natural selection possible (Mayr, 2001).

[10] "A relatively permanent change in hereditary material involving either a physical change in chromosome relations or a biochemical change in the codons that makes up genes" (Url-9).
[11] "The formation by the processes of crossing-over and independent assortment of new combinations of genes in progeny that did not occur in the parents" (Url-10).
[12] "The variation of the phenotype that is produced by a given genotype under different –[even same]- environmental conditions" (Mayr, 2001).

ii) The competitive selection process

Mayr (2001) explains the competitive selection process through 'struggle for existence' in Darwinian terms as: "...those individuals who are most efficient in coping with the challenges of the environment and in competing with other members of their population and with those of other species will have the best chance to survive until the age of reproduction...".

What selected in Darwinian evolution are the most adapted individuals –and their genes. Selection cannot be dissected into an internal and an external portion as the genotype and the phenotype. Mayr (1991) explains the reason for this as follows:

> What determines the success of an individual is precisely the ability of the internal machinery of the organism's body ... to cope with the challenges of the environment. It is not the environment that selects, but the organism that copes with the environment more or less successfully.

As Mayr emphasizes above, it is not the environment that selects. It is rather an elimination process in nature. It is a filter where some things just pass through it and some things don't. There is no force and there is no prediction in this process since a bit of luck is involved –i.e. small things can get stuck while passing through the filter and some bigger things with long and thin characteristics can manage to wriggle through (Langrish, 2004).

As mentioned previously, Darwinian thinking and the Biological view propel a non-directional, non-forceful, non-predetermined, non-progressive change, and involves a 'chance' or 'luck' factor. Although the production of variation involves random mutation and recombination, the competitive selection process includes random and non-random processes together where chance takes a smaller role. It is a non-random process as Mayr (2001) states that "...those individuals with characteristics providing the greatest adaptedness to the current circumstances have the greatest possibility of survival". It is also random as Mayr (2001) states that "Everything is somewhat probabilistic. Natural catastrophes, like floods, hurricanes ... [etc.] may kill otherwise highly fit individuals". Accordingly, Dawkins (1996) states the situation as "Darwinism is not a theory of random chance. It is a theory of random mutation plus non-random cumulative natural selection".

iii) The replication of the 'winners'

A reproductive system is required for an evolutionary change. However, a 'reproductive system' excludes living things such as plants and bacteria that passes on their characteristics without having sex. Therefore, Langrish (2005) suggests

using the word ‘replication’ instead of ‘reproduction’ to avoid the confusion with sexual reproduction.

Langrish (2004) defines the Darwinian evolution –the Darwinian change- as “descent with modification under the influence of natural selection”. This is because competitive selection and replication processes require being distinguished since competitive selection is the actual natural selection and replication is the descent.

In the light of explanations on genotypes and phenotypes, the individuals are the interactors that refer to phenotypes; and the heritable characteristics of the ‘winning’ individuals are the replicators that refer to genotypes.

Wright (2009) explains the requirement of the replicator in Darwinian evolution as: “While a specific attribute may give an organism an advantage in its circumstances, for this advantageous attribute to be passed on to the next generation, there needs to be some means of replication, now known as a replicator”.

iv) The repetition of the process including the appearance of new varieties

The two required mechanisms for an evolutionary change are explained together in this part. Firstly, a mechanism is required to generate new varieties that are the raw materials for the evolution to restart. Since the first three steps that are the existence of the variety, the competitive selection and the replication of the ‘winners’ lead to a steady state on their own, a continuation is needed in the evolution process. Even this is not enough and another mechanism for changing the rules of the selection process is required. Otherwise, the evolution process would slow down through diminishing returns and even would stop (Langrish, 2005).

Wright (2009) explains the repetition process of evolution as follows:

> The process of organisms being selected by being suitable for their circumstances, and passing on the traits that made it suitable to their offspring, repeats over time, with what will be selected for the next generation changing according to what has survived current environmental circumstances.

v) An example: Evolution of the horses and their representation

The evolution of horses is a popular example due to its survival of a single evolutionary line. Figure 2.4 shows this linear and progressive evolution from *Hyracotherium* to *Equus* (the only living genus of horses). As represented in the figure, the horses got bigger; lost their toes; and the size of their teeth increased. This was due to the change of the habitat of horses. They started to graze on planes rather than browse in forested areas in accordance with the first evolution of grasses in the midst of equine evolution (Gould, 1996).

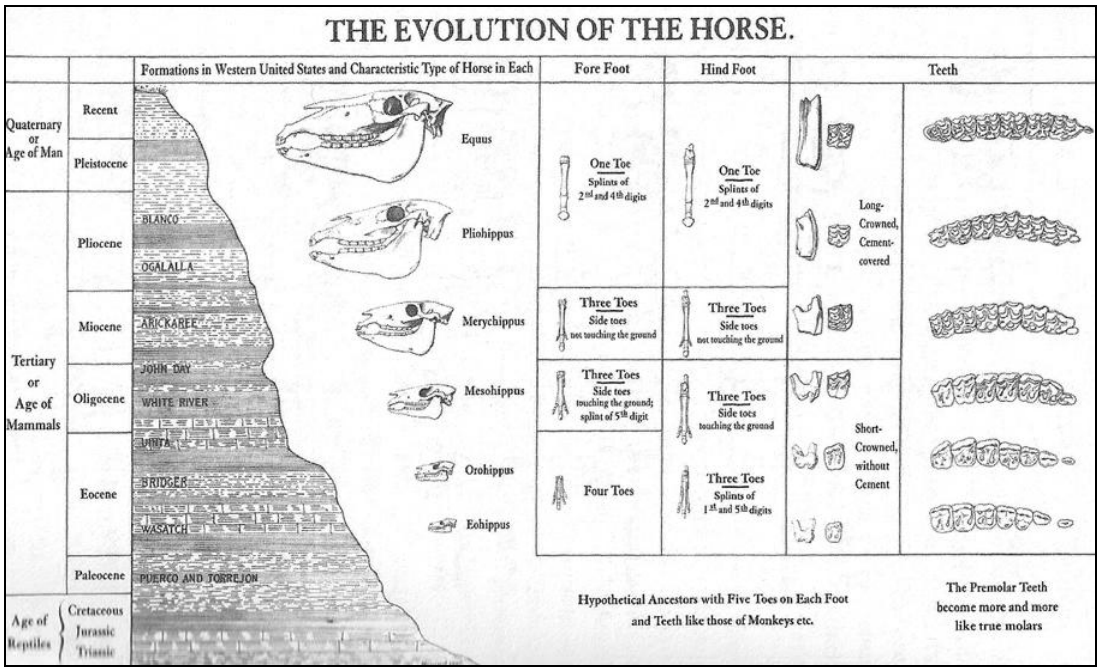


Figure 2.4 : W. D. Matthew's evolution of horses plotted in stratigraphic order – early 20th century (Gould, 1996).

However, the figure and the explanations for the adaptation of the horses to the environment through time given above fail to describe evolution in a very reductionist manner, and fall into the physics view. Gould (1996) criticizes it as "... [it is] only one pathway through a very elaborate bush of evolution that waxed and waned in a remarkable complex pattern through the last fifty five million years".

On the other hand, according to Darwinian thinking and biological view, evolution is a complex, gradual, continuous process including various factors. Figure 2.5 and 2.6 show this more complex representation of the evolution of the horses below.

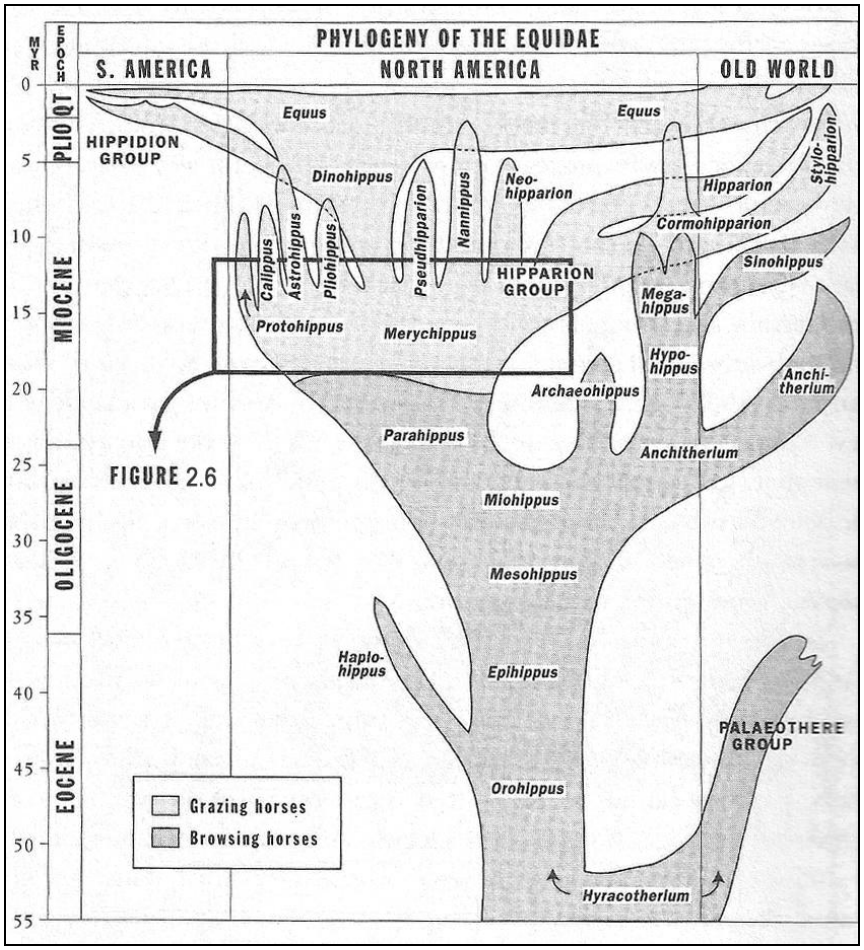


Figure 2.5 : The more complex branching evolution of horses as depicted by Bruce MacFadden in 1988 (Gould, 1996).

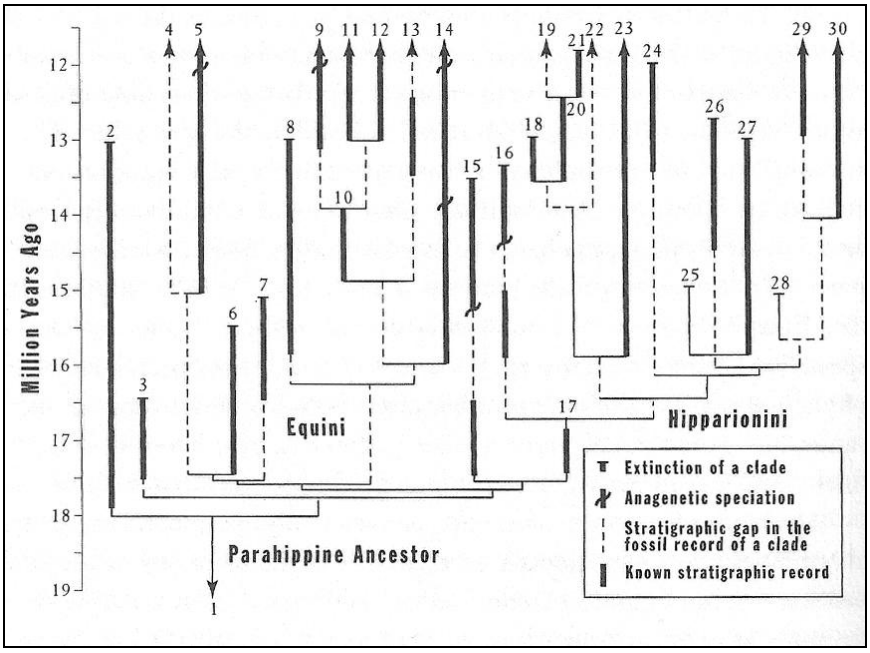


Figure 2.6 : Enlargement of Figure 2.5 to indicate the amount of branching occurred during a relatively short interval (Gould, 1996).

In these figures, the five major and inseparable theories of Darwinian evolution –evolution as such, common descent, gradualism, multiplication of the species and natural selection- can be observed. Many varieties occur through time and they get eliminated –natural selection- while the replicators –the genes- of the winners are inherited to the next generations causing new varieties to occur by random mutation and recombination. It is a gradual and continuous process since the rules of selection changes such as the example above of how the habitat of horses changed.

2.2.4 Sexual selection

Besides natural selection, Darwin (1993) saw a second set of factors that contribute to an increase of reproduction success, called sexual selection. He defined it as: "The advantage which certain individuals have over others of the same sex and species solely in respect to reproduction".

Sexual selection and its relation to the appearance of the living organisms are explained by Darwin (1993) as follows:

> Thus it is, as I believe, that when the males and females of any animal have the same general habits of life, but differ in structure, colour, or ornament, such differences have been mainly caused by sexual selection: that is, by individual males having had, in successive generations, some slight advantage over other males, in their weapons, means of defence, or charms, which they have transmitted to their male offspring alone.

Darwin (1993) was also careful in not attributing all sexual differences to this process since evolutionary thinking is multi-causal.

The examples that make males more advantageous in the process of sexual selection are the large antlers of deer, the large tails of peacocks, being victorious in fights with rivals that permit the males to acquire a larger harem of females, the ability to obtain superior territories, sibling rivalry, aspects of parental investment, etc. (Mayr, 2001).

Referring to one of the examples, the peacock with the largest and best-conditioned tail becomes the most popular choice among female peacocks due to sexual selection process although these attributes are not advantageous in balancing or camouflaging for the male peacocks to survive (Wright, 2009). This example reveals the difference between natural selection and sexual selection as Darwin (1993) explains below:

> This form of selection depends, not on a struggle for existence in relation to other organic beings or to external conditions, but on a struggle between the individuals of one sex,

> generally the males, for the possession of the other sex. The result is not death to the unsuccessful competitor, but few or no offspring.

On the other hand, recent studies by Zahavi and Zahavi –Israeli ornithologists- indicate that sexual selection is actually a part of natural selection within the underlying mechanism of 'the handicap principle' (Wright, 2009). According to this principle, females may choose particularly conspicuous males since it is a superior quality despite the fact that it is a handicap.

Wright (2009) explains the example of peacock from Zahavi and Zahavi's study as follows:

> ...the key phenomena such as the peacock's extravagant tail was the deliberate display of wastefulness that suggested that the organism was so adept at survival that it could be handicapped with an inefficient feature, such as an large ornamental tail, and yet still survive. This would demonstrate that it would make an excellent choice of parent for the chooser's offspring.

2.3 From Biological Evolution to Design Evolution: Darwinian Evolution Theory and Memes in Design

Firstly, this part explains the influences that affect the change in design and the contribution of evolution as a long range explanation for change.

Then, it explains the evolution of human beings within their design ability which leads to the form of cultural evolution.

Within this basis, it introduces the memes and discusses the use of Darwinian evolution theory and the memes in design studies.

2.3.1 Explanations for change in design

Wright (2009) studies the change in the appearance of the design of man-made objects in her book "Why things look the way they do: Explaining Changes in Art and Design Over Time, Using Darwinian Evolutionary and Cyclical Theories". She clarifies her study stating that:

> It is rather a study of change over time to the design ideas that influence the appearance of man-made objects. As ideas are difficult to access and measure, this study looks at the products of those ideas, and studies the changes to them.

Wright (2009) emphasizes three explanations for the change in the appearance of the designed objects: i) Role of the designer, ii) Design in context, and iii) Long-range explanations, which are explained below.

i) Role of the designer

The first group of explanations, which is 'the role of the designer', focuses on the creative aspects of design that are the ideas and skills that underpin the practice of the designer such as the talent, inspiration, recognition, motivation, imitation or opportunities of the individuals.

This idea of designer being the key factor in changes to the appearance of designed objects is at the root of the art historical model of 'The Great Designer'. According to this model, the success that leading edge artists and designers achieve is believed to be due to them, and their work, being the best available, that changes in design is believed to happen solely due to their high level of creativity. Here, the designer and the artist are visualized as independently working originators, who are not being driven by external factors and not followers of ideas (Wright, 2009).

Wright (2009) criticizes this first group of explanation as being insufficient to explain the change in design over time.

ii) Design context

The second group of explanations for the change in the appearance of designed objects is based on the context in which designs are produced; they include direct environmental influences, and combinations of indirect influences. Wright (2009) states that "This set of explanations includes ideas on how designs are adapted to be suitable to the environment they exist in", and it excludes any role for the designer, other than as a passive transmitter of economic or social forces.

Sparke (1988) addresses the complex interweaving of separate aspects of the context a design is produced in shaping its final appearance as follows:

> Many factors influence the process: the ideas of the designer (if one is involved); the technological determinants of the products' manufacture; the socio-economic constraints of the manufacturing process and the consumption of the final product; the cultural context that gave rise to the need for the object in the first place; and the conditions of its manufacture. The political situation in the country manufacturing the object may influence the way it is designed and its final appearance.

Wright (2009) identifies the influences for this set of explanations of 'design in context' as: "Environmental factors, materials, production methods, economics, the concept 'form follows function', ergonomics –needs of user-, social and political climate, education, and precedents".

It can be said that materials, production methods and ergonomics are the technological determinants of design while economics, social and political climate are the socio-economic constraints of design.

Other influences mentioned by Wright –environmental factors, the concept 'form follows function', education, and precedents- that affect the change in design are explained in the following paragraphs.

Designers have more ideas than they use. They select some of these ideas and externalise them for further selections. Further selections can be done by anyone such as the person sitting at the next desk, who informally suggests that a particular design is better than another, or a person whose job is to evaluate designs, and select the ones that best fit their brief, to the end user, be that client, purchaser, or recipient of its services (Wright, 2009). She states that "This selection process is very much dependent on the environment in which the designer operates."

Wright (2009) explains the effect of the concept of 'form follows function' as follows:

> This idea works for some objects, particularly simple ones, such as buckets or hammers, not true for others, which may have a number of functions. If all objects were designed in forms that were dictated by their use, then every object designed for that use would look the same, but they do not. It is reasonable to state that all designed objects are designed to fulfil some function, but this function may be something other than its utilitarian use. Other uses may include a need to appeal to purchasers, due to its price, its durability, its ease of use, or the status it may be perceived to offer.

Educational environments affect an individual's talent. These are modified by factors such as training, experience and practice and lead to changes in the appearances of designed objects in the end (Wright, 2009).

Lastly, Wright (2009) explains the influence of precedents on change in design by stating that "The link between designed objects and their precedents extends to their acceptance by users when they are introduced or developed".

iii) Long range explanations

The third group of explanations are the long range explanations. Wright (2009) explains them as follows:

> Long-range explanations are those happening on a larger scale than the first two sets of explanations. This set of explanations encompass long term patterns of change to the appearance of designed objects, brought about as a result of both the role of the designer, and the context a design is produced in, and adds the effects of time to this combination. These long-range patterns of change are tracked over a longer duration than the working life of an individual designer, or the environmental events that might be considered to form the design context responsible for some aspects of change to its appearance. These changes

> happen over long periods, happening outside the influence of individual incidents that cause specific changes, and include phenomena such as design cycles and evolution.

The examples of long range explanations are fashion, cycles and evolution. In fashion, "...the perceptions surrounding the design of an object change over time. What may at one time thought to be attractive or modern may at another time be thought to be ugly or old fashioned". In cycles, "…the appearance of designed objects changes as it passes through phases of opulence or austerity over time". In evolution, "a continual process happens independently of the intention of any designer or design movement" (Wright, 2009).

Influences of individuals and the environment –direct and indirect- are combined within time in the long range explanations for change, which is undertaken in this thesis within the Darwinian evolution theory in order to add to the understanding of change in the appearance of designed objects subjected to this thesis.

The use of Darwinian evolution theory and the memes in design studies –as a form of long range explanations for change in design- is explained in detail in the following parts.

2.3.2 From biological evolution to cultural evolution via design ability of human beings

Information is transferred non-genetically through parental care, and an enlarged nervous system is selected in favour for such remembered information, which has led to formation of culture in the evolution of humans (Mayr, 1991).

Friedman (2000) explains how humans and culture evolved through natural selection as follows:

> At some point, life forms became sufficiently advanced to capture behavioural adaptation as well as genetic adaptation. Those creatures that adapted their behaviour in a way that conferred evolutionary advantage did better than other creatures. … A creature survives better because it possesses a larger brain with a richer brain structure. The continually improving brain enables the creature's offspring to do better still. New behaviours make survival more secure. Secure survival preserves the gene pool. And so on. … In evolutionary terms, we developed the modern brain in the relatively recent past. The physical potential of this brain gave rise to our current habits of mind, the habits that support our mental world.

Humans evolved together with their mental world that includes language, making tools, painting etc. as their way of interacting with each other and with the environment, and producing their world of culture.

Tools and tool-making behaviour –designing behaviour- in an environment has made us humans in the first place through the evolutionary process. Friedman

(2000) thinks that tool-making probably preceded language behaviour and conscious imagination, since animals other than humans make tools as well. Friedman (2000) continues and states that “As tool-making and tool use became the conscious subject of willed imagination, our tools and tool-making behaviour helped us to survive and prosper as humans”, and when humans began to create mental symbols, they became their preeminent tool.

Accordingly, Özcan (2002) states that “The evolution process has given human beings a major role by rewarding them with design ability”, and it is this design ability that started the separation of human beings from nature and the creation of a unique evolutionary phase of human patterns called cultures (Özcan, 2002).

This is a new form of evolution where cultural transmission between individuals and generations takes place, and it is analogous to biological evolution (Dawkins, 1989).

2.3.3 Introduction to memes: Definitions and different types

Richard Dawkins, who is a Darwinian zoologist, takes a gene’s eye view of nature in his book “The Selfish Gene”[13] as another way of explaining neo-Darwinian evolution. In this book, he emphasizes that although competitive selection process takes place largely at the individual level, it is the information in the genes –the DNA molecule- that gets copied and inherited to next generations. Therefore, biological evolution is purely a benefit for the genes themselves; neither for the good of species, nor for the group of individuals. Accordingly, he states that although “Darwinism is too big a theory to be confined to the narrow context of the gene, [...] the gene should be the sole basis of the ideas on evolution” since it is the replicator, and “all life evolves by the differential survival of replicating entities” (Dawkins, 1989).

In brief, the life on our planet depends on a replicating entity: the gene –or in specific the DNA molecule. Some other forms of replicators might be possible in the universe. Here, comes the 'meme'[14] as being analogous to 'gene', and representing the new kind of replicator in human culture, which has recently emerged on our planet (Dawkins, 1989).

The term 'meme' is introduced and populated by Richard Dawkins in "Chapter 11 - Memes: The New Replicators" of his book “The Selfish Gene” in 1976, which was mentioned above. He thinks that the name of the new replicator should convey “the idea of a unit of cultural transmission, or a unit of imitation”. In the formation of the name 'meme', Dawkins uses the Greek root *mimeme* (something imitated) and

[13] First published in 1976.
[14] Pronounced to rhyme ‘cream’.

converts it in a way that it sounds like 'gene', and he also relates it to 'memory' or the French word *même*. His examples of memes are tunes, ideas, catch-phrases, clothes fashions, and ways of making pots or of building arches. In addition, he gives more detailed example of how a scientific idea is spread throughout papers, lectures, discussions etc. (Dawkins, 1989).

Although Dawkins introduced memes as an analogy to genes in 1976, neuroscientist Juan Delius published a detailed picture of what the neuronal hardware of a meme might look like, which Dawkins mentioned in the second edition of his book “The Selfish Gene” (1989).

In addition, Chase (2005) states that “...the neural constellations that are encoded memes are *functionally* equivalent across individuals; thus they are not the same (person to person) at the level of neural changes”.

These explanations indicate that memes exist in the brain; they are more than an analogy to genes. Although this is an ongoing discussion on memes if they are more than an analogy, in either way -analogy or real- memes have been subjected to different disciplines and been used purposefully, one of which is this design evolution study.

i) Definitions

Definitions of memes vary widely from very broad to specific due to its use in different disciplines. Some of the definitions and examples of memes are given below.

By 1998 the term entered the English language and first appeared in the Oxford English Dictionary as follows: “*Meme* (mi:m), *n. Biol.* (shortened from *mimeme* ... that which is imitated, after GENE *n.*) An element of a culture that may be considered to be passed on by non-genetic means, esp. imitation” (Blackmore, 2002).

Aytaç (2005) quotes Gatherer, who defines memes as:

> It is an observable cultural phenomenon, such as a behaviour, artifact or an objective piece of information, which is copied, imitated or learned, and thus may replicate within a cultural system. Objective information includes instructions, norms, rules, institutions and social practices provided they are observable.

Silby (2000) defines memes as:

> Some modern day examples of memes are musical phrases, jokes, trends, fashions, car designs, and poetry. Any thought or idea that has the capacity to replicate is a meme. A well used example of a meme is the first four notes of Beethoven's 5th symphony. Another example is the "Happy Birthday" song. These are ideas that inhabit our minds and have been

> very successful at replicating. Not only have these memes found their way into literally millions of minds, they have also managed to leave copies of themselves on paper, in books, on audiotape, on compact disks, and in computer hard-drives.

Since memes seem to be merely ideas, Silby (2000) emphasizes their importance in comparison to genes as follows:

> At first glance the idea of a meme may seem trivially true. Of course ideas spread, what's the big deal? Well, the big deal is that memes behave in similar ways to genes, and in this way their behaviour and development can be described in terms of evolution.

In addition, Heylighen (2001) defines memetics, which is the study of memes in brief, as "theoretical and empirical science which studies the replication, spread and evolution of memes".

As the definitions above indicate; the 'meme' has been defined by several researchers as 'a unit, an element and/or a pattern' of an 'idea, information, behaviour and/or artifact' that is transmitted from person to person by means of 'imitation' or 'learning'. These definitions are clarified for the use of memes in this thesis through the arguments given below.

To define the structure of memes, Dawkins (1989) asks if a tune is one meme, how many memes a symphony includes in order to define the complexity and the structure of memes. He divides the 'gene complex' into large and small genetic units, and units within units. He defines 'gene', "not in a rigid all-or-none way, but as a unit of convenience, a length of chromosome with just sufficient copying-fidelity to serve as a viable unit of natural selection"; therefore "a single phrase of Beethoven's ninth symphony is sufficiently distinctive and memorable to be abstracted from the context of the whole symphony, which to that extend deserves to be called one meme".

However, Langrish (1999) makes an objection to the use of the term 'unit' for defining the structure of a meme. He states that memes are not units; they are patterns like Russian doll nesting structures since the term 'unit' is more found in the physics view for reducing the variety into one single formula. On the other hand, since the meme is a complex concept meaning different things to different people and it varies and changes over time and place, Langrish (1999) suggests using the term 'pattern' as it indicates complexity and falls into the biological view. As an example, he discusses if the 'idea' of a railway is a 'unit' or a 'pattern', and he states that the knowledge needed to construct and run a railway system is enormous and connected to each other like Russian doll nesting structures so that memes should be defined as 'patterns' rather than 'units'.

To explain the transmission of memes between people –the replication process of memes-, Dawkins (1989) states that:

> Just as genes propagate themselves in the gene pool [the total gene set on earth] by leaping from body to body via sperms or eggs, memes propagate themselves in the meme pool [the collection of ideas that are currently circulating the world] by leaping from brain to brain via a process which, in the broad sense, can be called *imitation*.

While Blackmore (1999) claims that the only replication process of memes is 'imitation' as it is defined by Dawkins (1989), Langrish (1999) claims that it is not the only way since 'learning' is another way for memes to pass from one brain to another, and he gives the example of scientific theories as memes that are not transferred by 'imitation', but by 'learning'.

Langrish (1999) suggests three directions, two of which have already been mentioned above, for advancing Dawkins's original description of memes in his paper "Different Types of Memes: Recipemes, Selectemes and Explanemes". This is the description of memes that is undertaken in this thesis, given below.

1) Memes are not units; they are patterns like Russian doll nesting structures. Because memes are too far complex to be described as 'units', and the term 'unit' carries a reductionist manner that is found in the physics view.

2) Not all memes are the same; they vary as the biological view implies. Different types of memes are recipemes, selectemes and explanemes.

3) Memes are not restricted to cultural transmission; other forms of transmission are possible. Different types of memes have different methods of propagating. For example, the ideas of science and explanations in general need words or maths for their transmission; they are transmitted by 'learning' while on the other hand 'how to cook' requires 'finger-tip' knowledge that transmits by 'imitation'.

ii) Different types of memes: Recipemes, selectemes, explanemes

On the basis of the biological view, Langrish (1999) identifies three different types of memes –recipemes, selectemes, explanemes- and he explains the reason for this as follows:

> The spreading of identical units through a cultural 'field' is far too P [Physics view] to be much help in the complex adaptive world of humans, their artifacts and their changing ideas. ...The concept of memes becomes more sophisticated and powerful when broken down into different types of memes with different ways of competing and being replicated.

The recipemes are competing ideas of how to do things; and their transmission is by 'finger tip' knowledge. It is 'finger tip' knowledge because you cannot tell someone

how to ride a bicycle, when the clay for a pot feels right, how to play the piano or how to knap a flint. You can write down the recipe for a cake but this will assume some shared practical knowledge (Langrish, 1999).

Once we have different ways of doing different kinds of things, we have ideas of success and betterness. Some things and some ways are ‘better’ than alternatives. The selectemes are competing ideas of betterness; and their transmission is closely bound to society (Langrish, 1999).

How selectemes are selected in people’s minds is explained through ‘Purposive Pattern Recognition’, as it is called by Maria Abu-Risha. Langrish (1999) explains it as follows:

> A selecteme is a Russian doll type pattern which forms a whole. When we feel that something is wrong, we do not think, "I will not do that because it would be stealing and stealing is against my religion which I have chosen to abide by even though I do not believe in God and in any case I might get found out and that would bring shame which I do not like..." No, we either just feel it would be wrong or we feel it is worth the risk. Either way that feeling can be described as a pattern of selection which the pattern of proposed action either fits, does not fit or is repelled by. When a pattern of action fits a pattern of selection, we have a ‘click’ which Maria Abu-Risha (1999) calls *Purposive Pattern Recognition*.

The explanemes are competing ideas that are used in answering questions about ‘why things work or work better’; and their transmission is different than other memes that they replicate by ‘learning’ which requires a language or symbols. They form part of an evolutionary system which sometimes involves institutions such as explanemes of science, regulation, law and government that compete within institutional frameworks.

Langrish (1999) states these three different types of memes can be combined in black box systems. He explains the black box systems as follows:

A black box can be anything that has inputs and outputs under some degree of control; such as a rubber tree, a chemical reaction, and a loom. Recipemes are ideas about inputs into boxes –raw materials, energy and condition- and about alternative boxes. Selectemes are ideas about outputs and their relative desirability. Explanemes are ideas about what is happening inside the black box (Langrish, 1999).

Since boxes can be connected –the output from one being the input to another- there can be long chains of recipemes and selectemes. The loom maker makes a loom using selected materials made elsewhere; the weaver selects a loom to make cloth from selected yarns made elsewhere; the tailor turns the cloth into clothes and

the clothes are purchased and worn. At each stage there are recipemes –ideas about how to do things- and selectemes –ideas about what sort of loom, yarn, cloth and clothes might be desirable or undesirable (Langrish, 1999).

In addition to forming long chains of inputs and outputs, recipemes and selectemes can form Russian doll nesting structures. The human body is a special black box. Part of its input is food. If someone decides to bake a cake, selectemes for healthy life style and sensuous enjoyment compete, leading perhaps to a creamy, fatty chocolate cake or a fat-free cake made from organic whole meal flour. Inside these selectemes and recipemes will be other more specific ones. Which recipe for a healthy cake or a delicious cake might be used? Someone might have a selecteme for Delia Smith; someone else for mother's trusted recipe. The actual cake when made and eaten by other people might influence future choices made by others (Langrish, 1999).

Next to these selectemes and recipemes, explanemes also take a role inside the black boxes, and they lead to suggestions for new black boxes or improvements in existing boxes. Some of them are ‘just - so’ stories. Some provide words to enhance communication. Some are highly sophisticated and live in special institutions (Langrish, 1999).

The man-made world can be visualized by these different types of memes acting within black box systems that also interact with each other. The objects are designed by designers, who act as black boxes, in an environment of other different black box systems, all of which change over time.

The contribution of these different types of memes and their black box systems to the understanding of change in design is sought in this thesis.

2.3.4 Darwinian evolutionary thinking in design

The impact of Darwinian thinking is widely observed in the intellectual activities as Steadman (1979) summarizes them starting from “…the theology, religion and philosophy”, which are followed by “…human history, history of ideas, growth of science, art criticism, linguistics, economics and social theory (from which some of Darwin’s ideas had first come)…”.

Furthermore, Steadman (1979) indicates that “The effect on such embryonic subjects as anthropology, sociology and psychology was overwhelming; and the whole basis of these emerging disciplines was set out or reorganised upon a biological, evolutionary foundation”.

Although the impact of Darwin's evolution theory had reached many different disciplines as mentioned above, the impact was felt much later in design and architecture studies.

Steadman (1979) states that "…The subject matter of design and architecture…is the same: the study of tools or useful objects, of buildings and settlements", which is brought into the scope of what Herbert Simon has termed 'sciences of the artificial'[15] by anthropologists and archaeologists rather than designers.

This delayed impact on design studies is explained by Steadman (1979) as other disciplines being the "...areas of the study of man which were so much closer to biology".

This thesis considers the designed objects as the extensions of ideas of human beings –not apart from them- in a way that their change can be studied within the evolution theories.

2.3.4.1 Similarities and differences between biological and cultural evolution

Dawkins (1989) states that cultural evolution is analogues to biological evolution, as mentioned before.

Langrish (2007) states that cultural –he actually prefers to use the phrase 'societal events'- and biological forms of evolution are more than analogous; there are some significant similarities between them. He identifies one of the important similarities as: "The biological world and the worlds of politics, economics and technical change are all worlds of incredible complexity. A wide variety of forms exists, competes and is copied if successful".

As explained before, Langrish (1999) identifies the certain features of the biological view as being multi-casual, involving fuzzy patterns, requiring descriptive studies and historical analysis, not involving predetermined patterns and welcoming variety. These features of the biological world define a complex system, which is also compatible with the man-made world. Basalla (1988) supports this view by stating that the diversity of artifacts is three times greater than the living organisms in the world, which indicates the richness of variety in man-made world in regard to a complex system.

The major apparent difference between these two forms of evolution is the human intentionality (Langrish, 2007). Dawkins (2006) also states that one unique feature of

[15] Sciences devoted to the study of all kinds of man-made objects and structures, material or otherwise (Simon, 1996).

man is his capacity for conscious foresight. Besides these, Özcan (2002) emphasizes the design ability of human kind as one of the most important features of human intentionality as follows:

> What human beings brought to the evolution process can best be described by the word "intention". Different than the processes occurring by chance and necessity, human beings have radically influenced the evolution by adding a consciousness of intention over the universe. Now, with our design ability future can be said to have become not an evolutionary destiny, but a matter of choice from many directions. Human beings have been selected naturally two and a half millions of years ago, but now they are equipped with tools to select their future consciously. And design is the most critical tool for this selected future.

Human beings evolved biologically together with their 'intention' capacity which later gave rise to another form of evolution that is the cultural evolution. As explained before, Darwinian evolution includes random and non-random processes; that is to say, it is not purposeful so that it does not program species to become something or to behave in a certain way. Human beings with their 'intention' capacity are one of the products of these random and non-random evolutionary processes. However, the cultural evolution is the product of human intentionality or consciousness as Dawkins (2006), Özcan (2002) and Langrish (2007) agree above. Although Özcan (2002) emphasizes the power of design ability for a consciously selected future of human beings and points out the purposefulness of this new form of evolution, Dawkins (2006) and Langrish (2007) state that cultural evolution is still a purpose-free Darwinian process. Langrish (2007) explains it as follows:

> Biological change has no foresight. Living things have the appearance of design but there is no designer. The appearance of design is generated by random changes followed by non-random selection and further iterations covering long time periods. Animals have to strive in order to survive. Human striving has conscious intentionality but it is still a Darwinian process because there is no way of knowing the best thing to strive for and outcomes are uncertain.

However, this is not say that whatever humans design is left alone to an ambiguous process of evolution. Human intentionality and its feature of design ability is a difference between cultural and biological forms of evolution. The awareness of the power of design ability together with evolutionary thinking contributes to a wider conception of the role of design in random and non-random processes of cultural and biological evolutions. This is where Özcan's (2002) proposal of 'future with a matter of choice from many directions' indicates the awareness of creating variable solutions or designs to a number of situations would provide more chance to survive in an evolutionary process.

One other apparent difference between the biological and the man-made worlds besides the human intentionality is the inheritable character, the gene. This difference is explained further in this chapter.

2.3.4.2 The arguments of evolutionary thinking in design

Besides these discussions of analogy within the similarities and differences between cultural and biological forms of evolution, there are authors like Adrian Forty, who dismisses the analogy and also the evolutionary explanations of change for designed objects. One of the reasons for this, is the strict analogy built between artifacts and living organisms. Forty (1986) states that:

> Historians of design have often tried to get around the problem [of explanations involving creative individuals] by attributing the changes to some sort of evolutionary process, as if manufactured goods were plants or animals. Changes in design are described as if they were mutations in the development of products, stages in a progressive evolution towards their most perfect form. But artifacts do not have a life of their own, and there is no evidence for a law of natural or mechanical selection to propel them in the direction of progress. The design of manufactured goods is determined not by some internal genetic structure but by the people and the industries that make them and the relationships of these people and industries to the society in which the products are to be sold.

Langrish (2004) clarifies four main arguments from Forty's statement above in his paper "Darwinian Design: The Memetic Evolution of Design Ideas", which are i) 'Artifacts do not have a life of their own', ii) 'Manufactured goods do not have some internal genetic structure', iii) 'The progress argument', and, iv) 'The law of propulsion argument'.

i) 'Artifacts do not have a life of their own' argument

This is also known as the 'machines don't mate' argument. Langrish (2004) answers and corrects this argument as; not the artifacts, but the ideas that produce them having a life of their own. The argument of 'machines don't mate' was answered by Samuel Butler in his 1872 novel "Erewhon". Langrish (2004) briefly summarizes Butler's views as follows:

> Machines use humans to "aid and abet" them. [Butler] makes the obvious points about individual machines requiring feeding and tending by humans, but he also makes the much more subtle point that the improvement of machinery relies on competition, the destruction of inferior machines, and the creation of better machines.

ii) 'Manufactured goods do not have some internal genetic structure' argument

This argument is answered by Langrish (2004) from Darwinian evolutionary point of view by stating that Darwin did not know anything about genes so Darwinian change does not have to include some 'internal genetic structure'.

However, Darwin was aware that 'something' was passing from one generation to another; otherwise natural selection would not work. The modern term for 'something' that gets passed on is a 'replicator' as popularized by Richard Dawkins (Langrish, 2004). It is the gene –the DNA molecule- in biological evolution and it is the meme –the replicating idea- in the cultural form of evolution.

Langrish (2004) states "Ideas that get copied, modified, and stuck together with other ideas can form the basis of a Darwinian theory of changing design".

Accordingly, Steadman (1979) explains 'genetic instructions' in design and architecture without calling memes as the ideas as follows:

> The analogy from organic evolution as applied to human manufactures…puts a new interpretation on the kind of relation…between an individual artifact and the general *type* of which that artifact is but one example. The type is what is transmitted in copying. It is the set of 'genetic instructions' which are somehow passed from one generation of craftsmen to another. …The analogy suggests that artifacts themselves in some sense serve to carry *information* about their own functioning and manufacture, through time; and also that such information passes through the heads of craftsmen, and that there exists in the mind of the craftsmen in some form the type, or image, or model for a species of artifact, which guides him when he comes to make a new copy. …It is not individual artifacts which evolve. It is abstract *designs*, of which particular artifacts are concrete realisations.

Lastly, Basalla (1988) states that:

> Machines conform to all of the criteria for evolution, apart from the ability to replicate. Yet even this problem is overcome by the ability of the ideas used to make the machines being able to replicate. Darwin's theory, therefore, is perfectly compatible with the mechanical kingdom.

iii) The 'progress' argument

This and the following arguments belong to the evolutionary viewpoints of Lamarckian and Spencerian, which are based on the ideologies of essentialism, finalism and the physics view that were explained in detail before.

Lamarck's two ideas to explain the evolution are the change of characteristics by 'striving for improvement' and 'the inheritance of acquired characteristics' (Wright, 2009). Langrish (2004) states that "…the Lamarckian alternative which sounds like a description of human design –things getting better through the striving of individuals- in fact does not work". He gives the following reason why it does not work:

> The problem is that the best designer in the world has no way of knowing what the future will bring.
>
> Assumptions about what would make an improvement are notorious for coming up against unanticipated obstacles. Changes in the environment can lead to the results of striving becoming redundant.

Spencer's approach to evolution is characterised by his ideas about progress towards a final perfect state, and 'the survival of the fittest' (Wright, 2009). Wright (2009) explains why Spencer's evolutionary viewpoint does not work for the designed objects and systems as follows:

> Living in the time he did, newly invented and developed machines and production techniques may have seemed to offer great benefits compared to what had preceded them. As the currently apparent negative aspects of mechanisation and industrialisation were largely yet to appear at that time, he may have felt that this was evidence of his idea of evolution as being progress towards perfection. As the negative aspects of mechanisation and industrialisation are now more fully appreciated, many people look back on pre-industrial life, with all its physical hardship, as an improvement on the polluted world we now inhabit.

Modern evolutionary biology is based on Darwinian thinking and its evolution theory; accordingly it has dismissed the other viewpoints on evolution. When the impact of Darwinian thinking reached at the design discipline, it was also sometimes misunderstood and confused with other biologists' ideas such as Spencer's progressive evolutionary thinking. Langrish (2005) states that:

> Unfortunately, some writers are still using the notions of Herbert Spencer. For example, two well known books on design history –one by Adrian Forty (1986) and one by John A. Walker (1989)- attempt to criticize 'evolution' as a possible explanation for changes in the appearance of designed objects but what they criticize (quite correctly) turns out to be Spencerian evolution and not Darwinian natural selection.

Further, Langrish (2004) states that:

> This has nothing to do with Darwinian change, but Forty does not restrict himself to the progress towards complexity mistake: he adds the astonishing "a progressive evolution towards their most perfect form." There is no such thing as a perfect mammal, perfect kettle, perfect car, or perfect tree. In all cases, they exist as different varieties which have to fit into different environments.

Similarly, Yagou (2005) states that the ideal form or the perfect form has nothing to do with evolution; evolution brings about change and adaptation, but it does not necessarily lead to progress or advancement, and it never leads to perfection.

iv) The 'law of propulsion' argument

On this argument Langrish (2004) states that: "Natural selection is *not* a law like the law of gravity: it does not propel things in some predetermined direction. It is a filter, which is different".

As explained in this part of the thesis, cultural evolution is similar to biological evolution in terms of Darwinian thinking and the change in the man-made world – including the environments, systems, objects, services, etc. that are part of cultural evolution. As such cultural evolution can be explained through this evolutionary thinking and its theories, which are explained in the following parts of this chapter.

2.3.5 Darwinian evolution theory and memes in design

As it is clarified within the argument of 'artifacts do not have a life of their own'; not the artifacts, but the ideas that produce them have a life of their own.

The designed objects are the extensions of ideas –memes- as Medawar and Medawar (1977) explains the exosomatic (outside the body) evolution as follows:

> Everybody has observed that the human artifacts which serve as tools are to some extent extensions of the body.
>
> It is very clear that these exosomatic parts of ourselves undergo a slow systematic secular change of a kind which it is perfectly possible to describe as 'involution' –exosomatic evolution- provided of course one realises that it is the design of these instruments that undergoes the evolutionary change and not the instruments themselves, except in a quite unnecessarily figurative sense.

By taking the meme's eye view in this thesis, the study of change in designed objects becomes the study of these memes that give form to the designed objects over time, and it is these memes that follow the requirements of Darwinian evolution theory.

2.3.5.1 Requirements for Darwinian evolution theory in design

As explained previously, five requirements are identified by Langrish (1999, 2005) in a biological evolutionary process –namely in Darwinian evolution. These are the existence of variety, the competitive selection process, the replication of the 'winners', the generation of new varieties for the continuation of the process, and change in the rules of selection. The last two requirements provide the repetition of the evolution process by looping back to the first requirement.

If any different population types other than living organisms such as designed objects provide these requirements, then their change can be described in terms of Darwinian evolution as Wright (2009) states that:

> Neither organic forms such as turtles nor designed forms such as chairs spring into existence without ancestry or precedent.

> Both chairs and turtles have arrived in their current forms through a process of change according to evolutionary principles, and will continue to evolve for as long as their descendants exist.

Following this in the thesis, the change in designed objects is investigated within these requirements to check if it is compatible with Darwinian evolution theory.

These requirements are explained in terms of designed objects below.

i) The existence of variety

The variety of designed objects is unquestionable. This variety depends on the use that designed objects will be put to and on the environmental conditions. For example, a sledgehammer, a war hammer, and a planishing hammer are all hammers, but they have very different uses, and consequently, appear in very different forms; and architectural styles change according to the climate as an environmental factor (Wright, 2009).

However, the reason for this huge variety of designed objects is not only due to the needs of humans and environmental conditions, but also it is due to the desires of humans. That's how Basalla (1988) explains the diversity of artifacts, which is three times greater than the living organisms in the world. He (1988) states that artifacts are "…testimony[ies] to the fertility of the contriving mind and to the multitudinous ways the peoples of the earth have chosen to live".

ii) The competitive selection process

Wright (2009) states that "Within the circumstances that select which survive and which perish; designed objects also compete both with entirely different objects and different varieties of similar objects", and she gives the example of a consumer, who is looking for a wedding gift. The first selection may take place within entirely different groups of products considering the budget. If the consumer decides on kitchen products, then he/she tries to select among toasters, waffle irons, etc, and if he/she decides to buy a bread maker, then he/she goes through different brands, prices, styles of bread makers.

Wright (2009) explains the selection of successful design ideas –memes- in history as: "Design solutions compete for effectiveness at solving the problem they are concerned with. The most successful problem solving ideas in these competitions go on to form part of ideas chains for successful objects".

Accordingly, Wright (2009) gives the examples for lines of thought, desire and expectation that are replaced over time by other ideas; such as the dominant design

idea of ‘brown and orange go together to create a really sophisticated effect’ between Seventies and Nineties in Britain, which was replaced by other design ideas afterwards. Another example is the dominant design idea of ‘streamlining, giving objects a modern, exciting look’ in the Twentieth century, which was itself then replaced by harsher angles, and minimal, straight edges.

One other issue that is emphasized by Wright (2009) for the competitive selection process of designed objects is that design success can only be meaningful when it is set within a specific context. As such it is meaningless to talk about the success of a chair design in a competition without an understanding of the context that the chair design competes in.

iii) The replication of the ‘winners’

Basalla (1988) claims that “every new artifact is based to some degree upon a related existing artifact…” Langrish criticizes[16] Basalla’s claim by stating that “‘based on’ implies a causal link but the fact that one idea occurred before another is not enough to demonstrate ancestry”.

There is an ancestry of designed objects starting from the ‘natural objects’ such as rocks, stones, twigs, leaves, shells, bones, horns etc. whose weight, structure, texture, form and materials made them suitable as found tools for the job in hand (Basalla, 1988). Designed object of today can be traced back to these ‘natural objects’. However, what links the objects of today to previous ones is done by the new replicating entity –the meme- that is responsible for the cultural transmission.

The memes –idea patterns- that are successful and are selected during the competition processes replicate themselves by being imitated or by being learnt from generations to generations, where something from the original meme is retained.

Wright (2009) explains how humans and artifacts evolved together through the evolutionary mechanism of replicating ideas –memes- as follows:

> Information [meme] on how to solve problems and how to make life easier by using machines is stored and made use of by successive generations. It evolves with the culture it is used by.
>
> Information [meme] builds up in layers, each adding already tried and tested, and new, ideas to solve problems with, while unpopular ideas fall out of use. This is why each generation does not have to discover fire, invent the wheel or first make use of levers.
>
> Humans and machines can in this way be said to have symbiotically evolved.

[16] In a review of the book “The Evolution of Technology” by Basalla (1988).

iv) The repetition of the process

Wright (2009) explains that "As each object is redesigned to fit its current circumstances, the natural selection process is repeated, with replicated winners of previous rounds of selection being used as the basis for the next design". She gives the examples of complex machines such as the television set since "...their invention or development is necessarily the result of long lines of newer design ideas building on older ones over time".

Wright (2009) explains the repetition of evolution process in design as follows:

> The ideas behind designed objects combine old inputs with new ones, drawing on solutions from the past with those coming from the present, with each new round of the natural selection process.
>
> These new ideas may be informed by new materials or techniques, or by socio-economic influences.
>
> The old ideas may include styles from the past that have come back into fashion, often in combination, and influenced by new ideas and design solutions.
>
> The repeating redesigning of objects also happens stylistically, but with more obvious recurrences of past styles becoming fashionable, then unfashionable, in identifiable wave patterns.

2.3.5.2 Sexual selection in design

Sexual selection is a second set of factors besides natural selection that contributes to an increase of reproduction success, such as the large tails of male peacocks attracting the females and being selected accordingly, although they are disadvantageous under the set of factors of natural selection. Wright (2009) explains sexual selection in design context as: "Evidence of this can be seen in levels and styles of decoration of designed objects, offering explanations for how manufactured objects are designed to appeal to consumers on the basis of adding perceived prestige and status to the user".

Langrish (2011) rather suggests the study of 'handicap principle' developed by Zahavi and Zahavi for design studies.[17] This principle states that the sexual selection is actually a part of natural selection, in which females may choose particularly conspicuous males since it is a superb quality despite being the fact that it is a handicap.

[17] Personal interview with John Z Langrish.

This is observed in some of the designed objects in a way that they are not actually capable of fulfilling their functions; however they are appealing the customers such as Philip Stark's 'Juicy Salif lemon squeezer'.

The 'handicap principle' is not studied in this thesis but proposed as future research in the end.

2.3.5.3 The role of memes

The designed objects are the extensions of ideas –memes- that change over time by following the Darwinian evolution requirements. They vary, compete among themselves, get replicated or eliminated, and pass on imperfectly to upcoming designed objects over time that ends up with the change in the design of objects.

Langrish (1999) explains the selection process of ideas about artifacts –memes- within an environment as follows:

> ...evolution of technology [which can be replaced with the phrase of 'evolution of designs' here rather than being specific in technology] is the evolution of ideas about artifacts within environments which select certain ideas and reject others. Competing ideas are first subject to selection within a mind- they compete for attention. They then compete for approval by people who control resources. A very small proportion of ideas end up incorporated in something else, an actual artifact, a process, a system etc. These things then seem to compete with each other in an exosomatic (outside the body) evolutionary process.

So it can be said that the selection of ideas –memes- about the designed objects happen within two kinds of environments successively; in the brains of people as the ideas, and in the environment outside the body as the sketches, computer models, prototypes, final designed objects, etc. that are the different mediums for design ideas.

This thesis subjects the final designed objects that compete in the selective world of purchasers and users for this design evolution study.

The memes contribute to three problems that appear during the application of a Darwinian process to changes in design and technology (or other products of human activity). These problems are clarified by Langrish (2005) in his paper "Evolutionary Design – Ten Years On: Memes and Natural Selection", which are:

1) Any evolutionary analogue needs an analogue of reproduction
2) Darwinian change does not discuss change in the environment
3) Human consciousness and imagination

These problems are solved by memetics –the study of memes- as explained below. Langrish (2004) identifies another problem in his paper that is 'Darwinian evolution

does not explain the emergence of really new things', which he clarifies with a package of answers, given in the following part.

i) The problem of reproduction

As mentioned before the problem of 'any evolutionary analogue needs an analogue of reproduction' is solved by the introduction of 'memes' as replicators of cultural transmission by Dawkins (1989). Langrish (2005) rather uses the term 'replication', and explains the replication system of memes briefly as: "They are 'replicated' by passing from one human to another. These replicating ideas get copied, modified, and stuck together with other ideas and can form the basis of a memetic theory of design change".

ii) The problem of environment

The problem of 'Darwinian change does not discuss change in the environment' is solved by the introduction of three different kinds of memes –recipemes, selectemes, explanemes- and by advancing the definition of memes –not units of culture, but idea patterns like Russian doll nesting structures acting within black box systems- by Langrish (1999).

Langrish (2005) explains the solution to the problem as follows:

> Recipemes [ideas about how to do or make things], such as solutions to design problems, compete within an environment of selectemes [ideas of betterness] which range from ideas of what a client wants, existing in the mind of an individual designer, to societal norms enshrined in laws and regulations. This 'climate' of selectemes within which the recipemes compete is different from the climate that selects some genes to survive and others to become rare. It is different because it is to some extent controllable; we can tax or ban some things and give rewards for others. The problem is that in the long term we have no idea of what is going to become 'better'. This means that this climate of values is itself part of a Darwinian natural selection system [where] some selectemes survive and others don't.

The evolution in the man-made world is much more complex than the biological world. The designed objects change in natural and man-made environments over time. This environment can be described as; the natural environment such as climate, earthquakes, and geography which does not change evolutionarily; the man-made environment such as wars and events which does not change evolutionarily; and the man-made environment such as economics, politics, legal issues, socio-culture, technology, styles, and what people want which changes evolutionarily. The ideas of designers that produce the designed objects interact with the ideas of other people and institutions that produce the design context while

these ideas together go through an evolutionary process within these natural and man-made environments over time.

This complex system of evolving designed objects is simplified by different types of memes, which contribute to the description of interacting ideas within a complex system. Langrish (2005) explains this as follows: “Recipeme idea patterns compete within an environment of selectemes, the selectemes themselves compete for attention and attempts at rationality also compete as explanemes”.

Within the study of memes that follow the requirements of Darwinian evolution theory, the different types of memes are investigated in this thesis for their contribution to the problem of environment by simplifying the complex system of designed objects over time.

iii) The problem of human intervention

The problem of ‘human consciousness and imagination’ was emphasized and explained previously.

Explanemes are the ideas that are used in answering ‘why’ questions of the human propensity; they get replicated –through learning within language and symbols-, modified, stuck together with other ideas, or get eliminated just like other types of memes, which indicates the change in the ‘human consciousness and imagination’ as well.

This changing human intervention is still a Darwinian process; it is not progressive as Lamarckian or Spencerian processes. Langrish (2005) gives the following example in accordance:

> Sir Karl Popper spent many years trying to discover what made scientific knowledge superior to other knowledge but was eventually forced to accept a Darwinian account in which scientific theories (explanemes) can be falsified but not proven to be correct (Popper, 1972). The ones that are not falsified are available for further change but there is still a Darwinian underpinning because we cannot foresee the future.

2.3.5.4 The novelty issue

Langrish (2005) identifies a package of answers to the problem of ‘Darwinian evolution does not explain the emergence of really new things’ in other words ‘where new variety comes from’ or ‘novelty in design’. This package contains the answers of i) by experiment –trial and error, ii) by accident, iii) symbiosis, iv) survival of things fitting into complexity, and v) the role of the individual designer.

Langrish (2005) states that “Darwin could see how a long series of small changes could lead to novelty, as long as the steps conveyed some slight advantage in the ‘struggle for existence’”. He wonders about where small changes come from and seeks for answers to this question.

i) By experiment –trial and error

‘Trial and error’ is often expressed by people as one of the answers that leads to novelty in design.

According to Vitruvius, who had written “The Ten Books on Architecture” during the time of Augustus –the first Roman Emperor-, early people could have improved shelters by experiment and imitating nature –the coverings of leaves, caves in the mountains etc.- and the first improvements could have been to strengthen those parts that failed in the storms. Vitruvius suggested two criteria that early people judged the success of their experiments on: Technical criteria –if it kept the rain out- and aesthetic criteria –if the people liked it. Trial and error led eventually to the discovery of ‘basic principles of architecture’. Then Vitruvius added a third criterion; if it was true to Nature; if it was ‘well formed’ such as the ‘ideal’ human body fits into a circle with the naval at its centre. According to Vitruvius, this kind of portions was discovered after examining many examples of ‘well shaped men’ (Vitruvius, 1999). However, the problem is how did the early people know which men were well shaped and which weren’t (Gelernter, 1995).

Langrish (2005) explains Vitruvius ideas about the novelty in design through experiments from a memetic point of view. First, there are recipemes –patterns of ideas about how to make buildings- which are transmitted by imitation, starting with imitating nature. Then, there are selectemes –ideas about what is a better building- which includes technical and aesthetic criteria. Finally, there are explanemes –ideas that attempt to explain why some things are better- which includes the explanations of resemblance to nature and ideal proportions. These memes interact with each other in a black box system and combine with other memes of black boxes over time producing the new variety that is needed in an evolutionary process.

Langrish (2005) states that “The human abilities to experiment and learn from trial and error speed up the process of change...”; however he asks the same question again that how people know about what is better than the other. Shortly his answer is that people have an idea pattern of what they are looking for, which is due to change as well, such as the idea of faster air travel whose consequence was Concorde that turned out to not be a better idea through time.

Langrish (2005) also asks that “New things come from trial and error but where do the subjects of the trial come from?” He states that ‘imitation’ is one of the answers; however it just moves the question further back in time. ‘Accident’ is another answer, which is discussed in the following part. Accordingly, Langrish (2005) states that “A Darwinian theory includes the possibility that new things happen by accident and are then subject to a selection system of trial and error”.

ii) By accident

As mentioned previously, Darwinian evolution includes chance factor, or in other words, the role for accident, which is also discussed to be valid in design context.

Langrish (2005) quotes the explanations of Sundt –a Norwegian sociologist, who visited Darwin in 1862- through translations of Elster (1983) as follows:

> Even when people who set up new buildings did not intend to deviate from custom in any way, it could easily happen that some small variation arose. This would be then accidental. What was not accidental however is that inhabitants of the house and the neighbours should perceive the variations and form an opinion as to their advantages and inconveniences.

Accordingly, people would choose and imitate the house that was useful for them. Then further improvements would arise through time, which were again followed by long series of experiments, each involving extremely small changes (Elster, 1983).

By accident and experiments –trial and error-, designed objects change gradually and can reach to local maxima –an equilibrium- where further improvements could not be achieved “...without going through some radical change or by becoming worse in order to become better in a different way” (Langrish, 2005).

Langrish (2005) states that there are two ways to escape from local maxima: The concept that ‘evolution happens somewhere else’ and ‘the change in the rules of competition’ as given in the fifth requirement for an evolutionary process.

The concept that ‘evolution happens somewhere’ else is emphasized through human beings’ role in a ‘co-evolving’[18] world by Özcan (2002) as: “There have been countless elements and organisms with their environment which have co-evolved over billions of years and our kind is just an actor in this co-evolution process of the universe with his and her design ability”.

Accordingly, this concept is named in design context by Dennet (1995) as ‘designed elsewhere’ and by Schon (Steadman, 1979) as ‘displacement of concepts’[19].

[18] Co-evolution (biology): “Evolution involving successive changes in two or more ecologically interdependent species (as of a plant and its pollinators) that affect their interactions” (Url-11).
[19] “…whereby an idea, a word, or an artifact is removed from its habitual context and transferred to some novel applications” (Steadman quotes Schon, 1979).

Alfred Kroeber's abstracted tree of 'cultural phylogeny' is shown in Figure 2.7 to reveal how production of novelty of artifacts differs from the production of new kinds in biological evolution (Steadman, 1979).

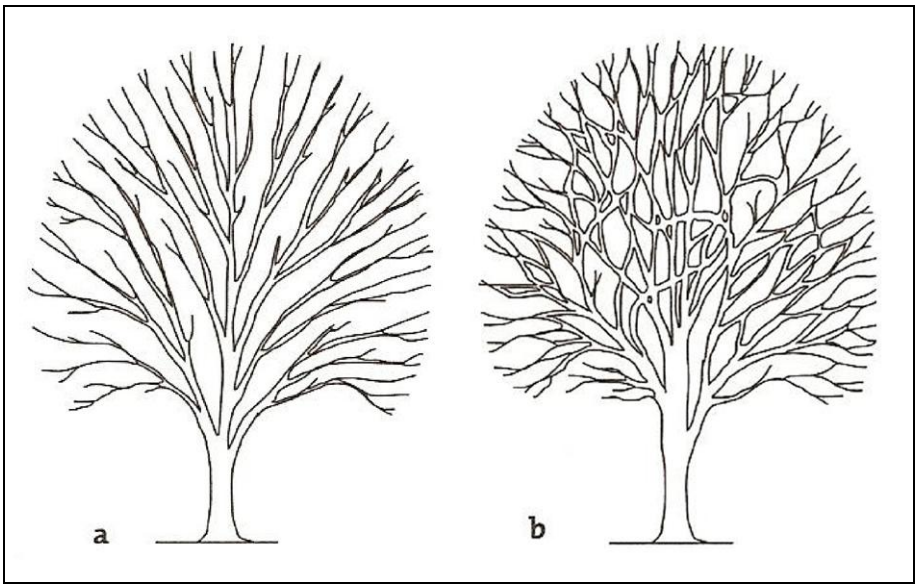


Figure 2.7 : A. L. Kroeber, "The tree of organic phylogeny with its characteristic branch pattern" (a) and "The tree of cultural phylogeny with its characteristic reticulated branch pattern" (b) (Steadman, 1979).

iii) Symbiosis

Symbiosis, which is popularized by Lynn Margulis, is the idea that new forms of life can come into being by a combination of two existing forms instead of branching. This form of novelty is highly observed in design such as clocks and radios being put together as a new design, which then struggles for survival whether they stay together or separated (Langrish, 2005).

Langrish (2005) states: "...a Darwinian theory of change in design has room for new things emerging from mergers of existing things", which happens through experiment –trial and error-, accident and symbiosis. However, these accounts of novelty lack a feeling for the enormous complexity of the designed world, which is explained in the following part.

iv) Survival of things that fit into complexity

The world contains many complex interacting strands, where human minds attempt to cope with through simplifying them. The general tendency of humans –designers- is to pick out one of the many strands and perceive it as the whole in the way of technological innovation, where the abilities of reasoning and inventiveness are used to come up with new solutions to existing problems (Langrish, 2005).

An example about a designer attempting to tackle with a problem and how complexity is actually rearranging itself is explained by Langrish (2005) below.

J. F. Baker came up with a new way of designing steel framed buildings that required less steel. According to this new way, the structure was considered as a whole for the spread of the loads instead of working them out for each component, which worked as long as the components were connected by rigid joints. After the World War II, while there was a shortage of steel, the firm of Sanders and Forster used Baker's idea. Although welding could be a problem when attempted on site, outside the laboratory conditions; it was not a problem because they were attempting to develop a factory based industrialised building system. Since there was a market for this system at that time, it was economic and was funded by the government. Within this Sanders and Forster system, other developments were undertaken such as the Wheelabrator shot blasting system and spray painting with a zinc rich epoxy primer for corrosion problem. Sanders and Forster welcomed all these sort of useful ideas to take advantage of a post-war demand for new buildings by developing a factory based industrialised building system. Baker's idea of 'less steel' was one of them; however it did not come alone by itself; it propelled the shape of joists to be used as well, which was a German invention, the Litzka lightweight beam. All these developments had their own history and they interconnected like the Russian doll nesting structures around the 'evolution of constructing steel frames' indicating the actual complexity. When the Sanders and Forster system was realized to be more expensive than traditional bricks, it lost its demand as there is no clear trajectory of technical progress (Langrish, 2005). However, as Langrish (2005) states:

> The problem of on site welding was eventually solved by a quite separate development, which lead to the availability of high tension bolts. Bolting components together to give rigid joints has the advantages that such joints can be easily inspected and can be carried out by semi-skilled labour.

v) The Individual Designer

Langrish (2005) states that:

> In the same way that genetics has something to say both about individual people and about how people got here in the first place, so memetics can be used to describe changes in design, both long term and those resulting from the decisions of one person.

An individual designer makes his/her living by making decisions, which affect the change in designed objects and lead new things to emerge.

Langrish (2005) states “The long sweep of design history is the result of countless individual decisions about what to make, how to make it, what to buy etc. but at the same time these decisions are influenced by the long sweep [evolution]”.

Although accidents are included in these decisions of designers, they are not just random mutations; designers have intentionality to fit into the changing complexity of everything.

Langrish and Abu-Risha (2008) in their paper called “Purposive Pattern Recognition: The Nature of Visual Choice in Graphic Design” interview and observe professional graphic designers to investigate their complex decision-making process with the question of “How do professional graphic designers make choices between visual alternatives?” The results show that the problem of choice is intuitive. For the authors, intuitiveness is not a satisfactory answer to explain what is going on in the brains of designers so that they approach to the problem through modern neuroscience.

The brain includes the mind part with conscious thoughts and feelings, and the unconscious part. Modern neuroscience has showed that the brain can make decisions before the conscious mind is aware of what is happening in the brain, which can be explained with the memes. Langrish (2011) states that “Memes are electro chemical patterns in the ‘brain’ that are associated with feelings in the ‘mind’”.[20] A parallel-processed mechanism goes on in the brain to cope with too much sensory information while taking incoming data, comparing them with remembered data, and then presenting the conscious mind with an ‘experience’ as in the case of how a face is recognised with its name.

The designers working with a design brief know what is needed in design and they ‘intuitively’ visualize the designs from many alternatives with this consciousness. Langrish and Abu-Risha (2008) explain what is going on in the head of designers as the ‘alternative visual patterns’ being compared with the ‘need pattern’ until there is a mental ‘click’, which is the brain’s way of telling the conscious mind that there is a match between the two patterns. In terms of different types of memes, selectemes correspond to the ‘need pattern’ and the recipemes correspond to the ‘alternative visual patterns’. The authors call this experience resulting from a comparison of a ‘need pattern’ –recipeme- with ‘alternative visual patterns’ –selectemes- ‘Purposive Pattern Recognition (PPR)’, which was shortly mentioned before. After the designers ‘get the idea’ for design through PPR, it is modified through the competing

[20] Personal interview with John Z. Langrish.

ideas in the head of one designer or through the interacting ideas of people communicating with each other.

2.3.6 The study of objects in design evolution literature

Steadman (1979) points out the importance of the study of objects in the design field as: "...there is a great need... for thinking about the fundamental questions of design... which can be illuminated not by any attempt to make the process of designing 'scientific', but rather by subjecting the products of design –material artifacts...- to scientific study".

Material artifacts are subjected to scientific studies within different disciplines such as material culture studies, semiotics, media and cultural studies, philosophy, science and technology studies, anthropology, and design studies (Boradkar, 2010). These disciplines and their subject matters about the material artifacts –things- are illustrated in Boradkar's book "Designing Things" (2010) as shown in Figure 2.8.

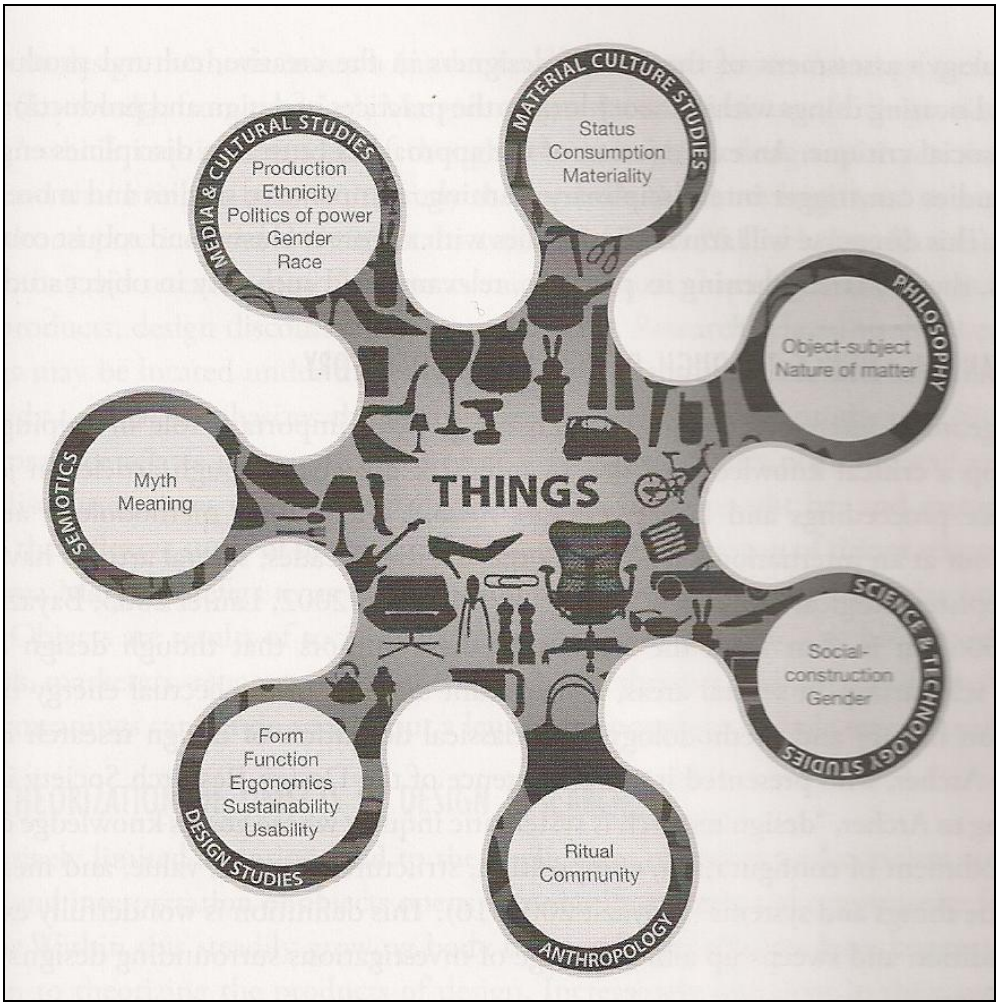


Figure 2.8 : Disciplinary diversity in examining things–illustration by Amethyst Saludo (Boradkar, 2010).

Regarding design studies, Boradkar (2010) states that “The relatively limited attention paid to the application of theory and criticism toward the analysis and interpretation of objects opens up a significant arena of opportunity for design research”, which still supports the argument of Steadman (1979) after thirty years.

Boradkar (2010) gives the reasons for less study of objects in the design discipline, compared to other disciplines, as follows:

> For several reasons, a large volume of the discourse around objects exists in disciplines outside design. First, as a formal discipline, design is relatively young and the comprehensive theoretical foundations ... are yet to acquire the sturdy proportions of more established disciplines. ... Second, design’s traditional role has been the production rather than the critical interpretation of things. ... Third, being a ‘professional’ discipline, a large percentage of design practitioners and educators tend to focus on praxis rather than theory.

Fallan (2010) clarifies the study of artifacts in the field of design history by stating that “There is nothing wrong per se in studying artifacts –be they humble or dazzling. What matters more is the approach; the way in which the objects are engaged and to what purpose”.

Fallan (2010) explains further the approaches in design history as follows: “Design history was conventionally considered the history of designed objects of high (aesthetic) quality and the designers, ideas, movements and institutions that conceived those objects”. Besides the continuation of such topics, the subject matter of design history has become much more complex and multifarious with increasing interest in issues such as consumption, mediation and use, and changing public perceptions of design (Fallan, 2010).

While broadening its subject matter, design history overlaps with other disciplines such as archaeology and anthropology and, therefore, introduces its methodology of studying artifacts in the concept of material culture embracing all the artifacts of a society.

For example; Atkinson (1988) in his paper “Computer Memories: the History of Computer Form” analyzes computers as a global form through an archive of computer manufacturer’s catalogues from the perspective of design history, which explores the cultural aspects of design meaning –the semiotic analysis of culture, in which objects or images are interpreted as cultural icons. Further, he examines how changes occurred in the production and consumption of the computer in the context of the workplace. This paper helps to provide an understanding for the interpretation of forms in social context, and indicates the importance of semiotic analysis in design history studies.

Other examples from the design history field that focus on the study of designed objects are the books of Henry Petroski. He investigates change in several designed objects –pencils, pencil points, paperclips, zippers, aluminium cans, airplanes, etc.- in his books "The Pencil: A History of Design and Circumstance" (1989), "The Evolution of Useful Things: How Everyday Artifacts-From Forks and Pins to Paper Clips and Zippers-Came to be as They are" (1992), and "Invention by Design: How Engineers get from Thought to Thing" (1996). These can be rather accepted as design history studies since they do not specifically focus on the investigation of the inheritance mechanism of ideas embodied in the designed objects.

Fallan (2010) further explains that "Design history today is no longer primarily a history of objects and their designers, but it is becoming more a history of the translations, transcriptions, transactions, transpositions, and transformations that constitute the relationships among things, people and ideas".

Although the evolutionary perspective is not new in design studies, the use of this perspective opens up new insights for the understanding of change in the appearance of designed objects over time, and follows the new research movement in design history studies that is mentioned by Fallan (2010) above.

The study of designed objects from an evolutionary perspective brings in both the historical study and the study of inheritance mechanism of the designed objects. This can be perceived as a contribution to design history studies as Yagou (2005) states that "Rewriting design history from an evolutionary perspective appears to be a path which is intellectually and practically challenging, and certainly worth following".

In order to explain artifactual diversity by an evolutionary perspective requires an analogy between living organisms and artifacts –designed objects. This analogy is a modern phenomenon with few examples in antiquity such as Aristotle, who made little use of such analogies while explaining the organic world. European thinkers started to handle this analogy during the Renaissance –between 14th and 17th centuries- within the appearance of new technological devices and the emergence of modern science. At first, living organisms were being described in mechanical terms. Then, in the middle of the 19th century, a movement of metaphors occurred in the opposite direction that "for the first time the development of technology was interpreted through organic analogies". This was due to widespread industrial growth, the geologist's ability to establish the antiquity of the earth and the appearance of the Darwinian evolution theory (Basalla, 1988).

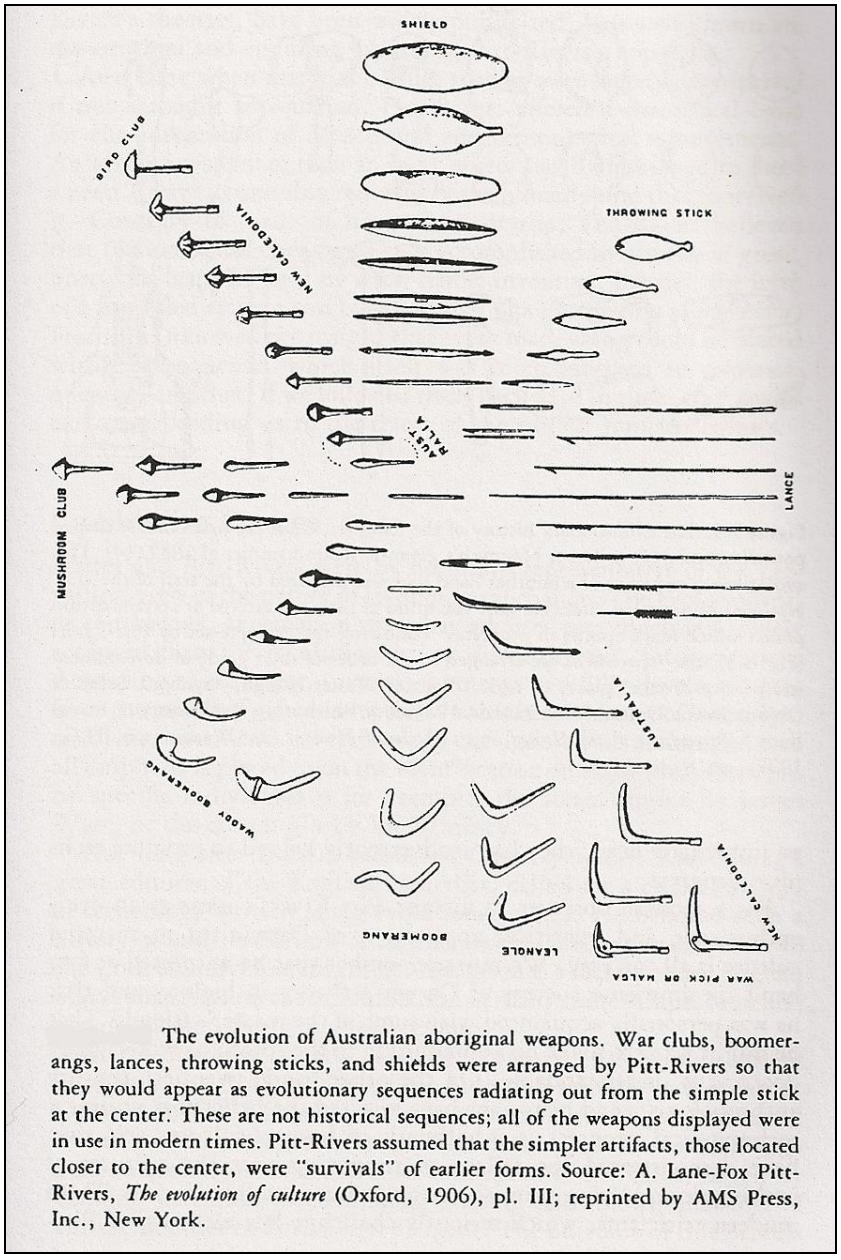
The most notable and lasting effects of this new mode of metaphorization was observed within literature –in the writings of Samuel Butler- and anthropology –in the work of General Augustus Henry Pitt-Rivers (original surname Lane-Fox). They both lived in mid-Victorian England, and both were deeply influenced by Charles Darwin's "Origin of Species" (Basalla, 1988).

In his utopian novel "Erewhon" (1872), Butler explored the idea that machines developed a fashion remarkably similar to the evolution of living beings. He said that machines have undergone a series of very rapid transformations from the simple stick wielded by our early ancestors to the steam engine of his day. He also suggested and exercised on the classifying of machines, which proceed to the construction of an evolutionary tree illustrating the connections between the various forms of mechanical life. Butler cautioned the nature of the future relationships of humanity and the machine; he thought that humans cannot help but fall back to second place in a world dominated by technology (Basalla, 1988).

While Pitt-Rivers was researching the history of firearms, he became aware of the gradual, progressive modification in them. Then he began to assemble a prehistoric artifact collection, but the organization of these diverse artifacts was questioning him. He resolved to ignore the geographical, temporal, and cultural dimensions of artifacts, follow the lead of natural history, and arrange his collection in a series of sequences composed of closely related forms. He was not concerned with accurately dating his artifacts and placing them within a specific cultural context. Instead he searched for forms that filled in the gaps of existing sequences or that could be used to initiate new sequences as shown in Figure 2.9 (Basalla, 1988) in the next page.

Basalla (1988) states: "Butler and Pitt-Rivers were by no means representative of the prevailing view of the nature of technological change". However, their studies still stand out in the historical review of the study of technological evolution.

Several authors have pointed out the relevance of evolutionary theories to designed arteficts until today (Steadman, 1979; Basalla, 1988; Dawkins, 1989; 1996; 2006; Langrish, 1993; 1999; 2004; 2005; 2007; 2008; Wright, 2009), whose work has been referenced throughout the thesis.



The evolution of Australian aboriginal weapons. War clubs, boomerangs, lances, throwing sticks, and shields were arranged by Pitt-Rivers so that they would appear as evolutionary sequences radiating out from the simple stick at the center. These are not historical sequences; all of the weapons displayed were in use in modern times. Pitt-Rivers assumed that the simpler artifacts, those located closer to the center, were "survivals" of earlier forms. Source: A. Lane-Fox Pitt-Rivers, *The evolution of culture* (Oxford, 1906), pl. III; reprinted by AMS Press, Inc., New York.

Figure 2.9: The evolution of Australian aboriginal weapons by Pitt-Rivers (Basalla, 1988).

Basalla's (1988) investigation of change in technology in his book "The Evolution of Technology" fails in not being able to answer how changes are inherited by next generation artifacts. Langrish criticizes[21] Basalla's (1988) claim of "Any new thing that appears in the made world is based on some object already in existence" by stating that "'based on' implies a causal link but the fact that one idea occurred before another is not enough to demonstrate ancestry".

The studies of Christopher Alexander reveal the use of pattern language in the design process. His studies starting from 1963 proceed to the publication of his book

[21] In a review of the book "The Evolution of Technology" by Basalla (1988).

“A Pattern Language” in 1979 together with the authors Ishikawa, Silverstein, Jacobson, Fiksdah-King, and Angel, in which he collected patterns from 253 housing and lodgement and wrote a language (a process for designing) for further applications (Bayazıt, 1997).

Khanafiah and Situngkir’s (2006) study, named “Innovation as Evolution - Case of Study: Phylomemetic of Cell Phone Designs”, is an example from the field of computational sociology. It uses algorithms in order to form an evolutionary relationship among different types of cell phones. Denett (1995) explains what algorithm does as “It takes as input a set of competitors and guarantees to terminate by identifying a single winner”, and he characterizes algorithm processes as follows; they have logical structure, steps of the procedure is simple, they have guaranteed results. Thinking evolution process as algorithm process is a continuous discussion, and not a subject to this thesis.

Van Nierop, Blankendaal and Overbeeke’s (1997) study, named “The Evolution of the Bicycle: A Dynamic Systems Approach”, is important in the sense that it shows how bicycles diverged and converged in a non-linear way, which is a general characteristic of co-evolving adaptive systems. Although dynamics system theory is adopted in their study rather than memetics, it justifies the Darwinian natural selection among other evolution theories due to its non-progressive and non-linear approach characteristics.

In their study “Darwinian Processes and Memes in Architecture: A Memetic Theory of Modernism”, Salingaros and Mikiten (2002) apply memetics to architecture through Darwinian processes for the investigation of modernist style as a ‘parasitic’ meme –like a virus-, which has spread in spite of its being non-adaptive for human needs. They explain natural selection (Darwinian process) in the designer's mind and outside the world, and reveal how the modernist style is selected among other traditional and non-traditional styles through parasitic meme propagation and then spread outside the world. They identify memes as architectural memes for this study, which includes ideas and visual images and they describe its content in detail with material, form, function, and emotion. They claim architectural memes should be like a virus since it is a physical entity. Identifying the memes like viruses, brings up a negative association with memes; however this study uses this negative association to strengthen their claim, which is ‘Modernist style does not suffice human's need; its success lean on something else, which are infectious ideas and visual images that want to be selected, spread and inherited’. Then, how the modernist style –meme groups- accomplishes this, is explained through Heylighen's

seven factors. These are simplicity, novelty, utility, formality, authority, publicity, conformity- and a 'encapsulation' factor. Within 'encapsulation', modernist style gains its meaning through links between memes, and becomes more arguable, and thus successful with explanations around it.

Langrish (2004) criticizes the concept of 'memes as viruses' by stating that:

> There are two [further] problems with the memes as viruses school of thought. One is that it ignores Dawkins original use for memes -as the basis for a new kind of evolution, acting on top of genetic evolution. Epidemiology is not in itself evolutionary unless it asks historical questions about the viruses. The second problem is that it has not found a use for memes…

Based on the second problem of this concept mentioned above; Salingaros and Mikiten's (2002) study uses memes in defining modernist style, giving it examples and supporting the argument in a way that it cannot be discussed outside 'parasitic meme corresponds to modernist style'. It does not welcome new discussions for memetics or modernism, but reduces everything on a 'memes as viruses' base and guaranties this argument in itself.

'Memes as viruses' concept belongs to the physics view rather than the biological view when applied to 'how and why design changes' studies. It reduces the meaning of design to a one singular formula: 'Modernist style = Parasitic meme'.

Dennett (1995) clarifies this argument of 'memes as viruses' concept by stating that "...it cannot be 'memes versus us' because earlier infestations of memes have already played a major role in determining who or what we are. The independent mind struggling to protect itself from alien and dangerous memes is a myth".

The studies given below undertake memes as behavioural patterns in cultures and/or as interactions of users with the object function.

In Özcan's (2002) study, "An Evolutionary Approach for Design: Contradictory or Complementary with History"; evolutionary points of view from Malthus, Darwin and Spencer are compared to classic design history research traditions. Memes in design are identified as cultural behavioural patterns, which transforms into design consequences i.e. ***dolmuş***[22] vehicles substitute 'horse' in Turkish culture through behavioural memes in a way that people's behaviour (interaction) to 'horses' in Turkish culture is carried on by ***dolmuş*** vehicles.

In another Özcan (2005) study, named "H2O is not Water Everywhere: Cultures and Evolutionary Design Practices on Water"; generic principles (gathered from Lamarck, Darwin and Spencer) of evolution theory and memetics are applied to a

[22] A minibus for transportation of people specific to Turkish culture.

specific cultural/geographical area. Two specific water-related design practices; toilets and ferries, are investigated in a way that people's behaviour (interaction) to ‘running water’ in Turkish culture is carried on by these design consequences of toilets and ferries.

In Aytaç’s (2005) master thesis, named “Memes and Memetics in Industrial Product Design”; memes and evolution processes are investigated within a case study on ‘typing’ memetic pattern that co-evolves with its design ideas –memes- embodied in objects like typewriters, keyboards and their layouts, special keys –i.e. QWERTY layout and the Shift key-, etc.

These studies advance the use of memes in design evolution studies, and the study of memes as behavioural patterns is suggested as future research at the end of this thesis.

Wright’s published “Why Things Look the Way They Do: Explaining Changes in Art and Design Over Time, using Darwinian Evolutionary and Cyclic Theories” in 2009. In this book she gives two long range explanations for change. These are Darwinian natural selection –including sexual selection- and cyclical theories which are adapted to Littlewood’s mail order catalogue images of table lamps and clocks dating from 1932 up to 1980 in order to understand the changing appearance of mass produced designed objects over time.

Although Wright’s (2009) study does not focus on memes, the way she undertakes Darwinian evolution theory as a long range explanation for change in the design of a group of objects over time is compatible with the study of this thesis. Further, Wright (2009) and Aytaç (2005) suggest the study of different types of memes as future research, which is undertaken in this thesis.

2.4 Cigarettes and Cigarette Packages from Turkey

This thesis investigates the change in design of cigarettes and cigarette packages from the beginning of the 20th century up to the present in Turkey by taking an evolutionary point of view.

A collection, comprising of 1161 Turkish cigarette packages and dating back to 1900s, is subjected to this thesis. The collection belongs to Tunca Varış, who worked as a tourist guide and has travelled extensively throughout Turkey to build up this ample sized collection. The collection has not been catalogued, published and exhibited as a whole, and it has not been used for any design research before.

All the cigarette packages in the collection are different from each other. The new cigarette packages and the existing ones with differences in their designs have been added to collection covering 110 years. Even a slight change in design such as the change in value of colour of a cigarette package is regarded as a differentiation in the collection.

In this thesis, the change in design of cigarettes and cigarette packages is studied with reference to Darwinian evolution theory where the influences of individuals and the environment are brought together within the effects of time; it is not the study of strict process of kinds such as the evolution of 'cigarette and the cigarette package'.

The cigarettes and cigarette packages are the extensions of ideas of human beings; they are the reflections of memes found in the brains of people, which competed with other memes in man-made and natural environments, got eliminated or replicated imperfectly and changed over time.

Turkish cigarettes and cigarette packages are cultural, everyday and mass-produced products, which provide a good example of a complex system of the man-made world.

In this part, the man-made environment of Turkish cigarette packages is revealed within economic policy, design and technology, socio-cultural aspects, and legal issues and smoking bans that tobacco, the practice of smoking, cigarettes and cigarette packages have gone through in the world, in the Ottoman Empire period, and in the Republic of Turkey.

2.4.1 Discovery of tobacco and its spread in the world

According to plant geneticists, tobacco was first cultivated between 5000-3000 BC in the Peruvian/Ecuadorian Andes, and then spread northwards. By the time of Christopher Columbus's arrival in 1492 it had reached every corner of the American continent (Gately, 2001).

Gately states the features of early tobacco use as: The variety of reasons employed to justify its consumption, and the diversity of ways in which it was taken. Tobacco was used by chewing, drinking, licking, enema, snuffing, smoking (Wilbert, 1987); it was smeared over bodies, even used in eye drops (Gately, 2001). Its use by different methods was not only due to different purposes like as medicine, spiritual training, spiritual journeys, before battles, before planting fields or prior to sex; but also it was due to different climatic conditions (Gately, 2001). In the thin, dry air of Andes the snuffing method was selected, and in the Amazon it was taken as a drink

(Gately, 2001). Gately (2001) also adds that “Different methods of tobacco consumption often existed side by side -one form for everyday use, another for magic or ritual”.

The practice of smoking is considered to be evolved from snuffing since “Snuffing tubes are among the most ancient tobacco related artifacts discovered in Americas and the practice coexisted with smoking in south and Central America” (Gately, 2001). The most common tobacco consumption in South America was smoking – using cigars or cured strips of tobacco wrapped in musa leaves or corn husks. When tobacco spread into Central America, its consumption diversity became less, thus smoking practice was selected over the others (Gately, 2001).

Tobacco and smoking was discovered by Europeans in 1492 by Christopher Columbus’ quest of America. In the following 50-60 years, tobacco spread into Spain, Portugal, Belgium, Switzerland, Italy, France and England; and even its cultivation had started. At the end of the 16th century, in other words, 100 years after tobacco’s discovery, tobacco was propagated so that it covered all of Europe, the Far East, Inner Asia, Siberia, India and Africa, and became a highly demanded plant in consumption, production and commerce. In the 17th century, tobacco’s propagation continued in literature and in scientific studies with new interpretations like emphasizing its usefulness for elderly people. In the 18th century, tobacco became highly traded and produced plant under the control of governments (Yılmaz, 2003).

In the 17th and 18th centuries tobacco spread into societies in a way that everybody[23] from every social class[24] were consuming it. Tobacco clubs and schools were opened in the cities. Tobacco’s subsidiary products such as pipes, snuff and tobacco boxes[25] led into new industrial branches in the mass production (Yılmaz, 2003).

There were also anti-propagation movements against tobacco starting from the 17th century, and it was prohibited several times by several governments[26]. Although it was claimed as unhealthy in the first written anti-propagation booklet[27], the governmental reason brought up for prohibiting tobacco was the danger for fire. It is claimed that prohibiting tobacco caused more increase in tobacco consumption. It

[23] Including children and pregnant women.
[24] Different than coffee, tea, sugar and chocolate which were consumed by upper level classes.
[25] Representing different social classes with their ornamentation and quality.
[26] England in 1604, Sweden and Denmark in 1632, Russia in 1634.
[27] “A Warning for Tobacconist” (1602) by Philirates.

was also prohibited in churches for 100 years starting from 1630 since it prevented religious commissary from their activities (Yılmaz, 2003).

2.4.2 Introduction of tobacco to the Ottoman Empire

Besides these developments of tobacco in Europe, the Ottoman Empire, at its most powerful between the 15th and 17th centuries, was aware of this plant as well. According to references[28] from late 1630s, tobacco was introduced to the Ottoman Empire in the beginning of 1600s by English merchants (Yılmaz, 1998). Since then, tobacco became significant in Turkish society, economy and politics. Its significance is so that Turks called tobacco *dütün or duhan*[29] while Europeans, Arabs, Persians and Indians used the word 'tobacco' in different dictations and pronunciations (Şen, 2003). A new product and its new concept were welcomed with a Turkish name naturally, which indicates how tobacco was accepted in a culture so quickly.

Tobacco consumption in the Ottoman Empire in those days is reviewed through eastern and western references below.

Vanzan (2003) quotes from Pietro della Valle's writings between 1614-1615 that:

> Here they enjoy smoking [not only] while having a chat […] but at every hour of the day. They amuse themselves with thousands trifles such as blowing the smoke from their nose. They think it's very entertaining, but I found it very disgusting.

Vanzan (2003) also quotes from Ibrahim Peçevi, who wrote in 1635 that:

> ...smoking was firmly established among all Turkish social classes, even amongst great *ulema*[30] and the notables… mean people in the coffee houses smoked so heavily that the smoke they produced would impede them from seeing each other. Smokers never separated from their pipes… and the stink of smoke had pervaded streets and bazaars.

Vanzan (2003) quotes from Aubry de La Mottraye's writings in the 17th century as well, which state that:

> [When you pay a visit to a rich] Turk, he immediately offers you a pipe to smoke. [Here] both sexes start smoking when they are very young and they do it comfortably at their home. Their tobacco is more tasty and nice smelling than that comes from East India. Besides, Turkish women mix tobacco with aloe wood and mastics in order to make it more aromatic.

Vanzan (2003) investigates an Italian idiom *fumare come un turco* –'to smoke like a Turk' appeared in an Italian dictionary in 1891-, in other words, she investigates the stereotype of the 'heavily smoking Turk' in her paper "To smoke like a Turk from

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[28] Ibrahim Peçevi, *Peçevi Tarihi*, Istanbul 1283 (old dating system), cilt 1, s. 196-197; and Hezarfen Hüseyin Efendi, *Telhisu'l-Beyan fi Kavanin-I Al-i Osman*, (prepared by) Sevim Ilgurel, Ankara 1998, s. 274-275.

[29] Turks called tobacco "*dutun or duhan*" -which comes from the word *duman* meaning "smoke" in Turkish, and the word *duhan* meaning "smoke" in Arabic; later it becomes *tütün* the word used today (Şen, 2003).

[30] The term used for the class of intellectuals.

facts to stereotypes". She illustrates how this stereotype occurred in the culture of western countries beyond Italy within 'Orientalism'[31] by stating that "The Orient was the place in which the West projected all its forbidden desires; it was the place in which all the physical pleasures, including smoking, had to remain exaggeratedly practiced and available".

2.4.3 Environment of tobacco, cigarettes and cigarette packages

2.4.3.1 The economic policy

Tobacco's propagation continued in the 17th and 18th centuries so that it became a highly demanded plant in terms of agriculture, economy, and politics –control of cultivation and the market by governments (Yılmaz, 2003).

Tobacco was highly welcomed in Anatolia. Tobacco cultivation became significant in terms of high quality tobacco type –known worldwide as 'oriental tobacco' due to climate, soil and the ability of the cultivator in Anatolia (Mercimek, 2003). It was highly demanded in Europe as well, especially between 1930 and 1940s up to World War II, when Europeans were introduced to American blended tobacco (Mercimek, 2003).

Being produced for 400 years, tobacco has been a significant revenue item with contributions to the economy in employment, export and tax income. It was so significant that control of the cultivation of and market in tobacco has meant control of the country.

Due to tobacco becoming an important commercial good it affected the emergence of new economies. Tobacco was mainly smoked with chibouk, whose production later became a sector with other smoking tools. It is estimated that 20.000 people were working in this sector in and around Istanbul in the 18th century (Ünal, 2003).

In Ottomans period, taxation of tobacco was closely related to changing institutional structure of Ottoman taxation system and differentiating monetary system. All these changes were in parallel to political and economic progress where tobacco income was the first to be affected. In the 17th century, tobacco was subject to taxation for the first time. In the 18th century, tobacco customs were gathered under one administration, and in the late 18th century tobacco income was directed to a special exchequer together with incomes of alcohol drinks and coffee for war financing. In the 19th century, in order to overcome the monetary crises, Ottoman governance moved from taxation solution to foreign indebtment. Tax incomes were shown as

[31] Western approach to eastern societies in the 19th century.

compensation of debts, and tobacco's tax income was one of the first incomes to be declared. This economical and political decision ended up with a tobacco monopoly by foreigners from the second half of the 19th century up to the foundation of the Republic of Turkey in 1923 (Doğruel and Doğruel, 2000).

The Regie Company was founded in 1884 as the first fully organization of monopoly for tobacco and alcohol in the Ottoman period (Doğruel and Doğruel, 2000). As mentioned above, its rights were given to foreigners as compensation of debts. The Republic of Turkey capitalized the Regie Company in 1925, and recognized it as the state monopoly. In 1946, the state monopoly was renamed as Tekel.

Tekel was an economical establishment of the Turkish government for managing various monopolies i.e. tobacco, salt, alcohol drinks, gunpowder, playing cards etc. It was regarded as one of the biggest establishments with its trade, sales, added-tax, export, distribution, production and employment that govern for over a century. In addition, it had social activities such as painting competitions and owning a sports club.

It is important to note that Tekel was more effective in the society among underdeveloped economic environment of Turkey in the beginning. Then, it became economically effective in parallel to developing economy of Turkey in the following years.

In 1984, Tekel started importing foreign brands. In line with the liberalization of the economy, a new law re-regulated the production, distribution and marketing of tobacco products, making multinational operations possible. In 1991, local and foreign private enterprises were given the right to manufacture cigarettes. In 2001, the Higher Directorate of Privatization included Tekel in the privatization program although it was highly criticized both in tobacco control and the preservation of public property. In 2002, the Tobacco and Alcohol Market Regulatory Authority (TAPDK) was established as a financially and administratively autonomous body with the power to regulate the tobacco market and the related health issues. In 2008, Tekel was sold to British American Tobacco Company (BAT) for US$ 1720 million. It was transformed into an incorporated company, and its market regulation responsibilities were transferred to TAPDK (Bilir et al, 2009).

Based on 2007 figures, Turkey ranks 7th in world tobacco production, supplying 1.7% of world tobacco demand, and it is the biggest producer and exporter of oriental tobacco. It is still the 5th largest cigarette producer in the world with

approximately 123.000 million cigarettes produced in 2003, and it is the 10th highest tobacco-consuming country in the world (Bilir et al, 2009).

With Turkey having a closed economy system until 1984, and Tekel's –the only cigarette manufacturer- being sold in 2008 reveals the economical and political significances of tobacco and cigarettes in Turkish governance.

It is interesting to investigate the change in design of cigarettes and cigarette packages within a rather stable environment of a state monopoly of tobacco where different tobacco companies are not creating a competitive environment, which has totally changed recently in Turkey.

2.4.3.2 Design and technology

i) Technology of cigarette making

The technology of cigarette making did not change much at its basics since the cigarette making machinery was invented. Before the cigarette machine was invented, cigarettes were rolled by the consumers, by the tobacco shop owners/cigarette rollers, or by the workers at the factory. Within the industrialization period, there had been many attempts to invent a cigarette-rolling machine. According to one reference, the first cigarette machine was invented by Luis Susini in Cuba in 1853. Then a developed version of it, which could produce 60 cigarettes per minute, was introduced at the Paris World Exhibition in 1878 (Voges and Wöber, 1967). Despite several machines being patented during the 1870s, the breakthrough came with the machine that was designed by a Virginia inventor, James Bonsack in 1881. His machine could produce 200 cigarettes per minute (Brandt, 2007).

The first so-called cigarette machine, named *Makaron*, arrived at the Ottoman Empire in 1890s. It was actually partly mechanized; tobacco was fed by hand and the machine could only make the tubes of cigarettes. A complete cigarette machine was brought to Turkey in the 1920s.[32]

The basics of cigarette making process in the machine can be explained in brief as follows: Cigarette paper comes in strips, which can be in different widths regarding to 'cigarette thickness'; then relevant amount of tobacco drops upon it and it is carried with a continuous belt into a long incremental funnel; at the end of the funnel cigarette maintains its latest form regarding the preferred 'cigarette calibre form' and 'cigarette thickness'; then the cigarette rod is pasted and then cut with a knife at different lengths regarding the preferred 'cigarette length' (Young, 1916).

[32] Personal interview with Nejat Oğuztaş (2010).

Without changing these cigarette making basics, technological developments focused on increasing the amount of production. Within the latest technology, the machine includes two continuous belts for cigarette making in one machine, and the amount of production has been increased up to 20.000 cigarettes per minute. In addition, cigarettes are rolled tighter within the technology. Also the use of paste has changed from starch to special paste, so-called cigarette paste.[33]

The cigarette making machinery is convertible according to the selection of 'cigarette thickness', 'cigarette calibre form' and 'cigarette length'. By these selections, character of the cigarette is provided. If the cigarette gets longer, thinner and round in form; the tobacco inside meets with less air and the force of inhalation decreases. Less weight in cigarette is also important, which is provided by shorter, thinner and oval formed cigarettes that contribute to the profit of the manufacturer.[34]

'Cigarette tips' varied. A 'sleeve' cigarette, which is a form of tip, also varied due to alternative materials used, which were "cork" and "paper". There were two kinds of machines for cork tipping: With and without a suction unit. Very thin cork sheets, with one of their side pasted with corn coloured paper, were prepared and cut into stripes. The required width for cigarette was cut from this cork stripe, which then dropped over a suction box. The cork tip was drawn down by suctioning upon one of the continuously moving cigarettes and was pasted. In the other machine, cork tips were carried to the cigarettes around which they were to be pasted by two small steel rods (Young, 1916). The machines for paper tipped cigarettes worked similar to this.

The manufacturing of a 'mouthpiece & sleeve' cigarette, which is another form of tip, was processed with another type of machine, which fastened the edges of the paper together by crimping without paste (Young, 1916).

Filters, which were based on the cellulose material, reduce the amount of smoke, tar, and fine particles during smoking; and also reduce the harshness of tobacco and prevent the mouth from tobacco flakes. After it was invented, its machinery was developed in the mid 1930s. The first 'filter' tipped cigarettes in Turkey were produced by a filter machine, which was attached to the cigarette machine.[35] The first 'filter' tipped cigarette was produced in 1959 for *Samsun* brand cigarettes (Url-12). Then the machines that produce 'filter' tipped cigarettes were brought into the country.

[33] Personal interview with Barış Karacaoğlu (2009).
[34] Personal interview with Nejat Oğuztaş (2010).
[35] Personal interview with Nejat Oğuztaş (2010).

The manufacturing process of 'filter' cigarettes is as follows: The continuous cigarette rod is cut into units of two-cigarette lengths; then these units are cut and separated for the emergence of two-filter lengthened filters in between. The filter tipping paper, which is 5 mm longer than the length of two-filters is then wrapped around and pasted; then this two-cigarette lengthened unit, which is attached from the filter and the filter tipping paper at the tip, is cut into two to produce filter tipped cigarettes.[36]

ii) Technology of cigarette packaging

In the modern industrial history of cigarette packaging, there were two important developments according to Young (1916): "The application of efficiency methods to mechanical and human labour in the handling of materials, and the supplanting of wasteful and insanitary ways of packaging" and "marketing with the economical and sanitary sealed package system".

Package making was a crude affair in the early days of the manufacture of the cigarettes, which were the times that cigarettes were hauled in bulks from the production places to the retailers to be sold (Young, 1916).

The history of the individual paper bag is coincidental with the history of the modern cigarette. The paper bag (a one-piece container flapped over at the top) caused waste problems since the tobacco in the cigarette quickly dried and came out of the cigarette and out of the loosely made container into the pocket of the smoker when it was being carried about (Young, 1916).

Although it was not come across in the literature of Turkish cigarette packaging, it is probable that paper bags were used to carry cigarettes in the Ottoman Empire period and/or in Turkey. On the other hand, it is known that together with tobacco boxes; cigarette boxes were used to carry cigarettes, which were made from different materials such as tin and silver. According to Varış[37], these tin packages were brought from France since the tobacco monopoly was run by the Regie Company in the last years of the Ottoman Empire.

Young (1916) states "Wrapping the individual bundles of cigarettes in foil before inserting in the container was the first great step forward in packaging. This helped to keep cigarettes in good condition, but did little toward eliminating waste, and nothing at all toward increasing convenience".

[36] Personal interview with Barış Karacaoğlu (2009).
[37] Personal interview with Tunca Varış (2008-2011).

After the paper bag, the ‘shell and slide’ box was introduced in the United States of America; one box within another, one sliding inside the other, with a flap that folded over the cigarettes. The foil wrapper was retained in this box as well. This box kept the cigarettes not only in good condition but also it was a great convenience and an eliminator of waste (Young, 1916).

The manufacturing of ‘shell and slide’ cigarette packages is explained as follows: Shells were printed, scored and cut from cardboard outside the factory. Slides were mainly made in the cigarette factories. They were cut from large pieces of cardboard, printed and scored for bending in a single machine, where long strips were made ready for packaging machine. The slides first went into a machine for forming. Then they were brought to filling machines, where cigarettes rolled down an incline while at the same time paper-back foil was fed from a roll. The foil was cut at required length and fell on to one of the containers, which was then filled with seven cigarettes first, then seven cigarettes again, and at last with six cigarettes. These three layers of cigarettes, with the foil beneath them, were pressed down into the container. Then the foil was folded over the cigarettes. In the last process, the completed foil package was forced into one of the labelled shells (Young, 1916).

By this way, the consumer dealt directly with the manufacturer, whose aim was cigarettes in every package to be sold in the original container at a uniform price, and every grain of the tobacco to remain in each cigarette until taken from the package by the smoker (Young, 1916).

These ‘sliding’ and also the ‘hinged-lid’ packages, which are further explained and exemplified in the thesis, were partially being made by hand and machinery in Turkey. ‘Hinged-lid’ packages were manufactured from 2 cm. long cartons, which were called *lamba*; then labelled papers were pasted on them; then they were filled with cigarettes and the folded edges of the cartons were pasted by hand; then the packages were opened from three edges with a razor.[38]

These packages being manufactured by hand was due the oval cigarettes. Young (1916) states “Oval cigarettes are packed into their boxes by hand, and this shape includes all Turkish and so-called ‘Egyptian’ cigarettes –mostly all the cork tipped cigarettes on the market”; and he adds “No machine has yet been invented that will do the work economically, and every attempted invention has failed for the reason that the oval shape does not lend itself to rolling”. However, in 1916, Young was

[38] Personal interview with Tunca Varış (2008-2011) and Alparslan Çetin (2010).

optimistic about the packaging machinery of oval cigarettes that they would be perfected one day.

One development in material was the invention of cellophane in 1911 by a Swiss chemist. After having a foil inner wrap and a paper outer wrap for a century, cigarette packages were started to be wrapped by this transparent outer wrap – cellophane- since 1940 (Hine, 1995). Hine (1995) states "...cellophane was sold on the basis of its sparkle, its transparency, and its implication that the product within was pristine, rather than for its ability to keep moisture out or for its light weight".

Cellophane was first used in *Yeni Harman* brand at the latter half of 1950s among Turkish cigarette packages.[39]

One significant innovation was the 'flip-top' packages. This new physical form that was a cardboard box with a top that flipped open was first designed for Marlboro cigarettes in 1955 by Frank Gianninoto (Hine, 1995). Hine (1995) states "Reyner Banham theorized in 1962 that the real purpose of the box was to prevent people from removing their cigarettes easily from the package". Opening the flip top was, "a mechanical ritual to be performed each time with the pack in view". Thus, he argued, the package served to remind a smoker what brand he preferred, even though "the corners of the hard box when stuffed into the traditional American shirt pocket dig into the surrounding rolls of affluent flesh every time he folds himself into the driving seat of his car". It can be said that this was an innovative way of getting the consumer's attention.

Today, the main stream in cigarette packaging is the 'flip-top' and 'soft' cups. In their manufacturing process, cigarettes that are grouped in rows of 7-6-7 are wrapped with a metalized paper similar to inner foil paper in the past. These grouped and wrapped 20 cigarettes are either wrapped with 'soft' paper or 'flip-top' folding cartons. The difference between them, other than the material, is an inner carton wrap used in 'flip-top' packages, which provides rigidity. In the packaging machine, the edge guides follow the creasing lines of the folding cartons and wrap the group of cigarettes by folding these cartons. Then the packages are wrapped with cellophane, which prevents the moisture of the tobacco and the scent coming from outside on the tobacco, besides its other effects mentioned above.[40]

[39] Personal interview with Alparslan Çetin (2010).
[40] Personal interview with Barış Karacaoğlu (2009).

iii) Printing techniques

In the 15th century printing was processed with wood blocks and in the 16th century with copper sheet in the world. In the 17th century screen printing technique and in the 18th century lithography technique was developed. New printing techniques appeared in the 19th and 20th centuries within the developments in physics and chemistry (Ödekan, 2008).

In Turkey printing technology was very limited; it hardly started at the 19th century. The first lithography workbench was constructed in the Ottoman Empire in 1831 and it became popular among public painters. In academy, wood, metal, litho, linoleum printing was taught in the 1930s. Screen printing technique was added later in the 1980s, which was preferred more due to editing and more colour options (Ödekan, 2008).

Before the Maltepe Packaging Factory was established next to İstanbul Maltepe Cigarette Factory in 1969, the packages were manufactured and printed at İstanbul Cibali Cigarette Factory, which was established in 1884.

As lithography printing technique's being first to be used in the Ottoman Empire, it was used at Cibali Factory. Later, letterpress printing, linotype machinery, offset press, rotogravure and flexography printing techniques were used throughout this time at the Maltepe Packaging factory.[41]

iv) Designers and the structure of the design department at Tekel's packaging factory

All these developments in technology mentioned above were tried to be followed by Tekel, the state monopoly of Turkey.

Tekel is known as the establishment for famous graphic designers in Turkish design history. Painters[42] became famous after working at Tekel. Ali Suavi Sonar is the first permanent staff member as painter in Tekel, who was followed by Atıf Tuna as a permanent staff member as well. There were also famous painters/designers/ academics taking jobs from Tekel as İhap Hulusi Görey, Bedri Rahmi Eyüboğlu, Mazhar Apa, Sinan Baykurt through time. There was a department for painters/designers, which was mainly dominated by one painter. Since Tekel is a state monopoly, it is closely related with politics and governments, which were closely involved with decisions of painters/designers. İhap Hulusi Görey and Atıf Tuna often complained about this situation. There are general tendencies for

[41] Personal interview with Alparslan Çetin (2010).
[42] Designers were named as painters at the first half of 20th century in Turkey.

producing new cigarette packages such as professions, fairs, exhibitions, tourism, provinces etc. While designing these packages –graphic and packaging design-, western trends in design and developments in technology are tried to be followed by Tekel (Durmaz, 2012).[43]

2.4.3.3 Socio-cultural aspects

Tobacco is so involved to humans that it has shaped and been shaped by our changing perception of our world, and it still continues to do so (Gilman & Xun, 2004). In addition to its being an important commodity worldwide, it is nearly everywhere with humans: in arts, literature, theatre, movies, music, advertisements, in the hands of famous actors/actresses and politicians as symbolic icons and so on.

In the 20th century people had many 'reasons' to smoke cigarette in terms of their addiction and psychological needs for representing their personal and cultural identities within gender, sexuality, military, autonomy, etc. in a society.

It is inevitable to see how tobacco shaped Turkish culture as well. In the introduction of "Tobacco Book"[44], editor Naşkalı (2003) summarizes them as follows; tobacco is in politics, in economy, in prohibitions, in classical Ottoman poetry, in theatre, in literature, in smuggling stories and legends, in folkloric music, in dreams as symbols, in conundrums, in funny stories, in slang language; it is the sixth finger of the poet; it is differentiated with its workers, gender, cigarette names; it is for consolation when we have melancholy, and sometimes it is the best friend that even comes to coffin with us[45].

As mentioned before, Turks were popularly known for their association with smoking in western culture with the expression of 'smoking like a Turk' that has been used in many European languages in the last century (Bilir et al, 2009).

In addition, smoking was regarded as a cultural activity mainly among men until 1980s in Turkish society (Bilir et al, 2009).

2.4.3.4 Legal issues and smoking bans

There had always been anti-propagations nearly since it was introduced to Europe. The anti-propagation activities started in the 1600s in Europe, the Middle East and in Asia; the 1800s in the Americas (Brandt, 2007); in the 1980s in Oceania; and in the 1990s in Africa (Mackay and Eriksen, 2002). Main reasons of these activities

[43] Personal interview with Ömer Durmaz (2012).
[44] Proceedings of an international symposium called "Details in Turkish Culture: Tobacco".
[45] Gökhan Semiz, a singer from Turkey, was buried with a cigarette pack and lighter. Also Frank Sinatra's will in 1998 was to be buried with his Zippo cigarette lighter.

were health issues, economical issues, morality, cultural offense, efficiency, and the cause of fire.

Tobacco was banned in 1610 by Sultan Osman the Young shortly after it was introduced to the Ottoman Empire. In the 1630s punishments became highly violent such as death penalties in the period of Sultan Murad IV. Three reasons are emphasized due to these prohibitions that are moral issues of Islam, cause of fire, and cause of social communication (Doğruel and Doğruel, 2000). The cause of social communication is stated as the biggest reason for these death penalties and the closing down of the coffee houses since it encouraged the possibility of speaking against the emperor (Yılmaz, 2003).

Anti-propagations and prohibitions caused an increase in 'snuffing' practice against 'smoking' practice in Europe and Ottoman Empire during the 18th century (Yılmaz, 2003). However, either way, they helped nothing than causing more increase in tobacco consumption (Yılmaz, 2003).

Although health has always been one of the biggest concerns, it dramatically became the biggest one in 1946 when it was scientifically proved that smoking caused lung cancer (Brandt, 2007). Since then legislation on smoking and adaptive actions of cigarette manufacturers on the contrary have continued worldwide.

2.5 Contribution to Knowledge

This thesis seeks to add to the understanding of change in the appearance of designed objects over time by providing a wider conception of change in design of Turkish cigarettes and cigarette packages from the beginning of the 20th century up to the present.

i) Evolutionary thinking and the biological view in science

Evolutionary thinking and the biological view in science provide the third view for explaining change in living organisms over time next to those religious and physics views. This third view features the biological world as being multi-casual, involving fuzzy patterns, requiring descriptive studies and historical analysis, not involving predetermined patterns and welcoming variety.

Through the analogy or the similarity, the world of artifacts –designed objects- is observed from this third view. The man-made world is perceived as a complex system with the features given above, and the artifacts are perceived as extensions of human thought that compels the study of designed objects and humans together rather than isolating them on their own.

Within this view, the change in designed objects can be described by using empirical research, which includes numerous observations and empirical –trial and error- methods, and comparative studies, which are then followed by descriptive studies.

ii) Darwinian evolution theory and the memes

Darwinian evolution theory provides long range explanations for change in designed objects, which brings together the role of the designer and the design context as the explanations for change, and adds the affects of time to this combination.

The role of the designer contributes to the formation of the designed object. The designed object becomes the extension of ideas –memes- of the designer. The design context is the complex system involving natural and man-made environments in regard to design. It is full of ideas of other people and institutions –memes-, which interact with the designer. And all these ideas and institutions co-evolve –change- over time following the requirements of Darwinian evolution theory.

Within this perspective, the change in designed objects is tested to see if it follows Darwinian evolution theory and provides a wider conception of change in the appearance of designed objects.

iii) Different types of memes: Recipemes, selectemes, explanemes

Evolutionary biology consists of two inseparable principal study areas: Inferring the history of evolution and elucidating its mechanisms (Futuyma, 1986). While the history of evolution leads to the study of 'relationships' among living things or designed objects, its mechanisms lead to the study of genes or memes –with different types of recipemes, selectemes and explanemes. These study areas are required to be synthesized for the investigation of change in design from an evolutionary perspective. By this way, partial historical studies of designed objects accumulate and link with each other leading to a more holistic understanding of change in design.

Different types of memes are useful to describe the complex interacting systems; they solve the 'problem' of the environment.

Since the selection of ideas –memes- about the designed objects happen within two kinds of environments successively; in the brains of people as the ideas, and in the environment outside the body as the sketches, computer models, prototypes, final designed objects, etc. that are the different mediums for design ideas. These different types of memes are in addition and can be named after micro and macro

levels to distinguish the designed object level and the design context level –the environment- accordingly.

Making use of different types of memes at different levels might provide a path to follow the change in designed objects through time while contributing to the description of change in the appearance of designed objects.

iv) Cigarette Packages

The change in design of Turkish cigarettes and cigarette packages are investigated in this thesis.

They relatively have simple design; were found in a relatively stable environment due to the state monopoly through time; are cultural and everyday objects; keep changing through legal issues and smoking bans recently; and are significant to Turkey.

Within these conditions, the characteristics of Turkish cigarettes and cigarette packages in a collection that have not been published before are explored in addition to the main aim of the research.

Due to these contributions to knowledge explained above, this study investigates the change in design of time-lined cigarettes and cigarette packages over time by taking an evolutionary point of view. This proposal of describing change in design might become a methodological basis for design evolution research, which may lead to other researches in this field.

3. METHODOLOGY

This chapter describes the methods used in the research and discusses the problems encountered in their use. The first part describes the research methods and aims, and their engagement with the theory used in this thesis. Then the second part shows the flowchart of steps in the research, and explains them in detail.

3.1 Research Methods, Aims and Engagement with the Theory

Design research is carried out in this thesis as Bayazıt (2004) states “The objectives of design research are the study, research, and investigation of the artificial made by human beings, and the way these activities have been directed either in academic studies or manufacturing organizations”.

Accordingly, the cigarette packages –and their inseparable contained objects, the cigarettes- are the materials of this academic research, which were used as the visual evidences for the investigation of changing appearances of designed objects over time regarding the refined research problem of this thesis: “Why and how does the design of Turkish cigarette packages change from the beginning of the 20th century up to the present?”

This thesis has explanatory and descriptive research purposes in regard to “why” and “how” research questions. Gray et al. (2007) define descriptive and explanatory research methods as follows: “Descriptive research ... highlights the outstanding characteristics of a sample, or of the population from which the sample was drawn, and explanatory research ... concentrates on cause-affect connections”. Accordingly, this thesis seeks to add to the understanding of the changing appearance of designed objects over time by revealing the change in design of Turkish cigarette packages and the cause-affect connections that lay behind them. In addition, it has an exploratory research purpose as well since it discovers and sets out the characteristics of Turkish cigarette packages in the collection that have not been published before.

On the way to add to the understanding of change in the appearance of designed objects over time, the methodological research aims of this thesis are as follows:

1) To identify and examine changes in the design of Turkish cigarettes and cigarette packages;

2) To use data gathered from the collection of Turkish cigarette packages – including cigarettes- to test Darwinian evolution theory and to examine different types of memes;

3) To compare the data gathered and evaluated from the studies of Turkish cigarettes and cigarette packages with the literature studied in order to arrive at informed conclusions that would be 'an addition to knowledge'.

The conceptual framework of this thesis was constructed on three bases due to the similarities between biological and man-made worlds. These were; i) Evolutionary thinking and the biological view in science, ii) Darwinian evolution theory and the memes, and iii) The study of designed objects: Turkish cigarettes and cigarette packages. This framework was constructed due to the following arguments of the thesis:

- Designing is a complex process and the change of designed objects require a third view within the features provided by evolutionary thinking and the biological view in science.
- Darwinian evolution theory, memes and their different types are the ways to explain the change of designed objects over time.
- Turkish cigarettes and cigarette packages provide a good example of a complex system in regard to the man-made world, and fundamental questions of design can be illuminated by subjecting the designed objects to a scientific study.

The change in designed objects is due to the role of the designer, design context, and the combination of these two with the effects of time that provide long range explanation for change. This thesis undertakes long range explanations for change which is a form of evolution. However, it does not investigate the decisions of designers; it does not interview them or review their statements about designing in published resources.

Similar research, which was explained in detail in Chapter 2, was carried out by Langrish and Abu-Risha (2008) in a paper called “Purposive Pattern Recognition: The Nature of Visual Choice in Graphic Design”. The authors showed that the designers working with a design brief knew what was needed in design and they intuitively visualized the designs from many alternatives with this consciousness. The authors explained what was going on in the head of designers as the ‘alternative visual patterns’ being compared with the ‘need pattern’ until there was a

mental ‘click’, which is the brain’s way of telling the conscious mind that there is a match between the two patterns. The authors named this mental ‘click’ as ‘Purposive Pattern Recognition’ (PPR), and revealed in their paper that PPR adds to a memetic view of change in design in a way that: “Changing idea patterns can be described in memetic terms with selectemes corresponding to the ‘need pattern’ and recipemes corresponding to the ‘alternative visual patterns’”.

This paper indicates that the contribution of designers to change in designed objects can be studied within an evolutionary account that is the different types of memes. Since the memes are in the heads of people, the designed objects are the extensions of these memes –the ideas. The different types of memes –recipemes, selectemes, explanemes- can be studied within the designed objects. Further, these memes are distinguished as ‘memes at the micro level’ to emphasize the ideas at the designed object level in this thesis.

The design context (technology, styles, economic policy, socio-cultural aspects, legal issues, other people’s decisions, customers’ demand, etc.) is responsible for the change in designed objects as well. It is a complex system in regard to natural and man-made environments surrounding the designed objects. Since this thesis studies the long range explanations for change, the design context is undertaken at a large scale as this environment is also due to change over time, which is evolutionary in some of the man-made environments. Since this is a very complex system, Langrish (2005) proposes that different types of memes contribute to simplification of this complexity. They define the ideas in the environment and how they interact with each other. Technology and styles correspond to how objects are designed and produced; they are the recipemes. Economic policy, legal issues, socio-cultural aspects, what other people and incorporation bodies want correspond to the ideas of betterness; they are the selectemes. Institutionalized ideas such as science correspond to the ideas about rationality of selectemes; they are the explanemes. These all interact with each other over time as Langrish (2005) states: “Recipeme idea patterns compete within an environment of selectemes, the selectemes themselves compete for attention and attempts at rationality also compete as explanemes”. Further, these memes are distinguished as ‘memes at the macro level’ to emphasize the ideas in the design context level in this thesis.

Different types of memes follow the requirements of Darwinian evolution theory. Consequently, the change in design of cigarettes and cigarette packages is studied with reference to Darwinian evolution theory and the different types of memes in this thesis.

The research methods that were used in this thesis are explained briefly below; and how they were applied in the research is explained in detail further in this chapter.

This research is a form of case study, in which the subject matter becomes one single case as in the studies of biology and history. Johansson (2003) states:

> When a physical artefact is the case (houses or housing areas, for instance, instead of an individual or a social group) the gap between case study and history tends to diminish. An artefact is a carrier of its history. This is what the philosopher and archaeologist Robin George Collingwood calls his "first principle of a philosophy of history: that the past which an historian studies is not a dead past, but a past which in some sense is still living in the present". The context of design and the context of use may be separated in time, but are often equally important to the understanding of the case of an artefact. In architectural research, when the case is a physical artefact, case studies often become more or less historical case studies.

Langrish (1993) identifies the aims of the 'biological' case studies, which is the methodological path followed in this thesis, as follows:

- To develop labels (codes) for use in a classification scheme
- To observe the movement of these labels (codes) through time
- To look for principles underlying this movement

Qualitative and quantitative methods are used in this thesis. Within the quantitative method; the data from the cigarettes and cigarette packages were collected by visual analysis, coded by pattern recognition and classified and organized in Excel tables, from which graphs and matrixes were obtained for a statistical analysis. Within the qualitative method, a board of time-lined cigarette packages, in which serial packages are grouped, was prepared. The data of cigarette package graphics were collected by visual analysis, coded by pattern recognition and marked in the board to obtain paths of marked codes and/or observed in detail within the groups of serial cigarette packages separate from the board.

In order to accomplish these studies that require time-lining, the unknown dates of the cigarette packages in the collection were found through a dating analysis method of Turkish cigarette packages, which was developed in this thesis.

The data from the cigarettes and cigarette packages were coded. These are the ideas for designing; they are the memes, in specific; they are the recipemes at the micro level. They correspond to ideas of 'how to make cigarettes and cigarette packages' such as '80 mm. long cigarette' or 'soft pack'. The movement of these codes –recipemes at the micro level- were revealed within graphs, matrixes, the board of time-lined cigarette packages and the groups of serial cigarette packages; and these movements were analyzed and tested to establish whether Darwinian

evolution theory is the principle underlying them by checking the evolutionary requirements that were explained in Chapter 2.

The environment is the inseparable issue of Darwinian evolution theory; these movements of codes –recipemes at the micro level- over time are due to environment. The environment -in specific, the design context- was defined before in terms of memes as technology and styles were the recipemes at the macro level; and economic policy, legal issues, socio-cultural aspects, what other people and incorporation bodies want were the selectemes at the macro level. The data of these memes at the macro level were collected from literature search, fieldwork, and interviewing in this thesis.

The interaction of these different types of memes at different levels are examined and discussed through selected narratives of examples from cigarettes and cigarette packages in this thesis in order to show how they contribute to explain the change in the appearance of designed objects over time with reference to Darwinian evolution theory.

3.2 Flowchart of Steps in the Research

The steps in the research are visualized within Figure 3.1 below. The steps in Figure 3.1 are explained in detail in this part except the dating analysis method and its results, which are explained in the next chapter.

PHASE I: Subjecting the cigarette packages to design evolution study

1) Deciding on the field of research: Design evolution
2) Defining the relevant characteristics of designed objects to be used in the design evolution study: Any cultural and everyday object significant to Turkey
3) Incorporating within different designed objects: “Olive oil bottles”, “horse carriages”, and “smoking products”
4) Studying “smoking products” and identifying their scope: Actions of the smoking routine and the main & side products used within
5) Conducting a pilot study of the action “to light” and its side product “lighter”
6) Deciding on a collection of Turkish cigarette packages for the design evolution study

Figure 3.1 : Flowchart of steps in the research.

PHASE II: Data collection, organization and analysis

Establishing familiarity with the collection of cigarette packages:

1) Preparing the card catalogue using the collector's classification

2) Transcripting the data prepared in the card catalogue into an Excel table using Microsoft Office (2007) Excel software programme

Collecting and coding the data:

1) Classifying the data as "design variables" and "context variables"

2) Collecting and coding the data of "design variables"

3) Collecting and coding the data of "context variables"

Dating analysis method and the results (explained in Chapter 4)

Quantitative translation: Analysis of the data within graphs and matrixes:

1) Organizing the data in Excel tables

2) Using "Brand/Special edition" context variable within the graphs

3) Obtaining the graphs of design and context variables

4) Bivariate analysis of design variables and obtaining the matrixes

Qualitative study of "package graphics" design variable:

1) Conducting a pilot study

2) Preparing a board of time-lined cigarette packages by using the collector's classification of cigarette packages and "Brand/Special edition" context variable

3) Collecting data by visual analysis of the "package graphics" and identifying and coding them by pattern recognition

4) Analyzing the codes in groups of serial cigarette packages and/or through the pathways that they create on the board

PHASE III: Analysis of the results

1) Analysis and interpretation with Darwinian evolution theory and different types of memes

2) Data collection for the environment (the design context)

Figure 3.1 (Continued) : Flowchart of steps in the research.

3.2.1 Phase 1: Subjecting the cigarette packages to design evolution study

i-ii) Deciding on the field of research and defining the relevant characteristics of designed objects

After it was decided that a design evolution study would be conducted within designed objects, the relevant characteristics of these objects were identified. Since the designed objects were considered to be the extensions of idea patterns – memes- and their change could be explained with Darwinian evolution theory, any everyday object could be subjected to this design evolution study. However, cultural objects are considered to provide a more explicit view of the changing idea patterns due to their more intense incorporation with people. In addition, since this research was conducted in Turkey, it was preferred that the designed objects to be studied were significant to Turkish culture.

iii) Incorporating within different designed objects

Three different designed objects were considered to be studied in compatible with the relevant characteristics identified above. These were olive oil bottles, horse carriages, and smoking products. Olive oil bottles were eliminated since the bottles were not designed generally in Turkey. Horse carriages were eliminated due to their being more nostalgic objects and, in addition, it was questionable if they were specific to Turkish culture. On the other hand, the smoking behaviour and its products were significant to Turkey within the historical, political, economic, socio-cultural aspects; and they were also everyday products. Also, the legal issues and smoking bans had brought the smoking behaviour up to a changing phenomenon of today.

iv) Studying “smoking products” and identifying their scope

When smoking products were chosen for the study, first of all the actions in a smoking routine were identified. The idea and behavioural patterns of the cigarette users were focused on for their intervention in changing smoking products. The actions identified in a smoking routine were: to carry, to hold, to present, to prepare, to light, to smoke, and to put away. Then, the products used within these actions were identified. These main products were chibouk, pipe, cigar, cigarette, and hookah; and the side products identified were lighter, matches, ashtray, mouth piece, items and packages for carrying, and items for preparing.

v) Conducting a pilot study

After the choice of smoking products, a pilot study was conducted on the action "to light" and its side product "lighter". Although the behavioural pattern of of users "lighting a cigarette" could be the primary concern, the pilot study was only focused on the idea patterns that shaped the designed objects, the lighters. The photographs of collectible lighters from a book by Clark (2002) were used to examine these idea patterns as different types of memes –recipemes, selectemes, explanemes. The idea patterns of lighters such as the attributes of lighting mechanism, material, form, and graphics were identified as memes, and their change was investigated. It was observed that the memes of lighters were changing together with the memes of technology, social class, trends, political and historical events. However, it was difficult to distinguish these memes according to different types while they were working at the micro level of lighters and at the macro level of design context, while time was also included in all these changing idea patterns. In addition, while working with the designed objects, it was easy to forget that the memes that shaped the objects were actually studied, not the objects themselves. These problems were solved later in the research when two papers, Langrish (2005) and Langrish and Abu-Risha (2008), on memes and their different types had been come across and reviewed.

vi) Deciding on a collection of Turkish cigarette packages

A collection of cigarette packages, which belongs to Tunca Varış, was located during the search for smoking products. The collection included the objects themselves; not their photographs or advertisements. The cigarette packages are cultural and everyday objects, and are significant to Turkey within the historical, political, economic and socio-cultural aspects. In addition, the legal issues and smoking bans that have been implemented around the world have impacted upon smoking behaviour. At this point, investigating the design consequences of these 'changed' and 'changing' phenomena of smoking becomes interesting and fruitful for this research. The collection includes almost 6000 cigarette packages, about 1200 of which belong to the Turkish State Monopoly. They date back from the beginning of the 20th century through to the present, representing 110 years of the Republic of Turkey, including the Ottoman Empire period. The collector, Tunca Varış[46] had worked as a tourist guide and has travelled extensively throughout Turkey to build up his collection. He states that he has the largest collection of Turkish cigarette packages as his collection was used in historical movies and documentaries,

[46] Personal interview with Tunca Varış (2008-2011).

partially exhibited in symposiums, and referenced in journals and books. However, his collection has not been catalogued, published and exhibited as a whole, and it has not been used for any design research.

3.2.2 Phase 2: Data collection, organization and analysis

This phase is explained in four parts. The first part establishes familiarity with the cigarette packages. The second part explains data collection from the cigarette packages and coding them. The third part explains the quantitative study of design variables and context variables. The fourth part explains the qualitative study of package graphics.

3.2.2.1 Establishing familiarity with the collection of cigarette packages

i) Preparing the card catalogue using the collector's classification

In order to get familiar with the cigarette packages in the collection, a catalogue of cigarette packages was prepared using the classification of the collector Tunca Varış, which is shown in Table 3.1 below.

Table 3.1 : The classification of the collection of cigarette packages by Tunca Varış.

1. Tekel 2000-2001	16. Maltepe	31. Balıkesir
2. Soldier	17. Samsun	32. Bursa
3. Atatürk	18. Turkish Cigarettes B	33. Istanbul
4. Republic of Turkey	19. Turkish Cigarettes A-Z	34. Kayseri and Konya
5. Politics	20. Jockey Club-Sipahi	35. Kocaeli and Kütahya
6. Parliament	21. Izmir Fair	36. Samsun and Trabzon
7. Yenice	22. Topkapı Palace	37. Special days and weeks
8. Yeni Harman	23. Associations-Clubs	38. Exhibitions
9. Boğaziçi	24. Kırkpınar Wrestling	39. International activities
10. Public	25. Wine	40. Festivals and feasts
11. Bafra	26. Sport	41. 50 cigarettes and more
12. Women	27. Institutions	42. Food
13. Outside Turkey	28. Republic - *tin material*	43. Other fairs in Izmir
14. Aromatic	29. Ottoman – *tin material*	
15. Private Sector Brands	30. Tekirdağ	

This classification has some problems due the hierarchic system, i.e. some popular brands have their own group such as *Bafra* classified under no. 11 while other brands with the initial letter of "B" are grouped together under no. 18. Although these hierarchical problems were realized in the classification of the collector, it was still

used in the cataloguing process of cigarette packages in order to get familiar with them.

First, a preliminary card was prepared for cataloguing after discussions with the collector, and it was used for almost 100 cigarette packages, one of which is shown in Figure 3.2 below.

No. 0020	**Date of Registration: 31.03.2008**	**Brand: Samsun 216**	**Photograph:**
GENERAL INFORMATION: Producer: **Tekel** Place of production: **İstanbul** Foreign brand: Partnership brand:		Barcode: **8 690101 110085** Price:	
Date and/or period: **2003**		Print on banderol: **"Tekel 2003"**	
Put on the market- Withdrawn from the market		Information on the front side: **Old logo of Tekel, "Samsun 216"**	
Information on the sides: On one side: **"Samsun 216", "Tekel 34277 İstanbul-Türkiye", legal warning "Harmful to health".** On the other side: **Barcode.**		Information on the back side: **Old logo of Tekel, "Samsun 216"**	

CONTEXTUAL INFORMATION:			
A. J. K. L. Cigarettes for sales and B. C. D. E. F. G. H. I. Cigarettes for different aims than sales: **A. Brand cigarettes:** **Normal** / Special edition / Slogan / Export / Import / Overseas sales-production / Anniversary			
B. Governmental institutions: Normal / Anniversary / Advertising			C. Anniversary:
D. Important days and events:	E. Statesmen:		F. Politics:
G. Turkish military: Normal / Anniversary / Advertising			H. Private institutions and entities:
I. Local administrations:	J. Others: **Overseas / Cyprus**	K. Overseas: **By Tekel / in the name of Tekel**	
L. Private brands:			
PRODUCTION PERIOD: **Constant** / Fixes periods / Ambiguous periods / For sometime / For once			
PRODUCTION AIM: Sales-overseas / Free-shops / **Sales-all market** / Sales-specific market / Promotion / Advertisement			
FACTORY: **İstanbul Maltepe Cigarette Factory**		**MANUFACTURING:** **Industrial**	

SPECIFICATIONS OF PACKAGE: Type of packaging: Box (tin) / Snap lid / Sliding / **Soft** / Box (paper) / Other		Material: Tin / **Paper**	Aim: **Preserving / Carrying**
Colours: **White, red**	Designer	Capacity (dimensions): **20 cigarettes**	
Design specifications: **Second type Samsun logo in the middle, the frame of logo is golden coloured, "Samsun 216" typeface is white coloured, "Tekel-Tekel-..." is written with golden colour on the ribbon of the cellophane**			

SPECIFICATIONS OF CIGARETTE: Length: **85 mm** Profile: **Round** Thickness: **Regular** Tip: None / Sleeve / Tube / **Filter**
Colour of the cigarette paper: **White** Colour and texture of the end: **Yellow-orange, cork like texture**
Design specifications:

INFORMATION ABOUT CONSUMPTION: Target consumer: Place of sales:	**OTHER INFORMATION:**

Figure 3.2 : An example of a preliminary card for the *Samsun 216* brand.

This preliminary card contained too much and diverse information about cigarette packages and it was difficult to organize them when the number of cigarette packages –almost 1200 packages- in the collection was considered as well. Therefore, a more modest card that focused on design was prepared for cataloguing, and applied to all cigarette packages in the collection. An example of these cards is shown in Figure 3.3 below.

<table>
<tr><td rowspan="2"> 
</td><td colspan="4">Collection Group and No.
WINE - 05</td></tr>
<tr><td colspan="4">Name – Brand
TURKEY V. WINE COMPETITION</td></tr>
<tr><td>Front
Illustration of a wine glass in front of fairy chimneys with light yellow background</td><td>Back
Illustration of a wine glass in front of fairy chimneys with light yellow background</td><td>Colour
Yellow, orange, red, brown</td><td>Year-Period
1986</td><td>Price
210 TL</td></tr>
<tr><td>Producer-County
Tekel (Monopoly), Istanbul</td><td>Packaging
Paper (soft cup)</td><td>Capacity
20</td><td>Dimensions
Samsun type</td><td>Barcode
-----</td></tr>
<tr><td>Cigarette length
85 mm.</td><td>Cigarette profile
Rounded</td><td>Cigarette tip
Filtered</td><td colspan="2">Notes
"25-26 October 1986"; the warning of “Cigarette damages health”; and information about the city of Ürgüp.</td></tr>
</table>

Figure 3.3 : An example of a card of *Wine No-5* from the catalogue.

ii) Transcripting the data into an Excel table

The raw data collected in the catalogue were transcribed into an Excel table using the Microsoft Office (2007) Excel software programme.

Actually, the catalogue did not have photographs of the cigarette packages – different from the card shown in Figure 3.3 above. The photographs of cigarette packages were taken later and linked to the Excel table in order to make further visual analysis on photographs, and refine and organize the data in the Excel table simultaneously.

This preparation of a catalogue of cigarette packages, both in cards and in an Excel table, included a sketchy visual analysis of form, function, graphics and texts of the cigarette packages; and included implications for the design elements of cigarettes

from the package configurations, which were also discussed with the collector Tunca Varış[47].

The cataloguing process of the collection provided familiarity to the cigarette packages; provided a base for further data collection; and helped to realize the problem of unknown dates of the cigarette packages, which were required to be found for this research.

3.2.2.2 Collecting and coding the data

i) Classifying the data as "design variables" and "context variables"

The raw data gathered from the catalogue of cigarette packages implied two different kinds of variables within the cigarette packages. These were the design variables and the context variables.

Design variables are the design related variables of cigarettes and cigarette packages that refer to the design elements of cigarette and cigarette package making; in other words, they are the ideas of cigarette and cigarette package making, which is called recipemes at the micro level in this thesis.

Context variables are the variables of cigarette packages that refer to the actions taken by the Turkish State Monopoly due the economic and political issues, and the socio-cultural aspects of Turkey. They are the ideas of the state monopoly reflected on the cigarette packages not in a designerly way so that they correspond to the selectemes at the macro level. If these ideas contribute as the design elements of cigarettes and cigarette packages, then they correspond to the recipemes at the micro level.

ii) Collecting and coding the data of "design variables"

In order to collect data of design variables, the design elements of cigarettes and cigarette packages were identified separately.

The cigarettes affect the cigarette packaging; they are the parts of an inseparable whole in a way that the change in cigarette design is closely linked to the change in design of cigarette packages. Therefore, the design elements of cigarettes were required to be identified next to the design elements of cigarette packages.

The design elements of cigarettes that would be studied as the recipemes at the micro level in this research were determined as follows: Length, thickness, calibre

[47] Personal interview with Tunca Varış (2008-2011).

form, and tip. These elements were determined due to their direct relationship with the design of cigarette packages.

Material and colour of the cigarettes, and material, colour and texture of the cigarette tips were also determined as the design elements (the recipemes at the micro level for cigarettes) to be studied first although they were not directly related to the design of cigarette packages. These studies could not be completed due to limited access to cigarettes sealed inside the packages. However, these limited data sets were referenced later in the research during the interpretation of the results.

Taste and quality of the tobacco used in cigarette making were also determined as the design elements to be studied. However, they were rather considered to be part of context variables later due to their close association with economic and political issues, and socio-cultural aspects of Turkey; and so were studied accordingly. The idea of making the taste and the quality of the tobacco correspond to both recipemes at the micro level and the selectemes at the macro level.

Qualitative methods were used in the data collection of these determined design elements. The data was collected by visual analysis of cigarettes themselves inside the packages and by visual analysis of informative texts written on the packages. However, most of the packages were sealed and could not be opened; in addition, the texts did not always give specific information about these design elements. Therefore, the data were also collected by implications from the packages, by reviewing specific characteristics of brand cigarettes in literature and by discussing with the collector[48]. Still, some of the cigarettes that were in packages could not be studied and were recorded as NA (not applicable) during the data collection.

As explained, the data were collected due the determined design elements of cigarettes, and then they were coded as the recipemes at the micro level. Rose (2007) explains the coding method as "'... attaching a set of descriptive labels (or 'categories') to the images". In this research, codes or labels were attached to the collected raw data by pattern recognition. Boyatzis (1998) defines pattern recognition as "...the ability to see patterns in seemingly random information". Accordingly, patterns were searched among the raw data of cigarettes and they were coded as the recipemes at the micro level as shown in Table 3.2 below.

[48] Personal interview with Tunca Varış (2008-2011).

Table 3.2 : Recipemes at the micro level for cigarettes.

Design Variables: Cigarettes	
Design elements	**Codes**
Cigarette thickness	“Regular”, “Thick”, “Slim”, “NA”, “Mixed”
Cigarette calibre form	“Oval”, “Round”, “NA”, “Mixed”
Cigarette length (mm.)	“68 mm.”, “74 mm.”, “80 mm.”, “85 mm.”, “100 mm.”, “160 mm.”, “NA”, “Mixed”
Cigarette tip	“Filter”, “Sleeve”, “Mouthpiece & Sleeve”, “Plain”, “NA”, “Mixed”

The code of “NA” means “not applicable”, and it is observed in all determined design elements of cigarettes. “NA” refers to cigarette packages whose cigarettes could not be coded due the limited access to the packages.

The code of “Mixed” is also observed in all determined design elements of cigarettes, and it refers to cigarette packages that contain a mixture of cigarettes. These packages could not be coded regarding a single type of cigarette.

The rest of the codes written in Table 3.2 above are explained further with visual examples in Chapter 5.

Two more codes could be included to the design element cigarette thickness, which were “Very Slim” and “Very Thick”. These were reviewed in the first list of cigarettes dating back to 1906 at the Ottoman Empire period (Doğruel and Doğruel, 2000). However, the cigarette packages in the collection from that period did not contain any cigarettes inside, and informative texts written on the packages did not mention any of these codes.

The design elements of cigarette packages as the recipemes at the micro level were required to be identified clearly for data collection as well.

Klimchuk and Krasovec (2006) state the design elements of packaging as “...form, structure, materials, colour, imagery, typography, and ancillary design elements with product information...” DiFranza et al (2002) states the design elements of cigarette packaging in two categories: Package graphics include colours, graphic elements, proportioning, texture, material, typography; and package configuration include form, opening mechanism, and again the materials and the texture. These design elements as the recipemes at the micro level are used in various combinations to create the desired cigarette package.

In the light of this, the main categories of cigarette packaging can be stated as package configuration and package graphics. The design elements of cigarette

packages that would be studied as the recipemes at the micro level in this research were determined due to these categories as follows:

- For the study of package configuration; form, opening mechanism, capacity, and materials were the identified design elements.
- For the study of package graphics; imagery, typography, and colour were the identified design elements.

In addition to the studies of package configuration and package graphics through their identified design elements, manufacturing of cigarette packages was also determined to be studied in order to observe the technology used for cigarette packaging in general, which correspond to the recipeme at the macro level.

The size was also identified as a design element among package configuration at first; and the dimensions of packages were measured and recorded accordingly. However, the data collected were diverse and another determined design element (the recipeme at the micro level), capacity would provide sufficient information about the package so that the size was not studied any further.

Qualitative methods were used in data collection of these determined design elements (the recipemes at the micro level). The cigarette packages themselves and their photographs were visually analyzed, and the relevant literature was reviewed about the manufacturing process of the cigarette packages (the recipeme at the macro level).

During the data collection of the recipemes at the micro level, it was realized that the study of package graphics was required to be different than the study of package configuration. The data of package configuration were explicit; they could be coded by pattern recognition after the data were collected, and the visual analysis of cigarette packages could be processed without observing all the packages at the same time. On the other hand, the data of package graphics were implicit; the processes of collecting data, and identifying and coding the data by pattern recognition worked in parallel and required a visual analysis of all cigarette packages at the same time.

This difference affected the analysis of data. A quantitative method was used for the analysis of the data of package configuration and a qualitative method was used for the analysis of the data of package graphics, which are explained further. Only the design element colour, which belonged to package graphics, could be studied quantitatively and qualitatively.

The determined design elements of package configuration as the recipemes at the micro level and their codes are shown in Table 3.3 below.

Table 3.3 : Recipemes at the micro level for cigarette packages.

Design Variables: Cigarette packages	
Design elements	**Codes**
Package form	“Soft Pack”, “Sharp-Corner Box”, “Round-Corner Box”, “Octagonal-Corner Box”
Package opening mechanism	“Soft”, “Envelope”, “Flip-Top”, “Flip-Top (Long Edge)”, “Hinged-Lid”, “Hinged-Lid (Short Edge)”, “Sliding”
Package capacity	“3”, “4”, “5”, “10”, “20”, “25”, “50”, “84”, “100”, “120”
Package materials	“Paper”, “Transparent Paper”, “Paperboard”, “Tin”
Package colours	“Red”, “Blue”, “Brown”, “Yellow”, “Black”, “White”, “Silver Gilt”, “Golden Gilt”, “Orange”, “Green”, “Gray”, “Pink”, “Purple”
Package manufacturing	“Hand”, “Machine”

These codes shown in Table 3.3 above are explained further with visual examples in Chapter 5.

Two more codes could be included to the design element package capacity, which were “500” and “1000”. The code “500” was reviewed in the first list of cigarettes dating back to 1906 in the Ottoman Empire period (Doğruel and Doğruel, 2000), and the code “1000” was discussed with Oğuztaş[49]. However, these codes have not been come across among the collection of cigarette packages as the recipemes at the micro level.

The study of package colours was processed by coding all the colours that were used in the cigarette packages in the collection. The colour variation in one package could be studied as well, which was tried at first. However, it was realized that this study was irrelevant due the different colours being used all the time in cigarette packaging and different printing techniques could not be observed from the packages by studying their colour variation.

iii) Collecting and coding the data of “context variables”

These variables of cigarette packages represent economic and political issues, and the socio-cultural aspects of Turkey. They were decided to be studied for two reasons: 1) The data from the context variables correspond to the selectemes at the macro level that change in parallel to design of cigarette packages in a complex environment; 2) They might have provided information about Turkish cigarette packages other than that could be found in literature.

[49] Personal interview with Nejat Oğuztaş (2010).

Context variables as the selectemes at the macro level were first realized during the preliminary card prepared for cataloguing of the collection. Further data collection of these variables was processed by the visual analysis of the names of the cigarettes and the informative texts written on the packages. In addition, relevant literature was reviewed and discussions were made with the collector[50].

The data were observed at manifest and latent levels. Manifest level indicates the data is directly observable in the information and latent level indicates the data underlying the phenomenon (Boyatzis, 1998). The names of the cigarettes and the informative texts written on the packages provided some of the contextual data at manifest level and implied some others at latent level.

Collecting, organizing and coding the data by pattern recognition was quite complex since this was a data-driven, inductive process. After several trials, collected data were organized within the context variables as the selectemes at the macro level and their codes were determined accordingly as shown in Table 3.4 below.

There were some other context variables, which were specifically determined to find the unknown dates of the cigarette packages. These are explained within the dating analysis method in Chapter 4.

The codes of “None” and “None / NA” were observed in all context variables. These codes refer to “not observed” and “not observed and/or not applicable” data.

The rest of the determined context variables and their codes shown in Table 3.4 are also the results due the characteristics of Turkish cigarette packages gathered from the collection. These are explained further in Chapter 5.

The context variable “Brand/Special Edition” was the most important contribution of this study of context variables. It was realized at latent level; however this covered all the cigarette packages in the collection and divided them into almost two equal halves. Among 967 cigarette packages in the collection, which could be studied, 414 of them were coded with ‘Brand’ and 553 of them were coded with “Special Edition”.

Therefore, this context variable “Brand / Special Edition” was used to analyze the other context variables and the design variables in the overall research.

In addition, a qualitative study wanted to be carried out on brand images in relation to socio-cultural aspects in Turkey; however it would be another research topic and could not be accomplished satisfactorily within the limits of this research.

[50] Personal interview with Tunca Varış (2008-2011).

Table 3.4 : Selectemes at the macro level derived from the cigarette packages.

Context variables	Codes
Brand / Special Edition	“Brand”, “Special Edition”
Manufacturing Factories	“Adana”, “Ballıca”, “Bitlis”, “Istanbul-Cibali”, “Istanbul-Maltepe”, “Istanbul (Cibali or Maltepe)”, “Izmir”, “Malatya”, “Samsun”, “Tokat”, “NA”
Sales	“For Sale”, “Not For Sale”
Distribution	“Domestic / NA”, “Villages / Eastern Anatolia”, “Specific Place”, “Specific Place / City”, “Duty Free”, “Overseas”
Company types	“State Monopoly Brands”, “Other Company Brands”, “Partnership brands”
Export / Import	“Export”, “Import”, “None / NA”
Sub-brands	“216”, “Gold”, “Luxury”, “International”, “Lights”, “None”
Differentiation due to consumers	“For Women”, “For Foreigners”, “For Employees / Members”, “None / NA”
Quality	“High”, “Regular”, “None / NA”
Taste	“Mentholated”, “Odorous”, “Strong”, “Aniseed”, Mild-Aromatic”, “None / NA”
Anniversaries / Memorials / Special days and weeks	“Anniversary”, “Memorial”, “Special Days and Weeks”, “None”
Events / Institutions	“Event”, “Institution”, “Hybrid”, “None”
Provinces	“Adana”, “Afyonkarahisar”, “Aksaray”, “Amasya”, “Ankara”, “Antalya”, “Aydın”, “Balıkesir”, “Bilecik”, “Bitlis”, “Bolu”, “Burdur”, “Bursa”, “Çanakkale”, “Çorum”, “Denizli”, “Diyarbakır”, “Edirne”, “Erzurum”, “Eskişehir”, “Gaziantep”, “İstanbul”, “İzmir”, “Kahramanmaraş”, “Karaman”, “Kastamonu”, “Kayseri”, “Kırşehir”, “Kocaeli”, “Konya”, “Kütahya”, “Malatya”, “Manisa”, “Mersin”, “Muğla”, “Nevşehir”, “Rize”, “Sakarya”, “Samsun”, “Siirt”, “Sinop”, “Sivas”, “Şanlıurfa”, “Tekirdağ”, “Tokat”, “Trabzon”, “Yalova”, “Zonguldak”, “None / NA”

3.2.2.3 Quantitative translation: Analysis of the data within graphs and matrixes

i) Organizing the data in Excel tables

Once the data are coded and organized accordingly, there is a wide range of methods of analysis. Boyatzis (1998) states “These methods can be seen as lying on a continuum. At one end is an exclusively qualitative and verbally descriptive approach to the phenomenon under investigation; at the other end is a primarily quantitative approach of statistically analyzing the phenomenon”.

For a basic quantitative study, which is primarily a counting of the codes, the determined design variables and context variables were organized in two separate

Excel tables and their codes were recorded in these tables accordingly, as shown in Tables 3.5 and 3.6 below with samples of cigarette packages being recorded.

ii) Using "Brand/Special edition" context variable within the graphs

Both of these tables included the columns of "Name", "Photograph", "Date Range" and "Brand/Special Edition". Cigarettes' names were written in the "Name" column; their photographs were linked to the classification name and no. given by the collector in the "Photographs" column; and the codes of "Brand/Special Edition" context variable were recorded in the "Brand/Special Edition" column.

The unknown dates of the cigarette packages were found by the dating analysis method, which is explained in Chapter 4. By this method, 967 packages could be studied out of 1161 in the collection, which were ranged in 5 years, except the Ottoman Empire period of 1900-1923. However, this period was also included in the study in order to observe the changes from the Ottoman Empire to the Republic of Turkey. These 5-year and 23-year ranged dates were decided to be used due to their appropriateness for the statistical analysis and accordingly they were recorded in the "Date Range" column in the Excel tables.

The "Name" column was to indicate the codes of cigarette package being recorded. The "Photograph" column was consulted for further visual analysis of the cigarette package being recorded when necessary. The "Date Range" and "Brand/Special Edition" columns were used for counting the codes of "Brand" cigarette packages and "Special Edition" cigarette packages separately through years.

Table 3.5 : The Excel table for design variables of cigarettes and cigarette packages (recipemes at the micro level): Some recorded examples.

Name	Photograph	Date range	Brand / Special edition	Cigarette thickness	Cigarette calibre form	Cigarette length (mm.)	Cigarette tip	Package form	Package opening mechanism	Package capacity	Package material	Package colours	Package manufacturing
Salon	50 cigarettes and more I No 4	1935-1939	Brand	NA	Round	160	Mouthpiece & Sleeve	Sharp-Corner Box	Hinged-Lid	20	Paperboard	Blue, Silver Gilt	Hand
Gelincik	Women No 8	1950-1954	Brand	Slim	Oval	68	Plain	Sharp-Corner Box	Hinged-Lid	20	Paperboard	Red, Green, Silver Gilt	Hand
Samsun	Samsun II No 3	More than 5 years	Brand	NA	Oval	68	NA	Round-Corner Box	Hinged-Lid	25	Tin	Yellow, Brown, Golden Gilt	Hand
Diplomat	50 cigarettes and more II No 7	1965-1969	Brand	NA	Oval	80	Plain	Sharp-Corner Box	Hinged-Lid	50	Paperboard	White, Black, Red, Golden Gilt	Hand
Bafra	Bafra No 7	1990-1994	Brand	Regular	Round	68	Plain	Soft Pack	Soft	20	Paper	Blue, White, Golden Gilt	Machine
Meltem	Aromatic No 16	1995-1999	Brand	Regular	Round	100	Filter	Sharp-Corner Box	Sliding	5	Paperboard	Green, Blue, White, Golden Gilt	Hand
Cool Black Style	Turkish A-Z I No 20	2005-2010	Brand	Regular	Round	100	Filter	Octagonal-Corner Box	Flip-Top	20	Paperboard	Black, Red, Golden Gilt	Machine
Samsun 216	Samsun II No 9	2005-2010	Brand	Regular	Round	85	Filter	Sharp-Corner Box	Flip-Top	20	Paperboard	Red, Blue, White, Golden Gilt	Machine
Konya Fuarı	Konya No 10	1980-1984	Special Edition	Regular	Round	85	Filter	Soft Pack	Soft	20	Paper	Blue, White	Machine
Eshot Um. Müdürlüğü	Kurumlar III No 10	1955-1959	Special Edition	NA	NA	68	NA	Sharp-Corner Box	Hinged-Lid	20	Paperboard	Red	Hand

Table 3.6 : The Excel table for context variables of cigarette packages (selectemes at the macro level): Some recorded examples.

Name	Photo.	Date range	Brand / Special edition	Manufacturing factories	Sales	Distribution	Company types	Export / Import	Sub-brands	Consumer signification	Quality	Taste	Anniversaries / Memorials / Special days and weeks	Events / Institutions	Provinces
Samsun	Sam-sun I No 23	More than 5 years	Brand	NA	Not For Sale	Domestic / NA	Partner-ship Brand	None / NA	216	None / NA	None / NA	None / NA	None	None	None / NA
Kadınlara Mahsus	Women No 3	1900-1922	Brand	NA	For Sale	Domestic / NA	State Monopoly Brand	None / NA	None	Women	High	None / NA	None	None	None / NA
Meclis	Parlia-ment No 11	1980-1984	Brand	NA	For Sale	Specific Place	State Monopoly Brand	None / NA	None	Employees / Members	None / NA	None / NA	None	Institution	None / NA
Uluslar-arası Selçuk-Efes Festivali 1979	Festival ve Şenlik III No 16	1975-1979	Special Edition	Izmir	For Sale	Specific Place / City	State Monopoly Brand	None / NA	None	None / NA	None / NA	None / NA	None	Event	Izmir
Balıkesir Milli Fuarı	Balıke-sir No 10	1975-1979	Special Edition	NA	For Sale	Specific Place / City	State Monopoly Brand	None / NA	None	None / NA	None / NA	None / NA	None	Event	Balıkesir

iii) Obtaining the graphs of design and context variables

Quantitative translation is the translation of one's qualitative codes into numeric representations, which can then be used for quantitative description of the units of analysis (Boyatzis, 1998). For numeric representation 'nominal scoring' is used in this research. "Nominal scoring is determining which of two or more coding options is satisfied" (Boyatzis, 1998). For example, a code for package material includes four categories; tin, paper, transparent paper, and paperboard that call for a nominal scoring of the qualitative information. Scoring and coding become the same act when the data studied is truly nominal.

Through these counting of codes design variables and context variables of "Brand" and "Special Edition" cigarette packages were visualized with graphs that show the change in frequency of codes through years. These graphs revealed how recipemes at the micro level for cigarettes and cigarette packages change through the years within "Brand" and "Special edition" packages separately. The graphs that were obtained from the Excel tables are as follows:

- Graph of "Brand / Special Edition" cigarette packages
- Graphs of design variables of cigarettes for "Brand"
- Graphs of design variables of cigarettes for "Special Edition"
- Graphs of design variables of cigarette packages for "Brand"
- Graphs of design variables of cigarette packages for "Special Edition"
- Graphs of context variables of cigarette packages for "Brand"
- Graphs of context variables of cigarette packages for "Special Edition"

iv) Bivariate analysis of design variables and obtaining the matrixes

A further quantitative analysis, in which the time was disregarded, was the bivariate analysis of design variables of cigarettes and cigarette packages. This is the analysis of relating two variables to one another (Gray et al, 2007). In three different matrixes, the associations between the design variables of cigarettes/cigarette packages were measured by simply counting the number of cigarette packages that was recorded for both of the design variables. Three matrixes prepared for this analysis are as follows:

- Matrix of design variables of cigarettes
- Matrix of design variables of cigarette packages
- Matrix of design variables of cigarettes and cigarette packages

These matrixes revealed how recipemes at the micro level for cigarettes and cigarette packages acted together as in the black box systems, and they also

revealed the pattern structure of the memes rather than the unit one, which were both mentioned in Chapter 2.

3.2.2.4 Qualitative study of “package graphics” design variable

The study of package graphics (the recipemes at the micro level), which included the studies of design elements of imagery, typography and colours, required a qualitative method for collecting data, identifying and coding the data, and organizing and analyzing the codes. This was due the visual study that the design elements required.

i) Conducting a pilot study

First of all, a pilot study was conducted by using Microsoft Office (2007) Power Point and Word software programmes in order to overcome the problem of working with a large number of visual design elements and to work out how to study them.

Following on from this, the photographs of cigarette packages, which were grouped in the files according to the classification of the collector, were initially visually analyzed and searched for a pattern. After trial and error, it was realized that the imageries of some of the packages were changing from being “Realistic to Abstract” and vice versa. Therefore, this keyword of change was determined to be studied further.

For the study of “Realistic/Abstract” imageries, a date-card was prepared in the Word programme for each cigarette package that was selected from the collection. A date-card included the photograph of the package, its classification name and no. given by the collector, its date and price, name of the administration of the state monopoly, the manufacturing factory, and information about health warnings. An example of the date-card is shown in Figure 3.4 below. This was done due to the problem of unknown dates of the cigarette packages, which was not solved at that time. Then, these date-cards were time-lined by the dates written on them in a page in Power Point programme as in the example shown in Figure 3.5 below, While the dates of packages (if they were unknown) were found and recorded in their date-cards in Word, the change in date-cards would be projected to the page in Power Point simultaneously for the rearrangement of packages along the new time-lining since they were hyperlinked. By doing so, date finding and visual analysis methods could be processed continuously and at the same time on the cigarette packages.

Wine No-5
1986
210 TL
Tekel, Istanbul
Health warning as text

Figure 3.4 : Date card for *Wine No-5* prepared in Word programme.

Figure 3.5 : An example of a page of date-cards prepared in Power Point programme.

Figure 3.5 above shows the visual analysis of 22 cigarette packages of *Kırkpınar Wrestling* due to the code “Realistic/Abstract”. Levels of abstraction were recognized during this analysis as well. Here, 5 examples are chosen from these packages to show the detailed analysis of levels of “Realistic/Abstract” study that are given in

Figure 3.6 below, Level 1 represents the most “Realistic” level and Level 5 which represents the most “Abstract” level. These levels were also obtained within the images by use of different graphics techniques that were photography, illustration, painting, and logo.

Figures 3.5 and 3.6 reveal the change of “Realistic/Abstract” recipeme at the micro level through years by assigning levels to these changes.

The “Realistic/Abstract” study was carried out with other cigarette packages as well. Other examples for this code (the recipeme at the micro level) were the cigarette packages of *İznik Grape Festival* as shown in Figure 3.7 below. It was realized that the change from “Realistic to Abstract” in imageries was consistent within the dates from mid-1960s to 1971 in both Figures 3.6 and 3.7. The study of this code could be continued and the key dates could be checked within the other compatible cigarette packages. By doing so, the change in recipemes at the micro level for package graphics could be analyzed through years in the collection of cigarette packages.

Level 1-(1968) Level 3-(1971) Level 3-(1972)

Level-2 (1975) Level-4 (1980) Level 5-(1981)

Figure 3.6 : “Realistic/Abstract” study on *Kırkpınar Wrestling* cigarette packages.

Figure 3.7 : "Realistic/Abstract" study on *İznik Grape Festival* cigarette packages.

ii) Preparing a board of time-lined cigarette packages

This pilot study was helpful to show the best way to study package graphics qualitatively. However, it was quite complicated to find the dates of the cigarette packages and make the visual analysis at the same time. In addition, cigarette packages could not be analyzed all together due to the size of the collection. Also the Power Point programme did not provide a sufficient field to order the cigarette packages in a time-line and analyze them.

In order to overcome these problems, first of all the unknown dates of the cigarette packages were found separately by dating analysis method, which is explained in Chapter 4. Then, a board of time-lined cigarette packages was prepared in Adobe Photoshop CS3 Extended Software programme since it provided a field as large as required.

After the dates and/or date ranges were found, cigarette packages were time-lined in groups by using the collector's classification. They were grouped in two different coloured boxes that indicated the "Brand/Special Edition" context variable. Figures 3.8 and 3.9 below show two examples of groups of cigarette packages that were time-lined in boxes due the collector's classification and that were coloured with blue and green due to the "Brand" and "Special Edition" variables.

Figure 3.10 below explains the symbols in Figures 3.8 and 3.9. The red rectangular symbol indicates the series of cigarette packages in the boxes that can be observed in Figure 3.9. Figure 3.9 shows the *Balıkesir* city related cigarette packages. One of the serial cigarette packages, shown in a red rectangle, is directly related to

Balıkesir city, and the other, shown in another red rectangle, is related to its town, *Ayvalık*.

The blue line indicates the dates of cigarette packages ranged from 1 to 5 years, and the red line indicates the dates of cigarette packages ranged more than 5 years. This means that more cigarette packages were studied in the board than were studied in the Excel tables. 1050 cigarette packages were studied instead of 967; and 442 of them were “Brand” cigarette packages and 608 of them were “Special Edition” cigarette packages.

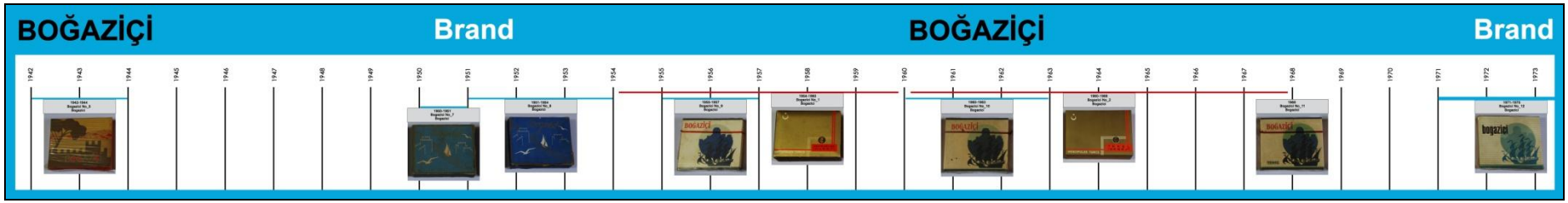

Figure 3.8 : The group of time-lined *Boğaziçi* “Brand” cigarette packages.

Figure 3.9 : The group of time-lined *Balıkesir* related “Special Edition” cigarette packages.

Figure 3.10 : Explanation of symbols in Figures 3.8 and 3.9.

After the cigarette packages were organized by time-lines within the groups of coloured boxes, these boxes were gathered and ordered in a time-line within a board. As such, the cigarette packages could be analyzed within the groups and the groups could be analyzed within the overall board. Figure 3.11 below shows the hypothetical scheme of the board of time-lined “Brand/Special Edition” cigarette packages. The board was also divided into two sub-boards for further analysis, one for “Brand” cigarette packages and one for “Special Edition” cigarette packages due to board’s being too large.

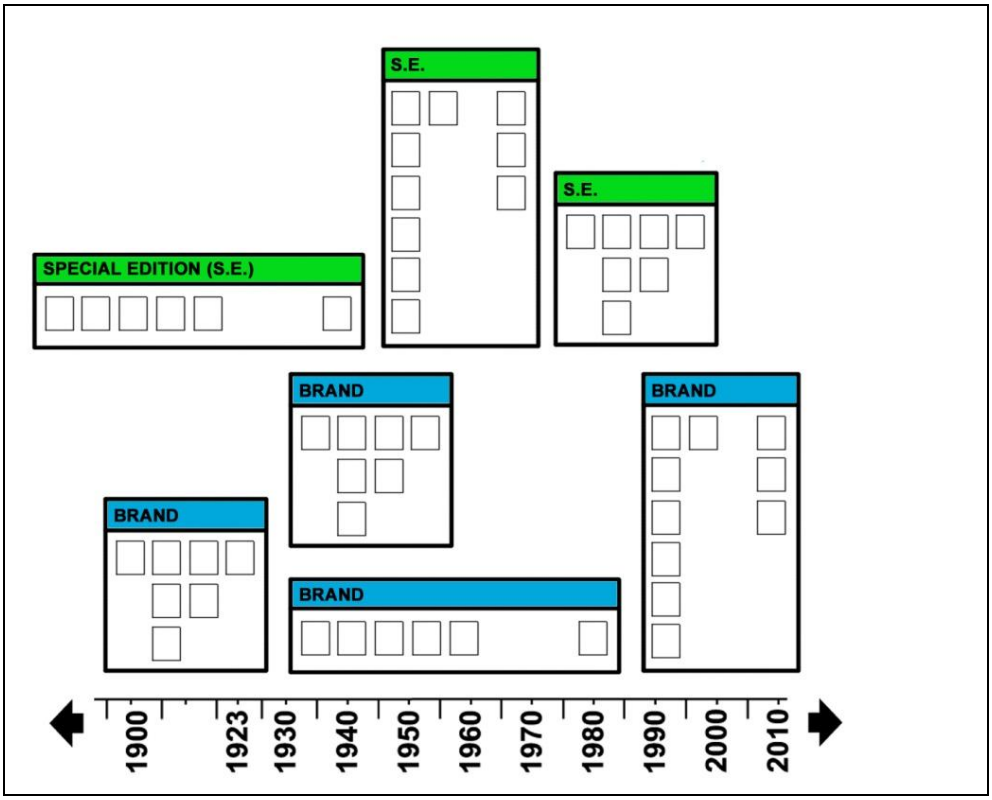

Figure 3.11 : The hypothetical scheme for the board of time-lined “Brand/Special Edition” cigarette packages.

iii) Collecting data by visual analysis of the "package graphics" and identifying and coding them by pattern recognition

After the board was prepared in a way that it would be helpful during the visual analysis of cigarette packages, it was analyzed for patterns of change in package graphics including the imagery, typography and colour design elements as the recipemes at the micro level.

These design elements of package graphics were analyzed to identify the codes (the recipemes at the micro level) to be studied in the overall collection. These identified codes were "Photo realistic/Realistic illustration/Abstract", "Plain/Fancy", "Style", "Motif", "Only colour change" and "Health warning".

iv) Analyzing the codes in groups of serial cigarette packages and/or through the pathways that they create on the board

These codes could be analyzed on the board in two different ways. They could be analyzed in serial cigarette packages, i.e. which codes appear in *Samsun* brand cigarettes and when. Or one code could be coloured on the board to analyze the pathway of that code moving through time in the overall collection, i.e. "Realistic" packages could be coded with red colour and "Abstract" packages could be coded with orange colour and the movement of these colours could be analyzed through years on the board. Both of these studies could then be explained within selected samples of cigarette packages for further analysis and interpretation with reference to the theory.

The analysis of keywords within the serial cigarette packages (A, B, C) and within the pathways (reds and oranges) in the overall collection is visualized on the hypothetical scheme as shown in Figure 3.12 below.

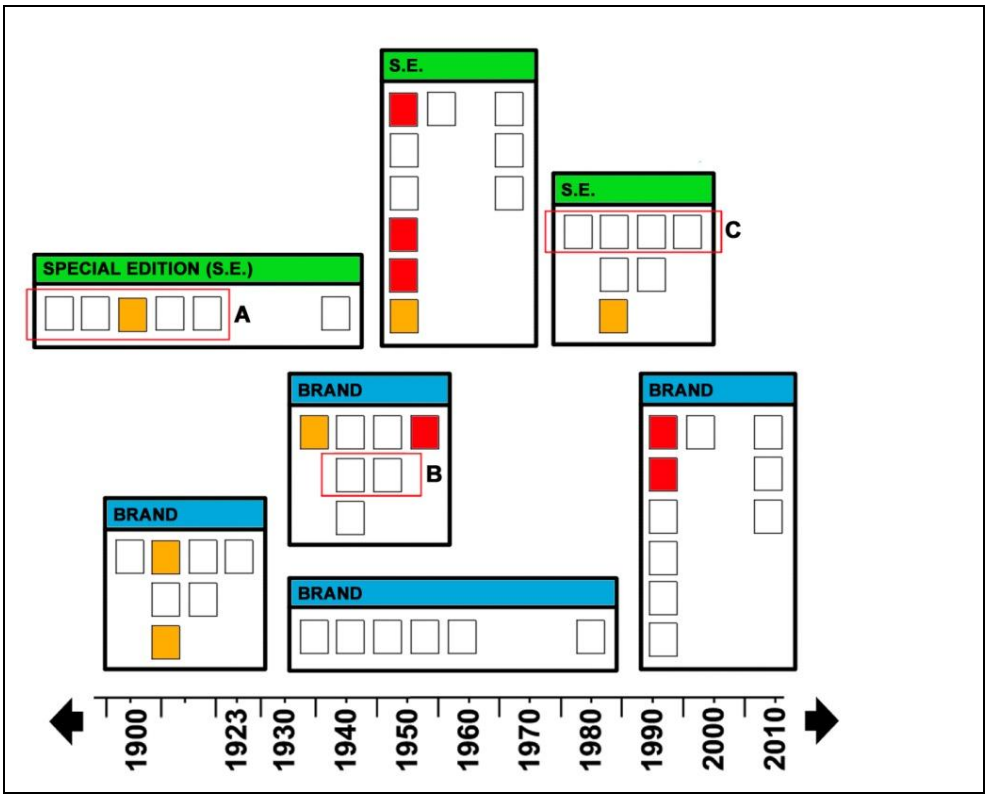

Figure 3.12 : The analysis of the codes on the hypothetical scheme.

3.2.3 Phase 3: Analysis of the results

This part explains how the results were analyzed and interpreted with reference to the theories used in this thesis.

Darwinian evolution theory cannot work without an environment. The designed objects change in an environment that is a vast complex system. In order to make the analysis and interpretation of the results that is the movement of codes (the recipemes at the micro level) through time revealed within graphs, matrixes, the board of time-lined cigarette packages and the groups of serial cigarette packages, the data for the environment (the design context) is required to be collected. How these data were collected is also explained in this part.

3.2.3.1 Analysis and interpretation with Darwinian evolution theory and different types of memes

Table 3.7 below gathers what have been explained so far in this chapter with the phenomenon of interest of this research.

Table 3.7 : Phenomenon of interest of the research.

Phenomenon of interest	**Unit of analysis**	**Unit of coding**	**Method**	**Results**
Change in designed objects: Description with Darwinian evolution theory, memes, and their different types	Collection of cigarette packages	Design variables: Design elements of cigarettes and cigarette packages	Quantitative (Package configuration, cigarette configuration)	Graphs, matrixes
			Qualitative (Package graphics)	Boards, groups of serial packages
Introduction to Turkish cigarette packages & Selectemes at the macro level	Collection of cigarette packages	Context variables	Quantitative	Graphs

One phenomenon of interest is to investigate whether the change in designed objects is due to the Darwinian evolution theory and can be described within Darwinian evolution terms. In order to understand if the change in the design of cigarettes and cigarette packages follows Darwinian evolution, it should fulfil the following requirements: 'Variety', 'competition between varieties', 'imperfect replication', 'appearance of new varieties', 'repetition of the process' and 'change in rules of competition'. These requirements, (which were explained previously in Chapter 2), were investigated among the cigarettes and cigarette packages in the collection at first.

One other related phenomenon of interest is the memes. Darwinian evolution theory requires an imperfect replicator, which is the meme. Memes are in the brains of people and designed objects are the visual productions of them. The study of the change in design of cigarettes and cigarette packages is actually the study of these memes (Langrish, 2004); and these memes follow the Darwinian evolution theory and its requirements. Therefore, what is investigated among the cigarettes and cigarette packages is actually the memes.

The other related phenomenon of interest is different types of memes, which is developed by Langrish (1999). Different types of memes overcome the problem of describing the complexity in the change of designed objects. As mentioned before, cigarette packages change within a vast complex system. Their change cannot be studied solely on its own. Darwinian evolution theory, which is descent with

modification under the influence of natural selection, cannot work without an environment. The designed objects are enclosed within a complex system of designers/producers, entities of design context, and other entities. The change in designed objects is due to change of these entities, and different than biology, some of these entities change due the Darwinian evolution theory, which makes things more complex.

But how do different types of memes –recipemes, selectemes, explanemes- contribute to descriptions of these interacting entities in the complex system? Langrish (2005) explains it as follows: “Recipeme idea patterns compete within an environment of selectemes, the selectemes themselves compete for attention and attempts at rationality also compete as explanemes”.

Two kinds of recipemes, selectemes, and explanemes work at micro and macro levels while they interact among themselves and with each other as a result of change in design of cigarettes and cigarette packages.

In design terms, recipemes at micro level are the ideas of “how to make a cigarette”, “how to make a cigarette package”, and “how to print graphics on the packages”; which have alternatives. Recipemes replicate by imitation (Langrish, 1999). The design variables of cigarettes and cigarette packages that were studied quantitatively and qualitatively were the recipemes at micro level. Their results – graphs, matrixes, boards and groups of serial packages from the package graphics studies- indicated what was going on with recipemes at micro level through years, and they were analyzed and interpreted accordingly.

Recipemes at macro level are the external recipemes. They are the competing technologies of manufacturing cigarettes, manufacturing cigarette packages, and printing techniques, which were explained in Chapter 2. Other macro level recipemes are the competing graphic styles, trends, and fashions. The data about technologies and graphic styles in Turkey and the rest of the world were collected briefly from fieldworks to factories, interviews and literature searches. They were then used to analyze and interpret the recipemes at the micro level. In other words, they were used to describe the change in design of cigarettes and cigarette packages.

Selectemes at the micro level are i.e. the ideas of “which length is better than the others for the cigarette”, “which opening mechanism is better than the others for cigarette package”, and “which type face is better than the others for package graphics”. Selectemes replicate by societal means (Langrish, 1999). These

selectemes at the micro level are at the designers' level and they were not studied in detail in this research; only an example is given for this decision making process of the designers in the last chapter.

Selectemes at macro level are the external selectemes. They provide an environment, where recipemes compete at micro and macro levels. They are economics, politics, rules/legal issues, socio-cultural aspects, and what customers want. The data about economics, politics, rules/legal issues (specifically on health regulations of cigarettes), and socio-cultural aspects in Turkey were collected from literature searches; they were then used to analyze and interpret the recipemes at the micro level. In short, they were used to describe the change in design of cigarettes and cigarette packages.

When there is a reason, explanemes come into play at micro and macro levels. They replicate by learning, which requires a language or symbols (Langrish, 1999); and they can work in pairs with selectemes, i.e at micro level "why that length is better than the others for the cigarette". At the macro level, they form part of an evolutionary system which sometimes involves institutions such as explanemes of science, regulation, law and government that compete within institutional frameworks. The explanemes, which are the attempts at the rationality of selectemes, were collected from literature search when necessary. They were then used to analyze and interpret the recipemes at the micro level. In short, they were used to describe the change in design of cigarettes and cigarette packages.

The phenomenon of interest on context variables of cigarette packages was a bit different. They were investigated to discover some characteristics of cigarette packages that have not been published before. More importantly, they were investigated if their graph results could be used as the selectemes at the macro level since they are the messengers of the environment –the vast complex system- in which these Turkish cigarette packages were produced.

The structure of these memes is like a pattern, not like a unit; they are continuously interacting with each other within black box systems.

Facsimiles of memes at micro and macro levels are represented in Figure 3.13 below. In the figure, the macro level changes were named as "recipemes and selectemes at the macro level", which were due to the Darwinian evolution outside of biology, and as "other man-made environment and natural environment", in which populations were due the Darwinian evolution in biology and the others just happened or changed non-evolutionarily. All these entities together provide the

environment or the complex system in which the objects are designed and changed. In Figure 3.13, cigarettes and cigarette packages with their package configurations and graphics were shown as recipemes at the micro level, which were changing or co-evolving within this complex system.

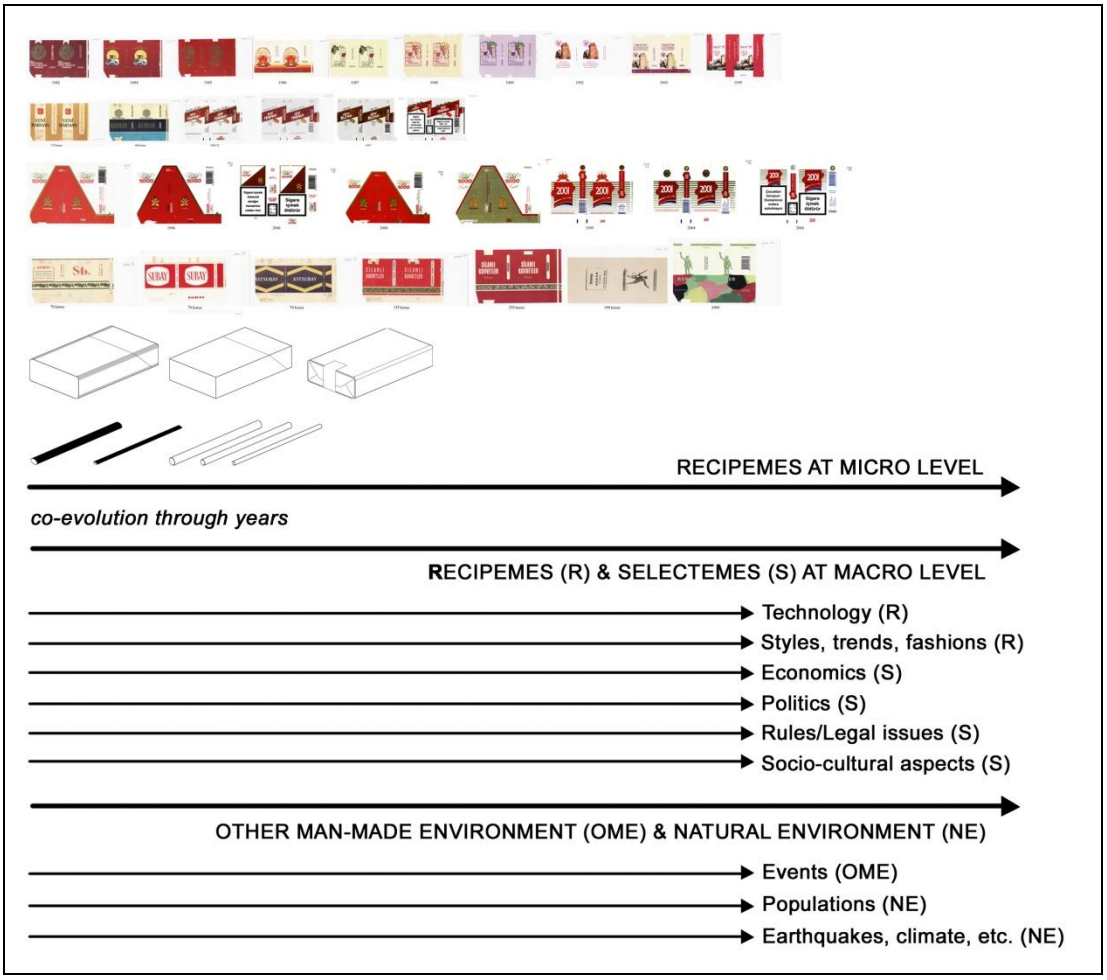

Figure 3.13 : A model of memes at micro and macro levels.

3.2.3.2 Data collection for the environment (the design context)

This part explains how data for memes at the macro level and for other entities in the environment of complex system were collected for the use in the analysis and interpretation of recipemes at the micro level, in other words, in the description of change in design of cigarettes and cigarette packages.

The data about population change in Turkey was collected from a historical statistics study by Maddison (2008). The Excel table was converted into a graph as shown in Figure 3.14 below. However, this graph with merely increasing population of Turkey was not useful in this research other than indicating the increasing demand on cigarettes, which caused the acceleration in the technology of cigarette making.

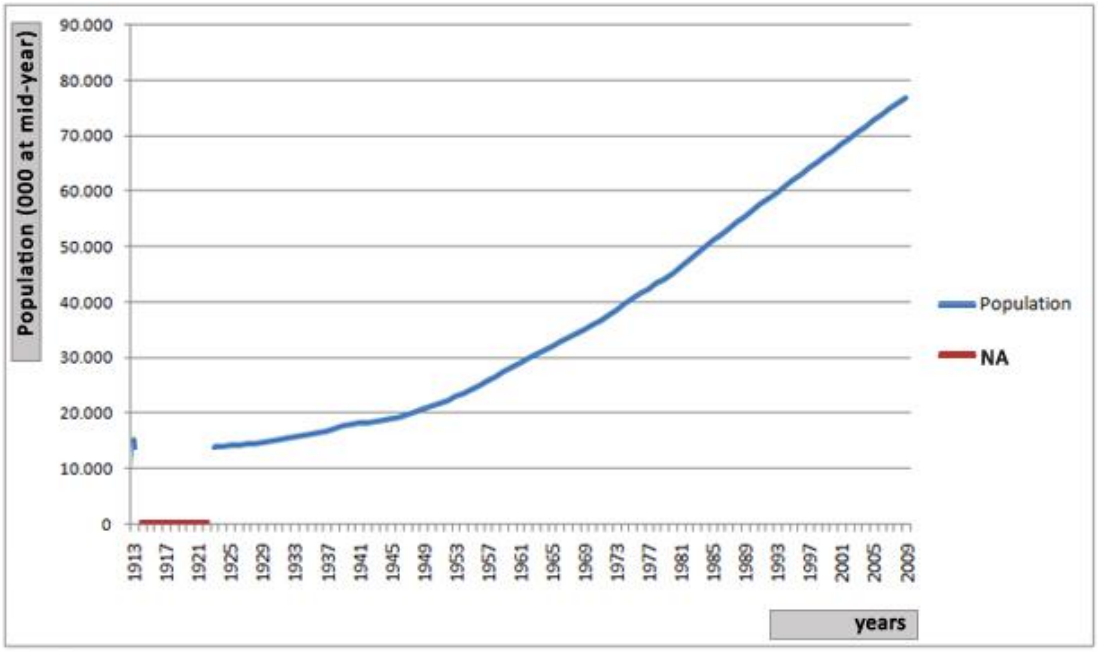

Figure 3.14 : Change of population in Turkey between 1913 and 2008 (after Maddison, 2008).

The data about economic change in Turkey was collected from another historical statistical study by Maddison (2008), which focused on Gross Domestic Product (GDP) per capita in Turkey. Its Excel table was also converted into a graph, which is shown further in Chapter 5.

The data about changes in the economic policy of Turkey came from an article by Eroğlu (2008), which was then gathered in a time-line that is shown further in Chapter 5.

The chronology of events in Turkey and in the world was collected from a series of books on Turkish history.[51] In addition, the chronology of events/decisions of the Turkish State Monopoly regarding its tobacco department was gathered from the history section of the General Management of Tobacco, Tobacco Product, Salt and Alcohol Business Enterprises (TTA)'s website and augmented from a report that was prepared by Bilir et al (2009) for World Health Organization (WHO). Then all of these events/decisions were gathered in a time-line, which is shown further in Chapter 5.

[51] Boratav (2008) from "Türkiye Tarihi No.5 - Bugünkü Türkiye, 1980-2003" (Turkish History No. 5 - Turkey Today, 1980-2003) on pages 190-197; by Akşin (2008a) from "Türkiye Tarihi No.5 - Bugünkü Türkiye, 1980-2003" (Turkish History No. 5 - Turkey Today, 1980-2003) on pages 351-356; and again by Akşin (2008b) from "Türkiye Tarihi No.4 - Çağdaş Türkiye, 1908-1980" (Turkish History No. 4 - Contemporary Turkey, 1908-1980) on pages 605-618.

The data about the technologies of manufacturing cigarettes and cigarette packages, and the printing techniques, which were explained in Chapter 2, were collected from literature searches, fieldworks and interviewing.[52]

The data about changes in graphic styles were collected from literature searches. In addition, a graphic style time-line was used from the book "Graphic Style: From Victorian to Digital" by Heller and Chwast (2000), which is partly shown further in Chapter 5.

The data about change in socio-cultural aspects in Turkey were collected from literature searches.

In addition to all, the owner of the collection, Tunca Varış was interviewed with on any subject about the Turkish cigarette packages during the undertaking of this research (2008-2011).

[52] Two fieldworks were made, one of which was to Torbalı Cigarette Factory of PhilSA Company in Izmir (during 2009). The manufacturing process of cigarettes and cigarette packages was observed, and Barış Karacaoğlu, Manager for Technical Training at the factory, was interviewed (during 2009). The other fieldwork was made to state monopoly's Tekel Packaging Factory in Maltepe, Istanbul (during 2010), where the printing technologies could be observed. There, Alparslan Çetin, Manager for Production, was interviewed (during 2010) about the technologies used in the past and today. More data on the manufacturing of cigarettes was collected by interviewing Nejat Oğuztaş (during 2010), a veteran tobacco expert, who blended one of the most famous cigarette brands, *Maltepe*, in Turkey.

4. DATING ANALYSIS METHOD AND THE RESULTS

The dates of cigarette packages in the collection are of critical importance in this research. Without them, the graphs of context and design variables could not be obtained and the board of time-lined cigarettes could not be prepared. In short, this research could not be processed without dates.

At first, there were 1161 cigarette packages in the collection. 45 of them were removed from the collection due to their being the same packages (two packages were sometimes kept in the collection since their front and back sides were different), prototype packages (that were never appeared in the market), fake packages (that were made in Bulgaria and being sold illegally) and tobacco packages. 653 packages out of the remaining 1116 packages had dates written on them; however 463 cigarette packages did not have any dates written on them. Therefore, a method was required to be developed and applied to the collection in order to find the dates or at least to limit the date range of the cigarette packages, which is explained in this part.

4.1 Developing the Method

A three-staged method was developed to find the unknown dates of the cigarette packages in the collection. These were: i) Preparation of a periodical list of the cigarette brands in the market; ii) Identification of the date-related context variables from the cigarette packages, and; iii) Analysis of the date-price relation of the cigarette packages.

i) Preparation of a periodical list of the cigarette brands in the market

At this stage, Turkish cigarette brands and the partnership brands (that were produced by the state monopoly and their partners such as Tabacs Turcs S.A. from Switzerland and TETA from Germany) were listed periodically showing their introduction to and withdrawal from the market.

This periodical list was prepared by two key references[53]. The former is a document of the state monopoly for adjusting the prices of cigarette brands. It includes some of the enactments of the state monopoly about tobacco and cigarette brands from 1875 until 1989. In addition, it provides some lists by date, where cigarette brands and their prices are given (see Appendix A). The latter is the book prepared for the state monopoly, which is a historical study for its foundation and activities starting from the Ottoman Empire and concluding in 2000. It includes five lists (see Appendix B), first of which shows the cigarette brands produced in 1906, and the other three show the prices of the cigarette brands from dates of 1924, 1928 and 1942. The fifth list, which was prepared by the authors, shows the periods of cigarette brands in the market from 1905 up to 2000. In addition, the book includes a little information about the dates of cigarette brands in its reviews.

Other supportive references were also used to prepare the periodical list of the cigarette brands and the partnership brands. 32 *Tekel Haber Bülteni* and *Tekel Dergisi* –magazines between 1982 and 1999, and *Tekel Annual Report of 1998* were reviewed to check the advertisements of the new cigarette brands and to find information about partnership brands.

A list of cigarette brands in the market from 1950 until 1973 (see Appendix C) was given in the 50th anniversary report of the state monopoly[54]. The dates from this report were compared with the ones in the periodical list. This report also included information about the partners of the state monopoly that provided the date range of partnership brands.

The known dates of the cigarette packages in the collection were also checked with all the data gathered from different references. The data from key and supportive references were written in columns of a table and compared for each cigarette brand. Some contradictions were observed between these references and even among themselves during these comparisons. The enactments of the government in the first key reference included the dates for the introduction of a new cigarette into or its withdrawal from the market, which were one or two years different from the dates of cigarette brands given in the price lists of the same reference. This was because the production and distribution of the cigarettes in the market took time as well as their being sold out during the withdrawal. Some dates were not matching between different references either. In order to avoid further mistakes, it was

[53] *Tütün ve Tütün Mamüllerinde Devlet Tekelince Yapılmış Olan Satış Fiat Ayarlamaları* (İlter, 1989) and *Osmanlı'dan Günümüze Tekel* (Doğruel and Doğruel, 2000).
[54] *Cumhuriyet'in 50'ci Yılında Tekel* (Saltan et al, 1973).

decided to determine the date range of the cigarette brands as wide as possible; even they were started from the dates given in the enactments.

The prepared periodical list of the cigarette brands and the partnership brands are given in Appendix D. Specifications of the cigarettes and cigarette packages were written in the periodical list as well, because one cigarette brand included different cigarette and package designs that had different periods in the market. Also there were some changes in the name of the brands, which were also noted in the list. *Bafra* brand from the periodical list is given as an example below in Table 4.1.

Table 4.1 : Example of *Bafra* brand in the periodical list of cigarette brands.

Name	Specification	Date	Notes
Bafra Maden	Thin-oval. Plain. Packaging capacity: 20-100.	1924-1957 (1906-1957)	There can be before 1924. *İkinci Bafra* brand is in 1906. 1957 date is from the collection.
Bafra Milli or Milli	Thin. Packaging capacity: 20-100.	1924-1925 (1906-1925)	There can be before 1924. *İkinci Bafra* brand is in 1906.
	Thick. Packaging capacity: 20-100.	1924-1925 (1906-1925)	
Bafra	Filtered. Length: 85 mm.	1983-1989	
	Special packaging with motifs. Packaging capacity: 20-50 in 1971 and 1975.	1971-1980	
	Plain. Length: 68 mm.	1940-1995 (1906-1995)	*Bafra* is the continuity of *Bafra Milli* and *Bafra Maden* brands.

ii) Identification of the date-related context variables from the cigarette packages

The cigarette packages were analysed for context variables that could provide clues in finding their dates. The following date-related context variables were identified from the cigarette packages at this stage:

1) Name and/or symbol of the country: Since the Republic of Turkey was founded in 1923; name and/or seal of the Ottoman Emperor were used on the cigarette packages before 1923 while name and/or flag symbols of the Republic of Turkey were starting to be used by 1923.
2) Language: Three different languages, except English for the export or advertising cigarettes, were observed on the cigarette packages. Only Ottoman or both Ottoman and French languages were used until 1928 due to the language of the Ottoman Emperor and the Regie Company. On 1

November 1928, the Republic accepted the Latin alphabet and started to use the Turkish language. Both Turkish and French languages were used until the beginning of the 1930s. Only the Turkish language was used afterwards.

3) Name and/or logo for the administration of the state monopoly: *İnhisar* and *tekel* are synonym words for 'monopoly'. *İnhisar* is Arabic and *tekel* is Turkish, and they were used mainly in different periods within different names and logos of the administration of the state monopoly, which are shown in Figure 4.1 below. Many different names, such as *Türkiye Tütün İnhisarı, Türkiye İnhisarlar İdaresi, Türkiye Tütün İnhisar İdaresi*, etc. were used for the administration including *inhisar* or *inhisarlar* (plural form) words. However there was no consistency in using these names at certain dates. Therefore, this period is generalized as the *İnhisar* period in the figure. *Tekel İdaresi* and *Tekel* were the other names of the administration that included the word *tekel*, which are shown in the figure as well. It was considered that common names for different periods in the figure could bring up some problems during the application of the method; however this was only one of the date-related context variables that would be checked with others. The dates in the figure were observed from the packages in the collection. Although *inhisar* and *tekel* words were used together between 1954 and 1957 in the market, they still provided information in general to limit the date range of the undated cigarette packages.

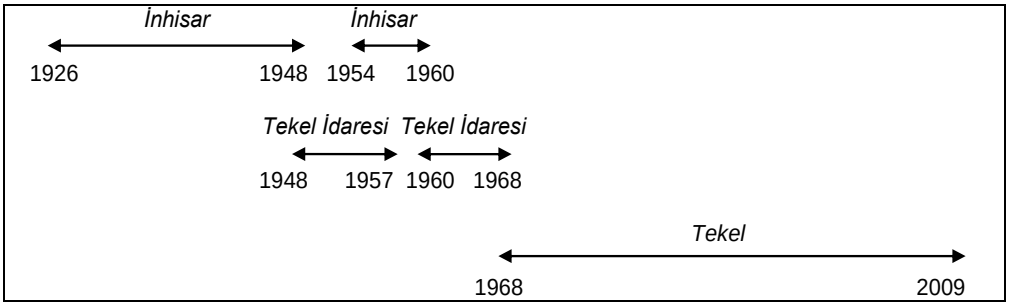

Figure 4.1 : Different names for the administration of Turkish state monopoly.

4) Banderole (a tax sticker for cigarettes): A paper by Tunca Varış (1995), named as *"Ufak ve renkli kağıt parçacıkları"*, was helpful to use banderols for finding the date range of cigarette packages (see Appendix E). In the paper, he selected 56 banderols as milestones out of 600, and listed them by date starting from banderols before 1960 up to 1994. Then he analyzed them systematically due to their graphics, colours, intentions for production and prices written on them. This was a valuable reference for the undated cigarette packages with banderols in the collection.

5) Health warning: Health warning texts and labels on the cigarette packages were analysed by date, and five periods were determined as follows:
   - First warning in 1979: "Attention: Disturbs your health"
   - Between 1982 and 2004: "Smoking is harmful to health"
   - Between 1999 and 2005: "Legal warning: Harmful to health"
   - Between 2006 and 2010: International health warning text-labels
   - Since 2010: International health warning labels with text and photographs / illustrations

   These periods did not include all the cigarette packages. In other words, health warnings were not put on all of them, except for the last two international warnings.

   It was observed that two periods intersected with different health warning texts for some time in the market, which could bring up some problems during the application of the method. However, health warnings were only one of the date-related context variables that would be checked with the others.

6) Barcode: The barcode system started to be used on cigarette packages by 1993 in Turkey, which could be checked on the undated cigarette packages in the collection.
7) Anniversary and the presidency: As it was mentioned before, some of the cigarette packages were special editions. Among these, some of them did not have dates, but included texts such as "120th Year of Ziraat Bank" or the name of the president, which led to a simple calculation of summing up the foundation date of the bank with 120, or summing up the dates of presidency, and finding the exact dates. Foundations of the institutions, first dates of the events, and the dates of presidencies were found from the Internet.

iii) Analysis of the date-price relation of the cigarette packages

One key and two supportive references were used in the analysis of relations between date and price of the cigarette packages. The monopoly document by İlter (1989), which was mentioned before, had date and price lists that had changed quite often throughout the years (see Appendix A). The lists between 1925 and 1929 included both the price per kilogram and the price per cigarette package according to amount of cigarettes included, and the lists between 1932 and 1989 included only the price per kilogram. The prices were in pennies –*kuruş in Turkey*, and they were

required to be calculated in Turkish Lira. On the other hand, the weight of cigarettes changed from one brand to the other, and some of them could be found in the other two supportive references. A book called “Tobacco in Turkey” that was prepared in 1965 by the state monopoly (see Appendix F) and a technical document that was prepared in 1972 by a tobacco expert named as Nejat Oğuztaş (see Appendix G). The document included the standards of weight, length, diameter of the calibre, moisture and nicotine for some filtered and non-filtered cigarettes. Weights of the cigarettes in these references were given in grams per one cigarette or per 1000 cigarettes, and they required to be calculated to kilograms regarding the amount of the cigarettes in one package.

4.2 Application

A three-staged method was applied to the undated cigarette packages in the collection. The date range were refined in every stage one after the other, and when needed, three of them were used at the same time for cross-checking.

In Stage 1, the date ranges from the periodical list were written next to undated cigarette packages in an Excel Programme (2007) by matching their names and design specifications. The periodical list included the cigarette brands and the partnership brands, but not the special edition cigarettes, whose dates were found in the further stages. The periodical list also included some cigarette brands that were not found in the collection.

In Stage 2, these date ranges were refined by a check list of date-related context variables, which were identified by the analysis of cigarette packages. However, there were some slight contradictions between these variables so that the date ranges were kept as wide as possible in order to avoid further mistakes at the last stage.

In Stage 3, the lists of date and price by İlter (1989) were used to further limit these date ranges. The prices were mainly given per kilogram; therefore two lists that showed the cigarette weights –one from a book by the state monopoly (see Appendix F) and the other from a technical report by Nejat Oğuztaş (see Appendix G), were used for the calculation. Since the list from the monopoly book had ranged the weights of cigarette brands by minimum and maximum, the price per kilogram for each brand’s specific package in the collection was calculated twice for these minimum and maximum weights, and was matched in the price lists to find a more limited date range. The other list from the technical report had fixed the weights of

cigarette brands; therefore these two lists were compared and used together. Only the weight of tobacco in one cigarette was considered to be shown in these lists, not the weights of filter and cigarette paper.

A simple formulation (shown in Figure 4.2) was applied to find the price per kilogram for each brand in the collection regarding the package and cigarette specifications:

$$\text{Price per kilogram for the undated package} = \frac{(\text{Price written on the package})*1000}{(\text{Weight of one cigarette in grams})*(\text{Amount of cigarettes})}$$

Figure 4.2 : Formula for the price per kilogram of tobacco.

For example, an undated package of *Samsun* brand is 60 Turkish Liras (TL) and it includes 20 cigarettes, which are filtered and 85 mm. in length. First, the weight range of this cigarette was found from the lists of cigarette weights, which was 1.24-1.32 grams. Then the formulation was applied twice for each weight as shown in Figure 4.3 below:

$$\text{Price per kilogram for undated package of Samsun brand-1} = \frac{60*1000}{1.24*20} = 2419.35 \text{ TL}$$

$$\text{Price per kilogram for undated package of Samsun brand-2} = \frac{60*1000}{1.32*20} = 2272.73 \text{ TL}$$

Figure 4.3 : An example of finding the price per kilogram for *Samsun* brand.

These prices were checked in the price lists and matched to the closest price and to its date, which was 2500 TL in 1981.

Another example; an undated package of *Bafra* brand is 160 pennies –*kuruş*- and it includes 20 cigarettes, which are unfiltered and 68 mm. in length. First, the weight range of this cigarette was found from the lists of cigarette weights, which was 0.95-1 grams. Then the formulation was applied twice for each weight as shown in Figure 4.4 below:

$$\text{Price per kilogram for undated package of Bafra brand-1} = \frac{160*1000}{0.95*20} = 8421{,}05 \text{ kuruş}$$

$$\text{Price per kilogram for undated package of Bafra brand-2} = \frac{160*1000}{1*20} = 8000 \text{ kuruş}$$

Figure 4.4 : An example of finding the price per kilogram for *Bafra* brand.

These prices were checked in the price lists and matched to the closest prices and to their dates, which were 8000 and 8750 *kuruş* between 1969 and 1971. Aside from

this example, date ranges resulted in being wider when the prices did not change every year.

Some other calculations were required as well at this stage. The price units in the lists were either in Turkish Lira or in pennies –*kuruş*-. Since 1 Turkish Lira is equal to 100 pennies -*kuruş*, the prices were adjusted when necessary. For each brand, based on the weight of an 85 mm. cigarette, the weight of a 100 mm. cigarette was extrapolated from the cigarette weight lists when necessary. In addition, weight per 1000 cigarettes was adjusted to weight per one cigarette, and then used in the formulation.

During the application, it was observed that the dates and prices of cigarettes with lengths of 68, 85 and 100 mm. were fixed in the price lists between 1975 and 1989. This was due to standard prices given to each brand with different cigarette specifications. The price per kilogram for 85 mm. cigarettes was fixed in two different groups by 1975 due to the two different qualities, and for 100 mm. cigarettes the price was fixed in one group by 1977. The price per kilogram for 68 mm. unfiltered cigarettes was fixed in four different groups by 1980 due to a wider variety of cigarette brands and differences in their qualities that were reflected in the prices. The prices were more fixed starting from these dates, and they were considered to be fixed after 1989 as well. These fixed prices were used to check the date results gathered from the formulation. In addition, the dates of a few cigarette packages of other brands, which were only observed in the periodical list but not in the price list, could be estimated regarding the similarity between prices and cigarette specifications.

In order to find the unknown dates of special edition cigarettes, dated-and-priced special edition cigarettes in the collection were investigated to establish whether their prices were fixed by dates. It was observed that the prices of special edition cigarettes were fixed by date, cigarette length, package material and package opening mechanism (see Appendix H). Therefore, this data was used to estimate the unknown dates of special edition cigarettes, which had prices written on them, in the collection.

While refining the date ranges of cigarette packages by price, the date-related context variables of Stage 2 were checked constantly, especially for the packages that did not have fixed prices.

4.3 Conclusion to Dating Analysis Method

463 cigarette packages in the collection did not have dates written on them; therefore a method for dating analysis was developed and applied.

In Stage 1, a periodical list was prepared for these cigarette packages. Since only cigarette brands and partnership brands were included in this list, it could not be used for other packages.

In Stage 2, cigarette packages were analysed for the date-related context variables that could provide clues in finding their dates or date ranges. These variables were name and/or symbol of the country, language, name and/or logo for the administration of the state monopoly, banderole (a tax sticker for cigarettes), health warning, barcode, and the anniversary and the presidency. These variables were applied to all cigarette packages in the collection by either providing a date range for them or refining the date range provided previously from the periodical list of the first stage.

In Stage 3, the date ranges were refined by the price of cigarette packages. 243 packages out of 463 had prices written on them and their date ranges could be refined; 26 packages were non-priced; and the prices of 194 packages were unknown.

Below, Table 4.2 shows the matrix for the associations of methods used on the cigarette packages in Stages 1, 2 and 3, and the numbers of cigarette packages whose dates were found by these associated methods. This matrix was used to check the usefulness of the methods in order to be used together again during the reapplication of them.

Table 4.2 : Matrix for the associations of dating analysis methods.

	A	B	C	D	E	F	G	H	J	K
A	1									
B	48	0								
C	1	2	23							
D	0	0	10	4						
E	0	0	16	1	1					
F	0	0	0	4	4	0				
G	0	0	6	0	0	0	6			
H	3	1	26	6	3	3	0	131		
J	2	7	4	3	10	9	0	10	40	
K	0	0	37	1	6	0	0	0	2	19

A: Stage 2 - Name and/or symbol of the country

B: Stage 2 - Language

C: Stage 2 - Name and/or logo for the administration of the state monopoly

D: Stage 2 - Banderol

E: Stage 2 - Health warning

F: Stage 2 - Barcode

G: Stage 2 - Anniversary and the presidency

H: Stage 3 - Formulation (price*1000) / (weight*amount)

J: Stage 1- Periodical list

K: Stage 3- Fixed price list by date for special editions

For 13 packages out of 463, none of these methods could be applied. The frequencies of date ranges for 450 packages, found by the methods above, are shown below in Table 4.3.

Table 4.3 : Frequency of date ranges for 450 undated cigarette packages in the collection

Date Range (year)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	23	28
Cigarettes (amount)	44	79	52	43	22	52	22	48	22	6	4	2	4	5	20	1	22	2

According to Table 4.3 above, date ranges up to 5 years were decided to be used in obtaining the graphs because date ranges above 5 years could be irrelevant to providing a time-line that was required for this research. In addition, the date range of 23 years, which indicated the cigarette packages of the Ottoman Empire period between 1900 and 1923, was also included in the graphs in order to observe the changes from Ottoman Empire to the Republic of Turkey.

As a result, dates and date ranges of 450 out of 463 cigarette packages were found by this dating analysis. Only 314 of them could be used together with 653 dates-known cigarette packages in the collection due the determined 5 years date range. In total, 967 cigarette packages out of 1161 –the first amount in the collection- were

used in the graphs to observe the change in design of cigarettes and cigarette packages.

The date ranges and the amount of cigarette packages assigned to them are given in Table 4.4 below. These date ranges were used to obtain the graphs, which are shown and analyzed in the following chapter.

Table 4.4 : Date ranges and the amount of cigarette packages assigned to them

Date ranges	Amount of packages
1900-1922	22
1923-1929	42
1930-1934	23
1935-1939	5
1940-1944	19
1945-1949	15
1950-1954	23
1955-1959	34
1960-1964	24
1965-1969	69
1970-1974	122
1975-1979	107
1980-1984	280
1985-1989	25
1990-1994	33
1995-1999	30
2000-2004	21
2005-2010	73

5. RESULTS AND ANALYSIS

In this chapter, the results obtained from the investigation of cigarette packages are analyzed and interpreted with reference to Darwinian evolution theory, memes, and their different types –recipemes, selectemes, explanemes in order to add to the understanding of change in the appearance of designed objects over time.

Through the initial visual analysis two types of variables were distinguished on the cigarette packages; the context variables and the design variables. A quantitative study was carried out for both the variables, from which graphs were obtained. Also, matrixes were obtained from a further study on design variables. In addition, a qualitative study was carried out for the package graphics, from which a time-line board of cigarette packages and groups of serial cigarette packages were obtained.

This chapter is divided into four main parts. The data gathered for the environment of Turkish cigarette packages is given in the first part of this thesis. Following on from this it is then explained in the following part within the graph results of context variables studies as the selectemes at the macro level. Then, the graph and matrix results of design variables that include cigarette and cigarette packaging design are given and explained as the recipemes at the micro level, which are further analyzed and interpreted with reference to the theories of this thesis. The results from the analysis are also compared to Wright's (2009) evolution and cycle research on the change of table clocks and lamps over time. Finally, in the last part, the package graphics are investigated as the recipemes at the micro level within a qualitative study. The results of this study are revealed within a time-line board of cigarette packages and groups of serial cigarette packages, which are analyzed and interpreted further with reference to the theories studied in this thesis.

5.1 Data Gathered for the Environment of Turkish Cigarette Packages

As mentioned before, in order to study how the design of Turkish cigarettes and cigarette packages has changed over time, their environment is required to be portrayed. As such, the evolution of designed objects cannot be studied without an environment.

The environment of Turkish cigarettes and cigarette packages was illustrated previously in Chapter 3, in which technology and styles were the recipemes at the macro level; economics, politics, legal issues, socio-cultural aspects, and what other people want were the selectemes at the macro level besides other man-made environment and natural environment that were not due to an evolutionary change.

Besides illustration of these memes, the technology of cigarette making, cigarette packaging and the printing in the world and in Turkey was explained in detail in Chapter 2 as the recipemes at the macro level. The data about the fashions and styles (the other recipemes at the macro level) are revealed further in this chapter.

The graphs of context variables were obtained as the selectemes at the macro level. They are explained in detail in the following part of this chapter.

The other selectemes at the macro level (economic policies of Turkey including the decisions for the state monopoly of tobacco, changing GDP per capita through years in Turkey) and the man-made events were gathered from several references as visualized below in Figure 5.1, Figure 5.2, and Figure 5.3. The changing population of Turkey was also given in Chapter 3 previously to indicate the increasing demand on cigarette consumption.

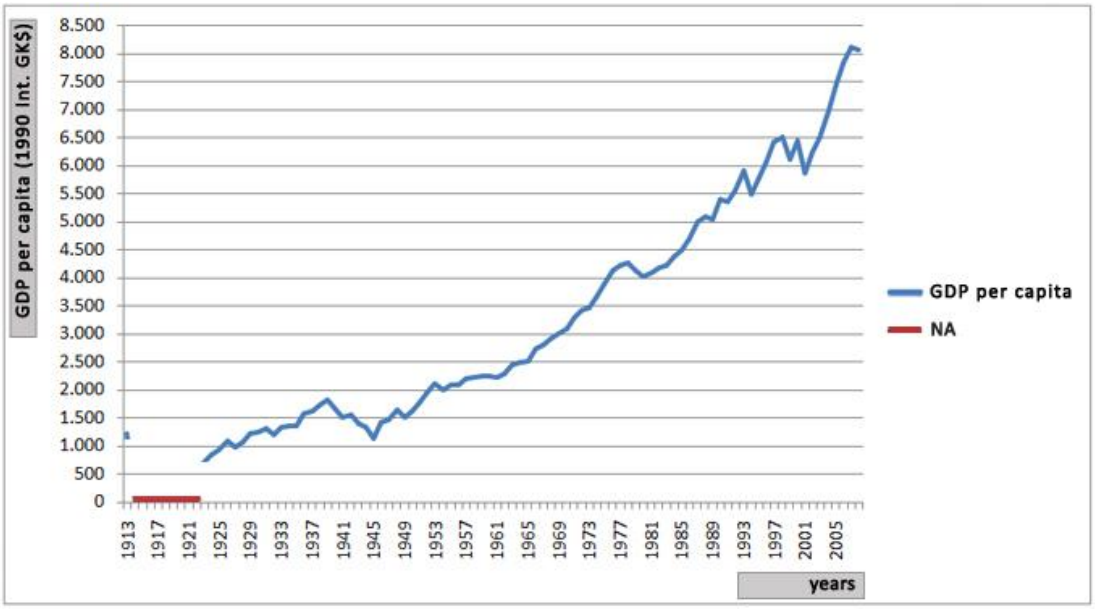

Figure 5.1 : Change of GDP per capita in Turkey between 1913 and 2007 (after Maddison, 2008).

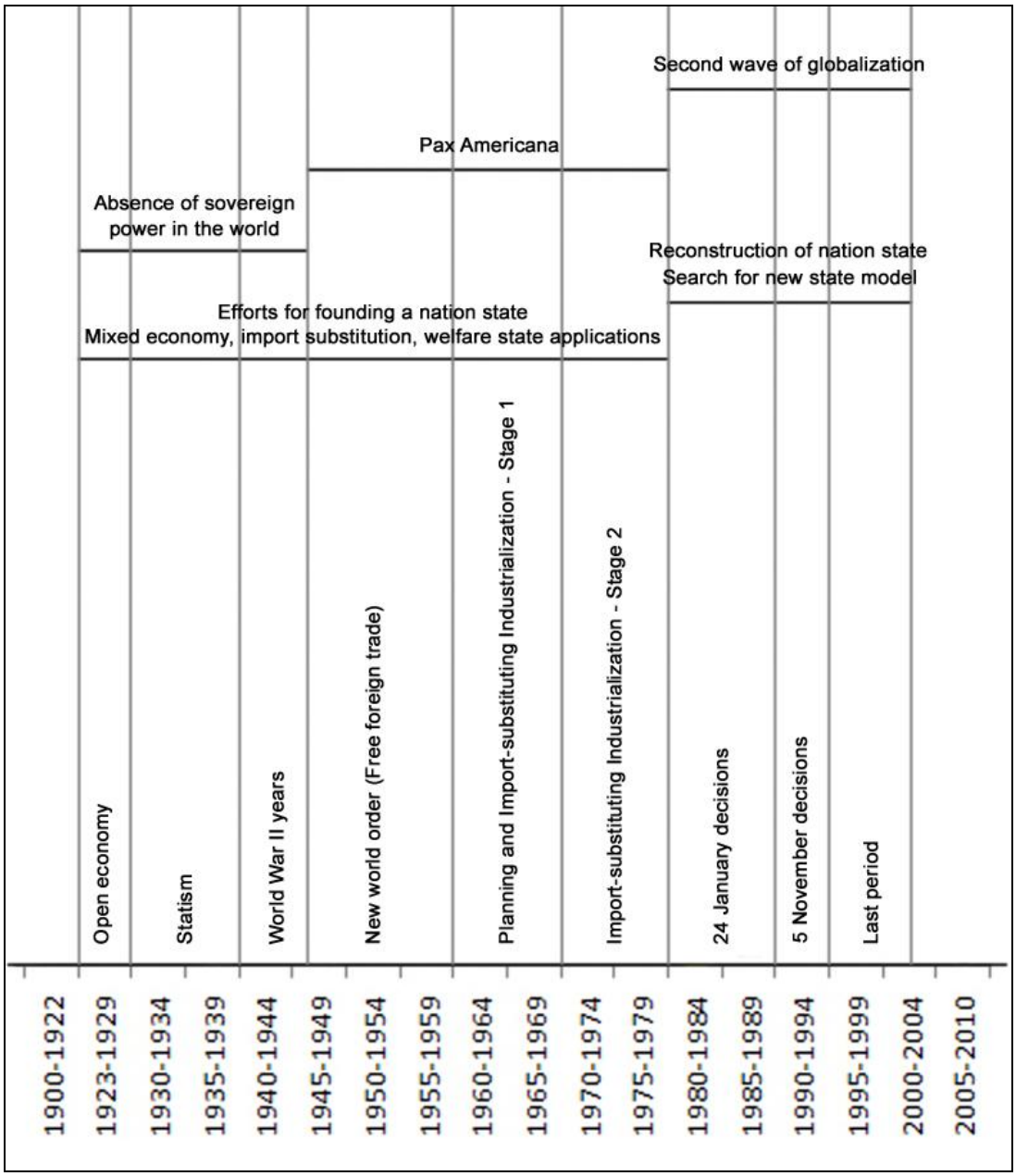

Figure 5.2 : Change of economy policy in Turkey between 1923 and 2010 (after Eroğlu, 2008).

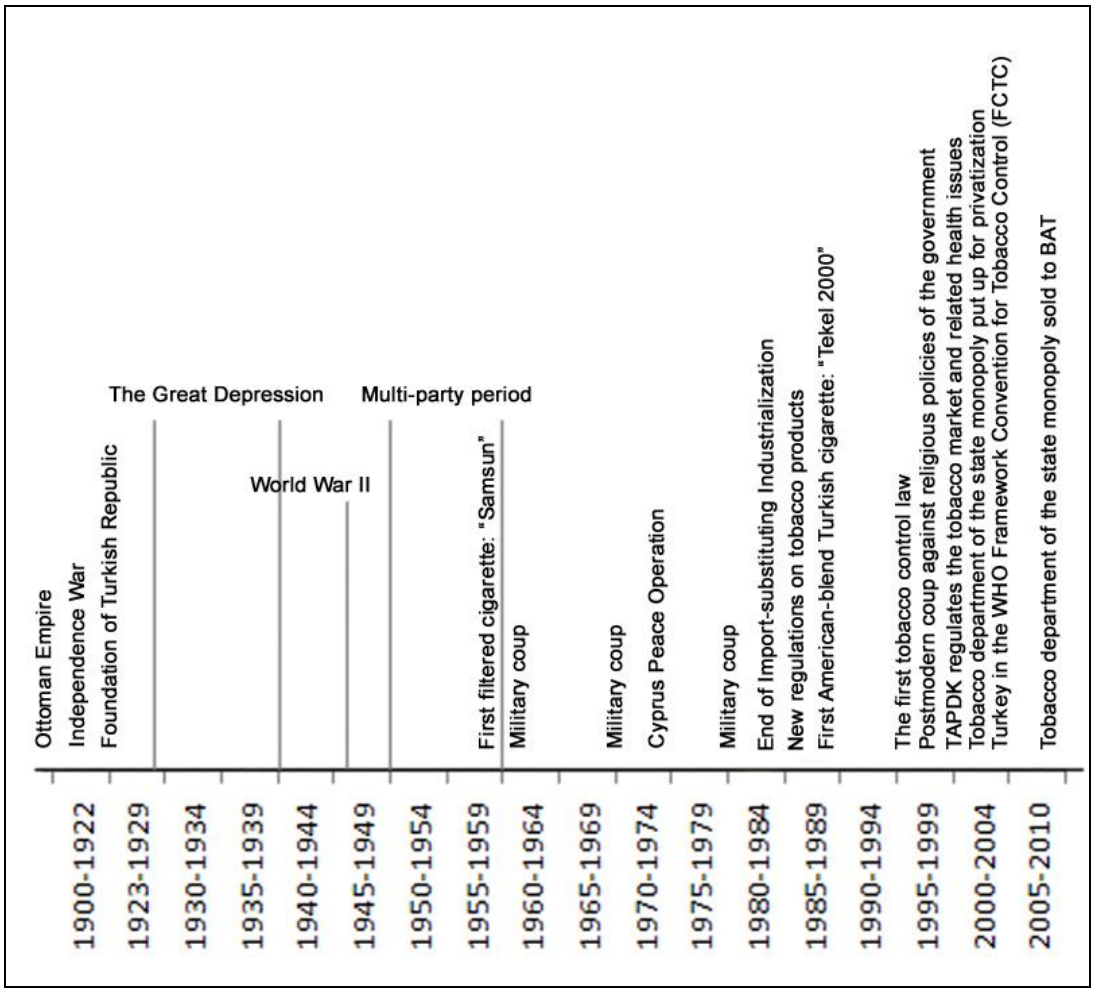

Figure 5.3 : The chronology of events in the world and in Turkey, and the chronology of events/decisions of Turkish State Monopoly between 1900 and 2010 (after Boratav, 2008; Akşin, 2008; Bilir et al, 2009; and Url-12).

These figures are explained in the following part within “Brand/Special Edition” context variable.

5.2 Graph Results of Context Variables Studies

Context variables are the variables of cigarette packages that refer to the actions taken by the Turkish State Monopoly due the economic and political issues, and the socio-cultural aspects of Turkey.

These variables provided some results for the characteristics of Turkish cigarette packages while their data were being collected, organized and coded for the quantitative analysis.

During the quantitative analysis some graphs were obtained to be used as selectemes at the macro level, which could provide a competitive environment for

the recipemes at the micro level –ideas for design variables that make the cigarettes and cigarette packages.

Beyond these aims and results, the most important contribution of this study was the identification of the "Brand/Special Edition" context variable. This variable covered all the cigarette packages in the collection and divided them into almost two equal halves. These were then used to analyze the other context variables and the design variables according to 'brand' and 'special edition' cigarette packages throughout the research.

Therefore, this variable is analyzed and explained first in this part as the base to all the other studies carried out; then the other context variables are explained.

5.2.1 "Brand/Special edition" context variable

This context variable was identified at the latent level during the visual analysis of the cigarette packages. It was realized that the cigarettes could be coded as 'brands' and 'special editions'.

This distinction was made due to temporality, accessibility, and spatiality of the cigarette packages in the market. 'Brands' refer to the cigarettes that are produced in large amounts and distributed broadly in the country for a significant period of time, such as *Samsun* and *Maltepe* brands. 'Special editions' are for specific events, institutions and people including anniversaries, memorials and special days/weeks, which are produced in small amounts for a short period of time, and distributed only to certain places; such as *1965 Bursa Milli Fuarı*[55], *Adana Sigara Fabrikası*[56], *Tekel Yeni Yılınızı Kutlar*[57]. Some of the packages, which were produced for some institutions such as for the military, the parliament and the police department, could be regarded and coded as 'hybrids' due to their being produced for a long time and being distributed widely. In the end, they were decided to be analyzed under the title of 'brands' due to their fewer amounts in the collection and being widely known as 'brands' in Turkish society.

As calculated previously, only 967 cigarette packages in the collection could be studied due to their found dates. Among the 967 cigarettes, 414 of them were 'brand' and 553 of them were 'special edition' cigarettes.

All these cigarettes were different from each other; they indicated the variety of design ideas. In 110 years, new 'brand' cigarettes were added to collection and/or

[55] *1965 Bursa National Fair.*
[56] *Adana Cigarette Factory.*
[57] *Tekel Celebrates Your New Year.*

their design was changed. Even a slight change in design, such as the change in value of colour of a cigarette package was regarded as a differentiation and was added to this collection.

Due to events, institutions and people constantly changing over the past 110 years in Turkey, the frequency of appearance of new ‘special edition’ cigarettes was higher than the ‘brand’ cigarettes. In addition, their design should be different every time for being a ‘special edition’. This is why the amount of ‘special edition’ cigarettes is higher than the ‘brand’ cigarettes in the collection.

Since the amounts of ‘brand’ and ‘special edition’ cigarettes are nearly equal in the collection and there is a significant difference in their frequencies, this “Brand / Special edition” context variable was decided to be used in the quantitative and qualitative analysis of other variables. By doing so the change in design of ‘brand’ and ‘special edition’ cigarettes could be analyzed separately and also compared to each other.

The frequency of ‘brand’ and ‘special edition’ cigarettes in the collection is given below in Figure 5.4. The figure is analyzed here at first in order to avoid similar analysis in further parts.

Figure 5.4 shows the change in the frequencies of ‘brand’ and ‘special edition’ cigarettes over the past 110 years in Turkey. These coded cigarettes provide the selectemes at the macro level which interact and compete in a complex environment of other selectemes at the macro level and other entities. The other selectemes at the macro level are the economic and political issues, and the socio-cultural aspects of Turkey, whose related data were visualized previously within Figures 5.1-3.

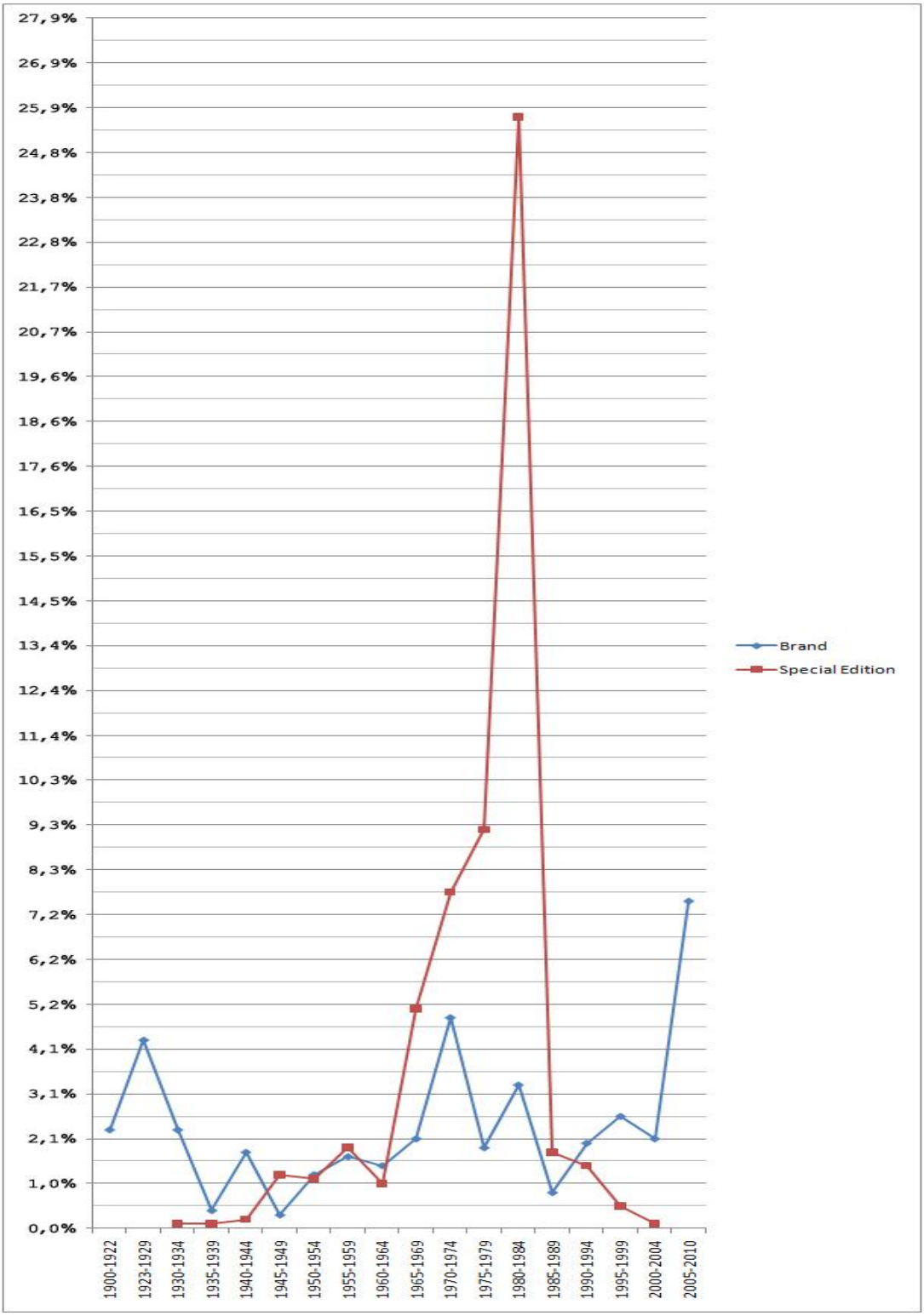

Figure 5.4 : 'Brand' and 'special edition' cigarettes in the collection.

Below Figure 5.4 is analyzed together with the data from Figures 5.1-3. The explanations below indicate the interaction between the selectemes at the macro level. This is the environment of the recipemes at the micro level (the ideas extended into form of cigarettes and cigarette packages) that are studied in this thesis.

When Figure 5.4 is analyzed, it is observed that 'brand' cigarettes were always in the market from the beginning of the 20th century up to the present. These 110 years covers the period of the Ottoman Empire (1900-1923) and the Republic of Turkey (since 1923).

A decrease in the frequency of 'brand' cigarettes is observed in the early years of Turkey from 1926 up to 1940. This decrease was probably due to the foundation period of the Republic of Turkey after the Independence War, and the Great Depression that affected the entire world between 1929 and the 1940s.

However, 'special edition' cigarettes appeared in the market in those years. The first 'special edition' cigarette was produced in 1933 for the 10th year anniversary of the formation of the Turkish Republic. The appearance of this new kind of cigarettes can be related to "Milliyetçilik"[58] and "Devletçilik"[59] ideologies of the young republic. 'Special edition' cigarettes were produced for specific events, institutions and people including anniversaries, memorials and special days/weeks that supported the republic's efforts for founding a nation state by creating a historical base for itself and strengthening its ideologies.

From 1940 up to 1945, a peak is observed in the frequency of 'brand' cigarettes while 'special edition' cigarettes kept being produced as well. Although there were severe hardships throughout the world due to World War II, the Republic of Turkey maintained a neutral stance and focused its effort on the foundation of the nation state.

From 1945 up to 1950, the frequency of 'brand' cigarettes decreases while an increase is observed in 'special edition' cigarettes. This preference of the Tobacco State Monopoly might be due to the awareness of communicative power of 'special edition' packages as a mass product in Turkey. In 1946, Turkey had entered into a multi-party parliamentary system with new political parties, which changed the role and acts of politicians in front of the public (Boratav, 2008).

Starting from 1950, the multi-party parliamentary system had started in practice with a new government (Akşin, 2008), whilst an increase in the economy was also observed in Turkey (Boratav, 2008). Accordingly, the production of new or different 'brand' and 'special edition' cigarettes were settled as their frequency becomes almost equal in Figure 5.4.

[58] Nationalism.
[59] Statism.

From 1955 up to 1960, a peak is observed in the frequency of 'brand' and 'special edition' cigarettes as the economy continued to grow. Then they both started to decrease in parallel to the failing economy between 1954 and 1961 (Boratav, 2008), which ended up with a military coup in 1960 (Akşin, 2008). The negative effects of the coup on the production of new or different cigarettes continued until 1963.

The most important development in terms of cigarettes appeared in those years; the manufacturing of first filtered cigarette, *Samsun*, in 1959 (Url-12).

Figure 5.4 above also shows that from the beginning of 1960s to the early 1980s, a boom in the frequency of 'special edition' cigarettes appears. This is such a significant increase that almost 26% of cigarette packages in the collection belong to this group. This boom can be explained with the economic policy of planning and the import-substituting industrialization stages of those years (Eroğlu, 2008) together with its socio-cultural impacts. In addition, new, faster and cheaper technologies of filtered cigarettes and their packages supported this increase, which was explained in detail previously in Chapter 2.

However, this boom is only observed in 'special edition' cigarettes. Leading up to the military coup in 1980, the frequency of 'brand' cigarettes decreases. Another reason for this decrease might be Turkey's military operation to Cyprus[60].

By going back to civil governance in 1983, a dramatic decrease in the frequency of 'brand' and 'special edition' cigarettes is observed due to the end of the import-substituting period. By the time of the import of foreign cigarette brands, this decrease in the frequency of both 'brand' and 'special edition' cigarettes was inevitable.

From 1987 up to 1997, the frequency of 'brand' cigarettes increases while the frequency of 'special edition' cigarettes decreases gradually.

In this period, together with the demolition of the Berlin Wall in 1989, the world and accordingly Turkey went through significant economic and political changes. A tendency towards populism and the liberalization of capital movement appeared between 1989 and 1993 in Turkey.

Even before 1989, some laws and allowances in tobacco business took place, which foreshadowed this tendency. In 1986, in line with the liberalization of the economy, a new law re-regulated the production, distribution and marketing of tobacco products, making multinational operations possible. Again in 1986, local manufacturing of

[60] Cyprus Peace Operation in 1974.

cigarettes in partnership with the Turkish State Monopoly –Tekel- was allowed. In 1991, local and foreign private enterprises were given the right to manufacture cigarettes (Bilir et al, 2009). The control of tobacco business was starting to be removed from the Turkish State Monopoly –Tekel-, which ended up with the closure of cigarette factories one after the other due to a lack of new technology. Istanbul Cibali Cigarette Factory was closed in 1994; Samsun Cigarette Factory was closed in 1997; Izmir Cigarette Factory was closed later in 2002 (Url-12).

The ideologies of “Milliyetçilik” and “Devletçilik” of Turkey were starting to be replaced by the free-market capitalist ideologies that accompanied globalisation. The increase in the frequency of ‘brand’ cigarettes does not only indicate their selection over ‘special edition’ cigarettes that had become tools of the ideologies of the Republic, but also indicates the efforts of Turkish State Monopoly –Tekel- in competing with foreign cigarette brands. Shortly after allowing the importation of foreign brands, the first American-blend Turkish cigarette was manufactured in 1988-89 with the name of “Tekel 2000” (Url-12) since this new taste had become popular in society.

As observed in Figure 5.4, from 1997 up to 2003 the frequency of ‘brand’ and ‘special edition’ cigarettes decreases and ‘special edition’ cigarettes disappear totally from the market by 2003. Turkey was struggling with problems such as the postmodern coup against the religious policies of the government in 1997, and the series of economic shocks between 2000 and 2001 as observed in Figure 5.1. This resulted in the Turkish State Monopoly –Tekel- being included in the privatization programme by the Higher Directorate of Privatization with the recommendations of the International Monetary Fund (IMF) and World Bank. Later in 2003, the State Monopoly’s –Tekel’s- tobacco department was put up for privatization. Health regulations of the government also appeared during this period, starting with the enacting of the first tobacco control law in 1996. In 2002, the name of the Turkish State Monopoly –Tekel- was changed to the “Tobacco and Alcohol Market Regulatory Authority” (TAPDK) and became a financially and administratively autonomous body with the power to regulate the tobacco market and related health issues. In 2004, Turkey became a party to the WHO Framework Convention for Tobacco Control (FCTC) (Bilir et al, 2009). All these entities of economic, political and legal issues were the environment for the elimination of the ‘special edition’ cigarettes and for the decrease in the frequency of ‘brand’ cigarettes.

After 2003, the frequency of ‘brand’ cigarettes increase dramatically in parallel to the privatization period of the State Monopoly –Tekel or TAPDK, which then was sold to British American Tobacco Company (BAT) in 2008.

5.2.2 Other context variables

The context variables of cigarette packages other than “Brand/Special Edition” are explained in this part.

The other context variables of cigarette packages were determined as “Manufacturing factories”, “Sales”, “Distribution”, “Company types”, “Export/Import”, “Sub-brands”, “Differentiation due to consumers”, “Quality”, “Taste”, “Anniversaries /Memorials/Special days and weeks”, “Events/Institutions”, and “Provinces”.

These context variables and their codes are the results on the characteristics of Turkish cigarette packages. The graphs obtained from these codes were referenced as selectemes at the macro level as being in relation with recipemes at the micro level –ideas of design variables that make the cigarettes and the cigarette packages.

i) Manufacturing factories

This variable indicates the different factories that were opened and contributed in the manufacturing of cigarettes through years in Turkey. The names of the factories that were identified and coded accordingly are ‘Adana’, ‘Ballıca’, ‘Bitlis’, ‘Istanbul-Cibali’, ‘Istanbul-Maltepe’, ‘Istanbul (Cibali or Maltepe)’, ‘Izmir’, ‘Malatya’, ‘Samsun’, and ‘Tokat’. The frequency of these codes in the collection is shown in Figure 5.5 below for brand cigarettes and in Figure 5.6 below for special edition cigarettes.

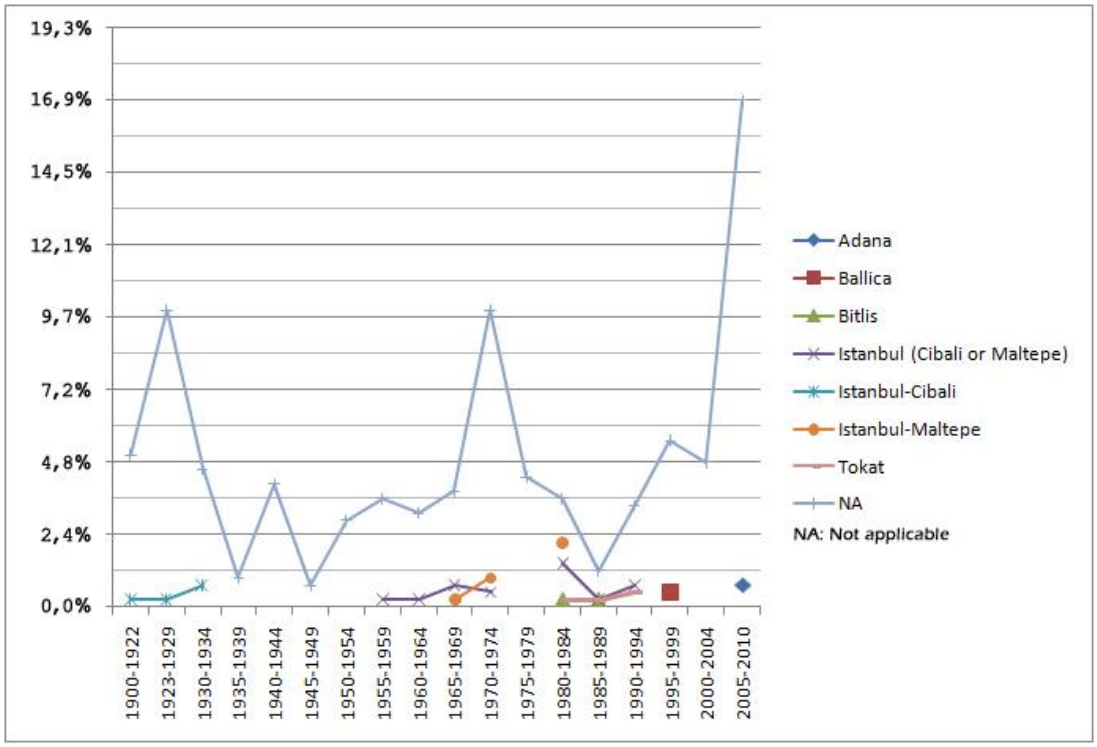

Figure 5.5 : Manufacturing factories of brand cigarettes.

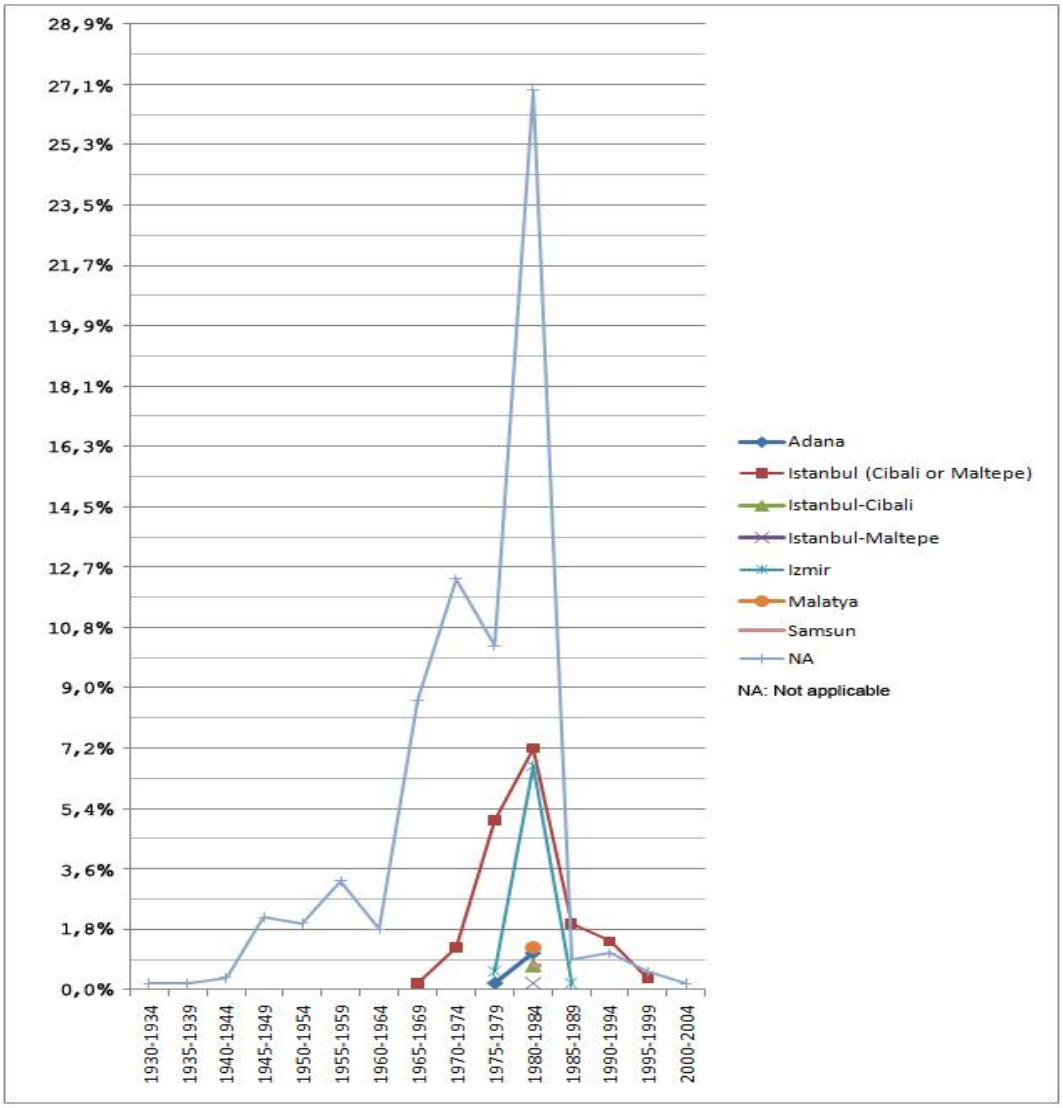

Figure 5.6 : Manufacturing factories of special edition cigarettes.

ii) Sales

This variable indicates if the cigarettes were ‘for sale’ or ‘not for sale’; and they were coded accordingly.

There are different reasons for the cigarettes being ‘not for sale’. For brand cigarettes, the reasons are their being produced for promotion of the brand, for advertising the State Monopoly and for rations to workers. Only a few of these cigarettes could be shown in Figure 5.7 below since it was not possible to find the dates of all these cigarettes.

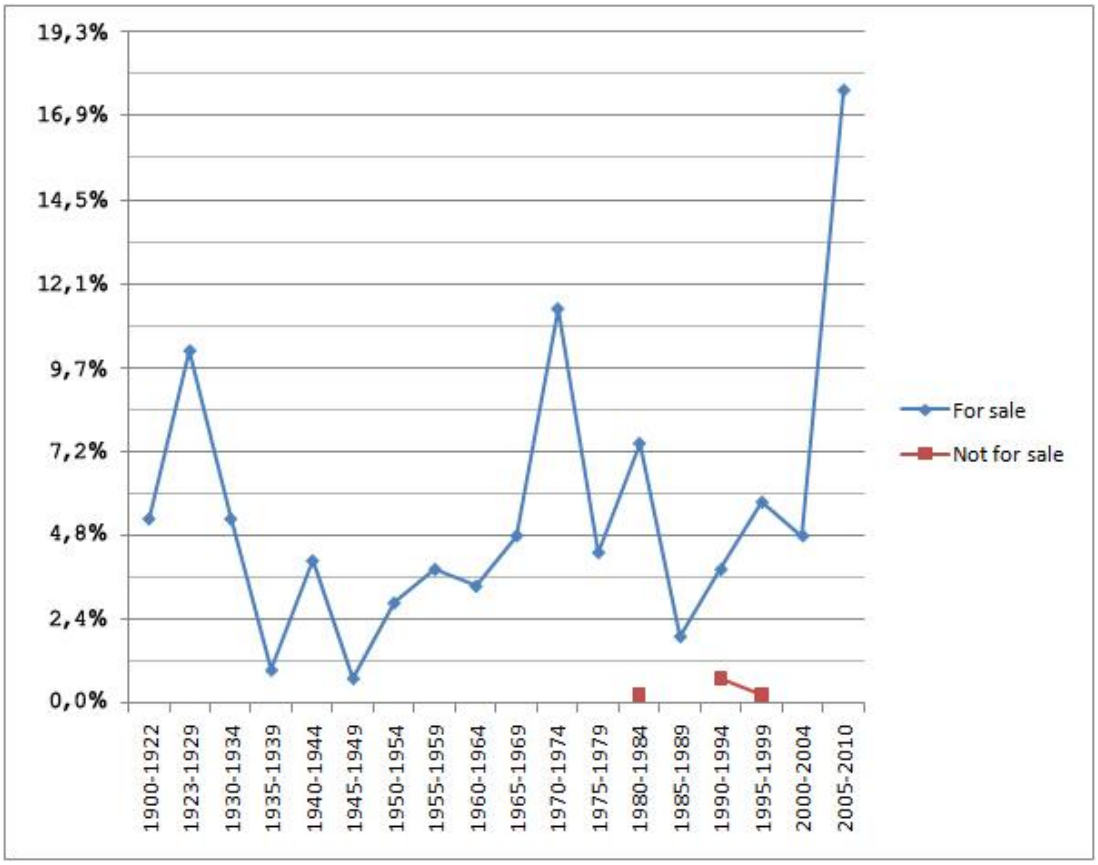

Figure 5.7 : Sales of brand cigarettes.

For special edition cigarettes, the reasons are their being produced as New Year gifts; as anniversary and memorial gifts for events, people and institutions; and as advertising gifts for intuitions and companies. One significant reason 'for sale' of special edition cigarettes was their being produced for donation for some political parties and for some sports clubs. Again, only a few of these cigarettes could be shown in Figure 5.8 below since it was not possible to find the dates of all these cigarettes.

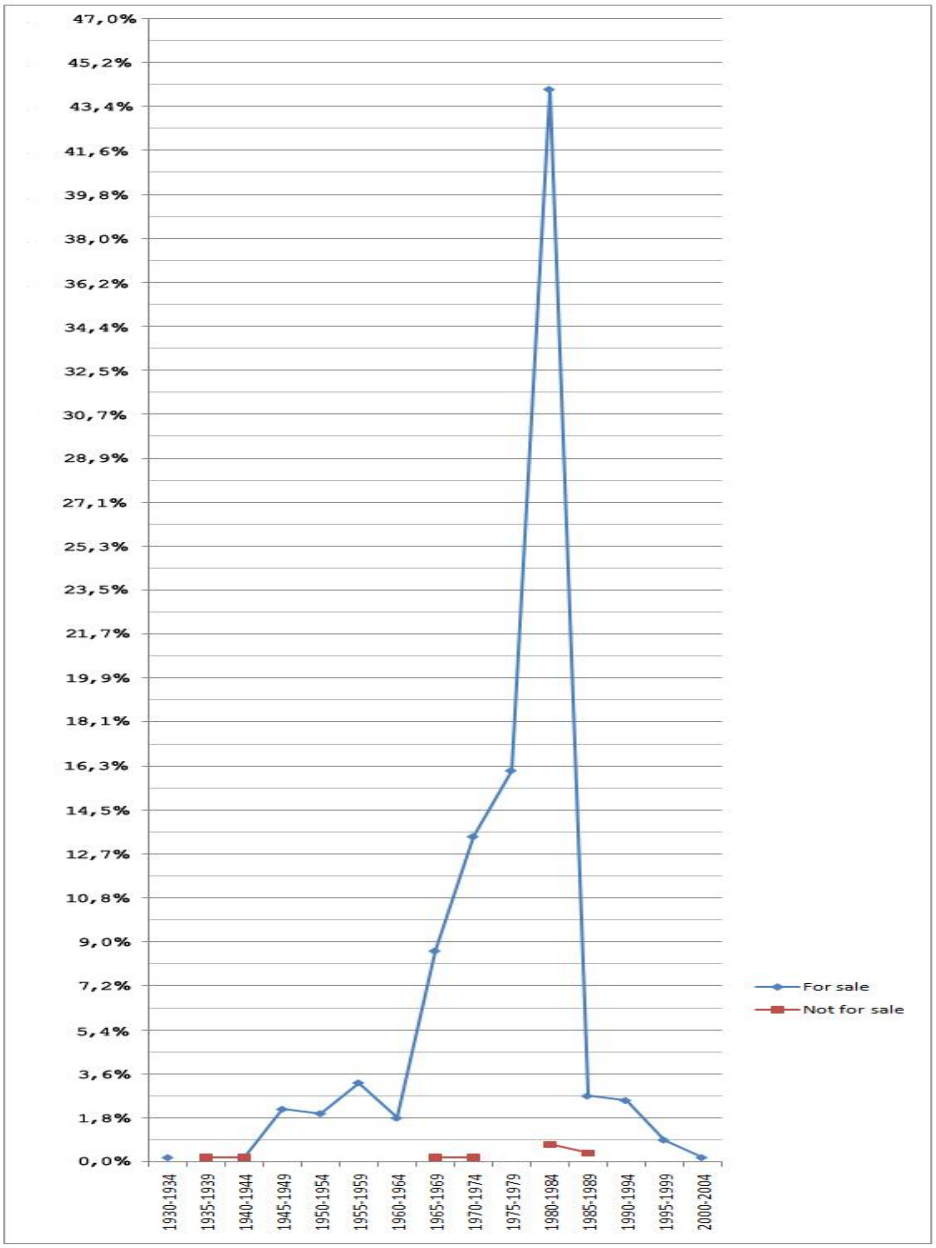

Figure 5.8 : Sales of special edition cigarettes.

iii) Distribution

This variable indicates the differing distribution of cigarettes. The codes for brand cigarettes are ‘domestic’ (distributed to overall Turkey), ‘villages/Eastern Anatolia’ (only distributed to villages and to eastern region of Turkey), ‘specific place’ (distributed to specific places in Turkey such as military zone, parliament buildings and security buildings), ‘duty free’ (distributed to duty free shops in Turkey), and ‘overseas’ (distributed to Arab and Turkic countries, to USA, to Japan and to others that were unknown). The frequency of these codes in the collection is shown in Figure 5.9 below.

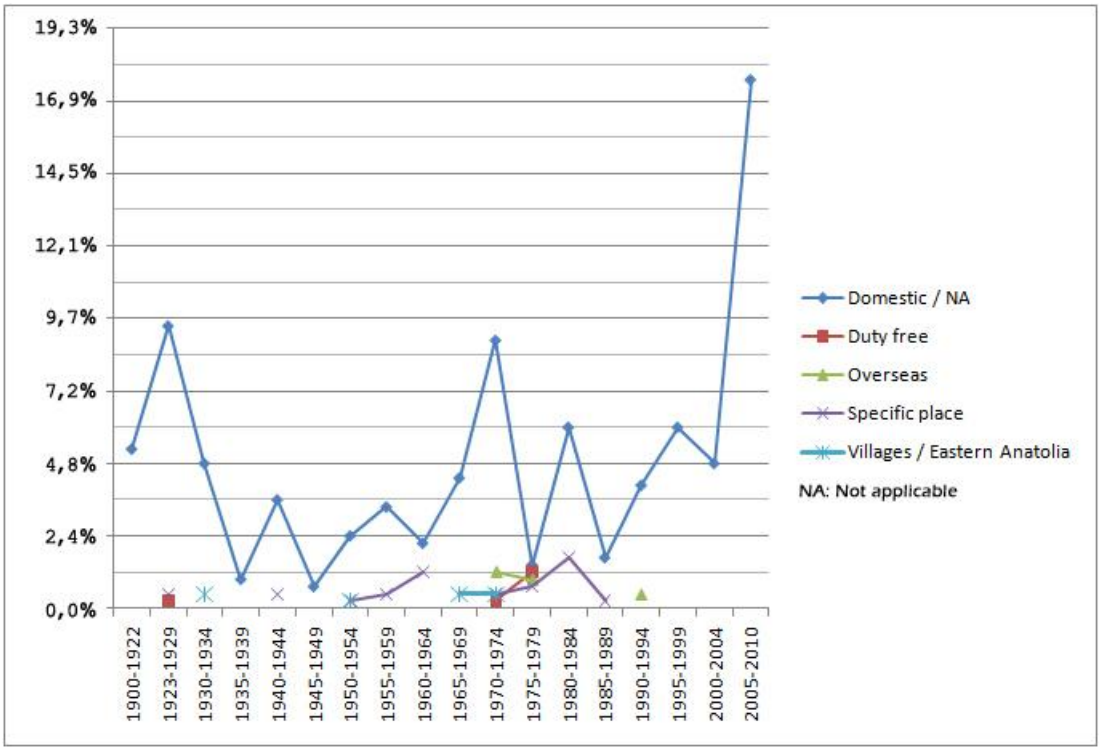

Figure 5.9 : Distribution of brand cigarettes.

The codes for special edition cigarettes are ‘domestic’ and ‘specific place/city’ (distributed to events’ specific places, cities, and regions in Turkey). The frequency of these codes in the collection is shown in Figure 5.10 below.

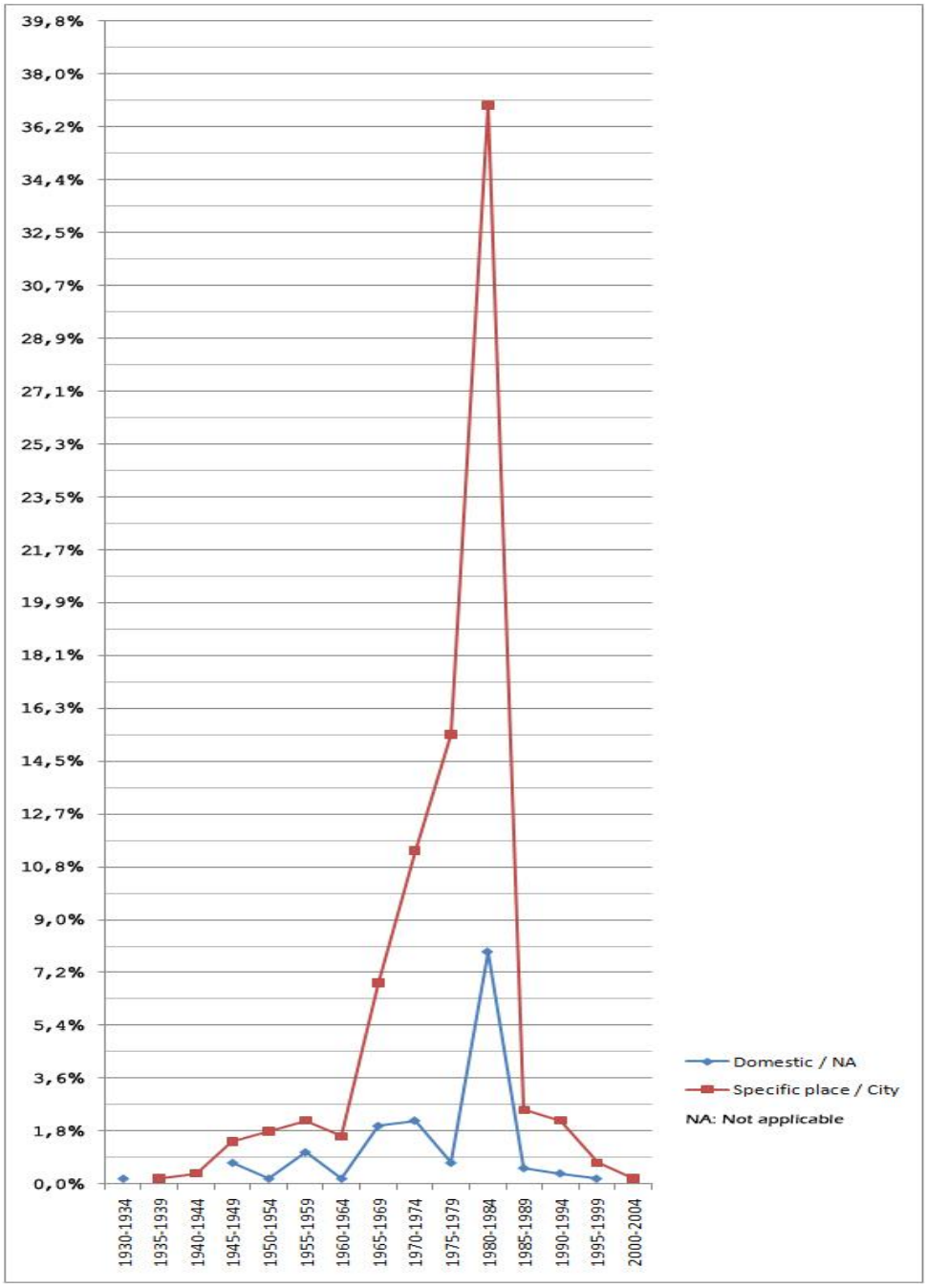

Figure 5.10 : Distribution of special edition cigarettes.

iv) Company types

This variable indicates differing production companies of the brand cigarettes. There is no such variable for special edition cigarettes since they were all produced by the State Monopoly.

The cigarettes of differing production companies were coded as ‘state monopoly brands’, ‘other company brands’ and ‘partnership brands’.

‘State monopoly brand’ cigarettes are the brands of the Turkish state monopoly that constitute most of the collection.

‘Other company brands’ are the brands that were and are still produced specifically for the Turkish market by foreign companies since 1995. Since the Turkish State Monopoly was sold to British American Tobacco (BAT) in 2008, state monopoly brands have appeared in the market under BAT’s name since then.

‘Partnership brands’ are the brands that were produced through a partnership between the Turkish State Monopoly and a foreign company. These cigarettes were sold abroad, in duty free shops or imported to Turkey. Therefore, some of them are state monopoly brands.

The frequency of these codes in the collection –‘state monopoly brand’, ‘other company brand’ and ‘partnership brand’- is shown in Figure 5.11 below.

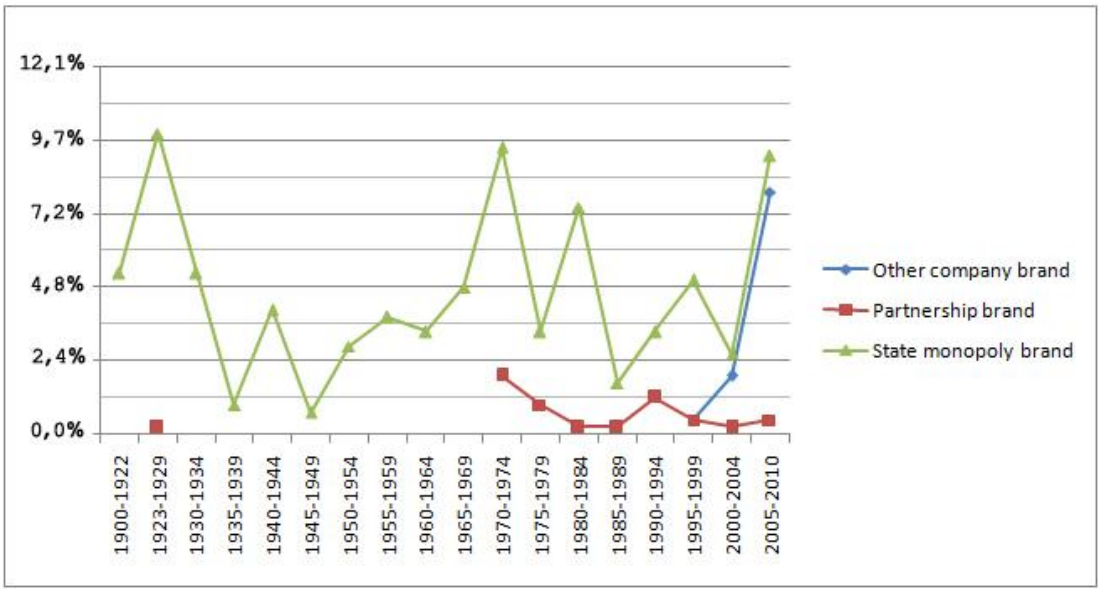

Figure 5.11 : Company types of brand cigarettes.

More detailed information about these production companies is shown in Table 5.1 below. The company names for the Turkish State Monopoly refer to a change of name through years; not to different companies of the monopoly.

Table 5.1 : Names and production countries of different types of the companies

Company Type	Company Name	Production Country
State monopoly	"*Reji*" (Regie)	Ottoman Empire
State monopoly	"*İnhisarlar*" (Monopolies Board)	Turkey
State monopoly	"*Tütün İnhisarı*" (Tobacco Monopoly)	Turkey
State monopoly	"*Tekel İdaresi*" (Administration of Monopoly)	Turkey
State monopoly	"*Tekel*"(Monopoly)	Turkey
Other company	European Tobacco	Turkey
Other company	Best Company	Turkey
Other company	British American Tobacco (BAT)	Turkey
Other company	Philip Morris International and Sabancı Holding" (PhilSA)	Turkey
Other company	Japan Tobacco International (JTI)	Turkey
Other company	R.J. Reynolds	Turkey
Partnership company	Tabacs Turcs S.A.	Switzerland
Partnership company	TETA	Germany
Partnership company	G.A. Andron & Co. Inc.	USA
Partnership company	G.A. Georgopulo and Co., New York	Turkey
Partnership company	Cyprus Turkish Tobacco Industry (KTTE)	Cyprus

v) Export/Import

This variable indicates if the cigarettes were exported or imported; and they were coded accordingly. Special edition cigarettes were not imported or exported so that this variable was valid only for brand cigarettes. The frequency of these codes in the collection is shown in Figure 5.12 below.

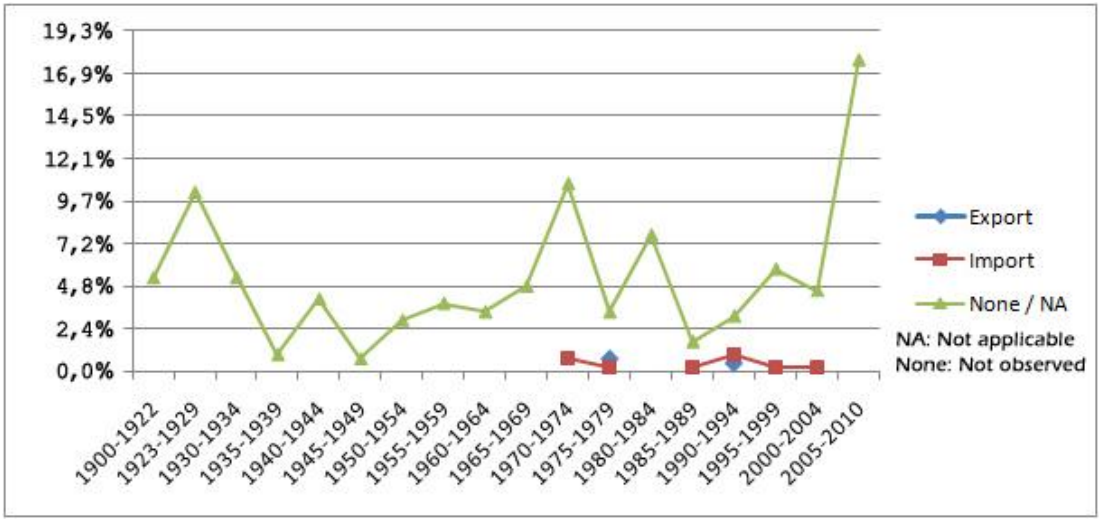

Figure 5.12 : Export/Import of brand cigarettes.

vi) Sub-brands

This variable indicates the differentiation of some of the cigarettes from the mainstream brands by taste, quality, distribution and health reasons. These cigarettes were coded according to the copy keywords used in naming the sub-brands, which were; '216', 'Gold', 'Luxury', 'International' and 'Lights'. The frequency of these codes in the collection is shown in Figure 5.13 below.

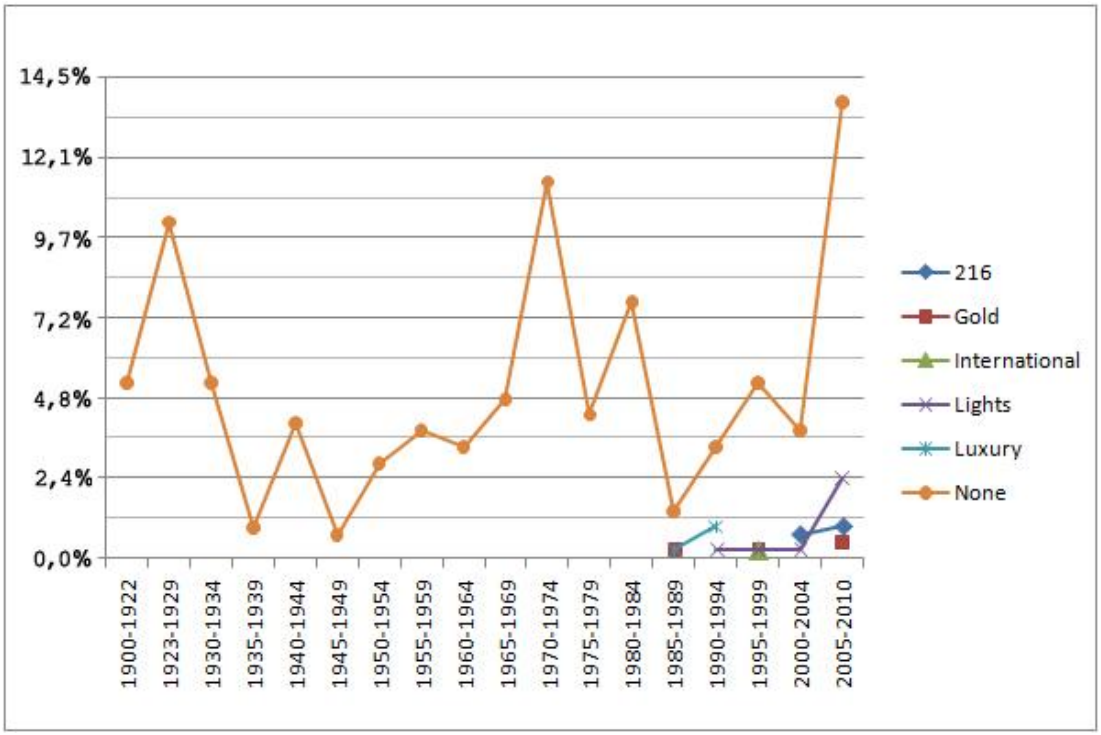

Figure 5.13 : Sub-brands.

vii) Differentiation due to consumers

This variable indicates the differentiation of brands due to consumers. These cigarettes were coded as 'for women' (specifically produced for women), 'for foreigners' (only produced for foreigners who could buy these cigarettes with passports), and 'for employees/members' (only produced for employees such as policemen and for members of the military and the parliament). The frequency of these codes in the collection is shown in Figure 5.14 below.

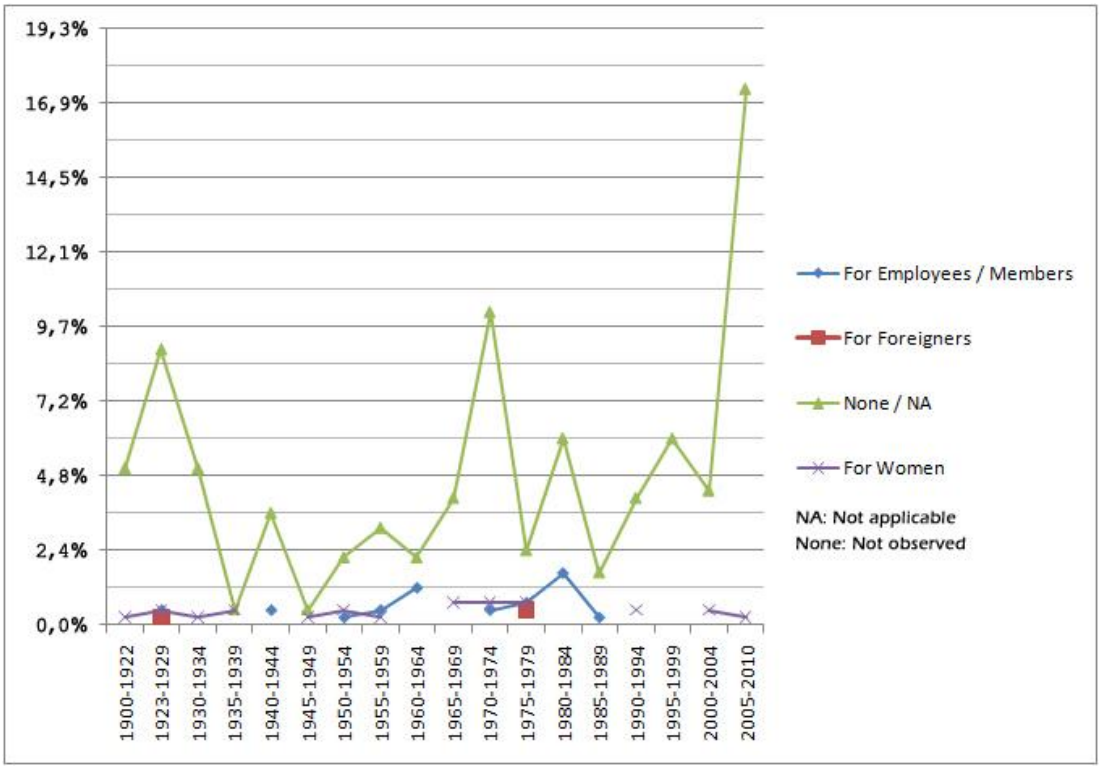

Figure 5.14 : Brand differentiation due to consumers.

viii) Quality

The state monopoly of the Ottoman Empire (Regie) assorted the tobacco and brand cigarettes as *Cari Nevi* (regular type) and *Mamulat-ı Mahsusa* (special type) according to tobacco's quality and so for their consumers who belonged to different social classes. For example; *Asker*, *Birinc*i, *Halk* brands, which were common in public, were regular type cigarettes; while *Serkldoryan*, *Büyük Kulüp*, *Boğaziçi* brands, which belonged to Mason-like clubs and/or produced for high class society, were special type cigarettes. Another type was added to these ones in 1925, which was called *Heyet-i Süferaya Mahsus* (ambassador type) (İlter, 1989). These cigarettes were only produced for the ambassadors living in Turkey.

In the light of this information, a variable for the quality of tobacco and cigarettes was identified and coded on brand cigarettes as 'regular' and 'high'. The code of 'high' was used for both special type and ambassador type cigarettes. Although these types gradually disappeared (probably in the 1930s), the brands, which were known by different quality and had been produced for a long time, were kept and coded until they disappeared in the market. The frequency of these codes in the collection is shown in Figure 5.15 below.

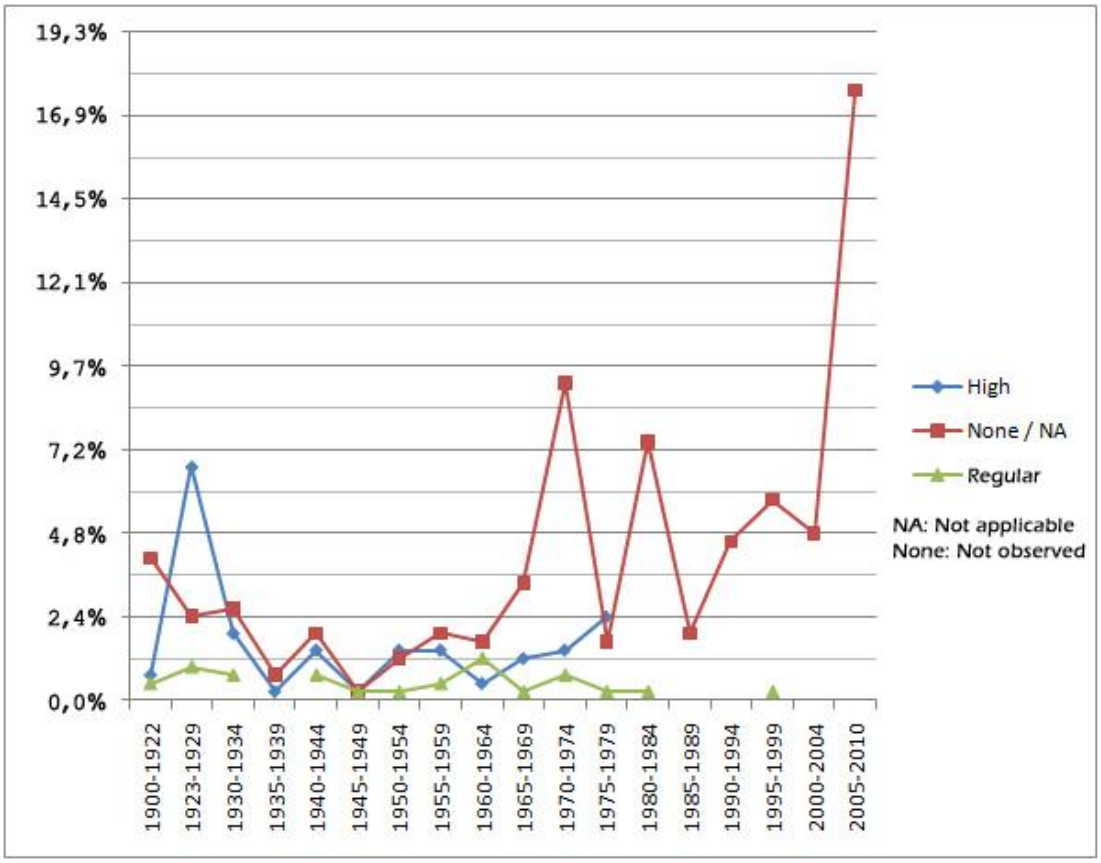

Figure 5.15 : Quality of brand cigarettes.

ix) Taste

This variable indicates different tastes of brand cigarettes. The tastes coded were ‘aniseed’, ‘mentholated’, ‘mild-aromatic’, ‘odorous’, and ‘strong’. However, only a few of these cigarettes could be shown in Figure 5.16 below since it was not possible to find the dates of all these cigarettes.

Among these tastes, it is interesting to observe the taste of ‘aniseed’ for a cigarette. This attempt can be related to so-called national drink of Turkey that is “*rakı*” which is made of aniseed.

Only one special edition cigarette was observed to be tasted in the collection and that was ‘odorous’.

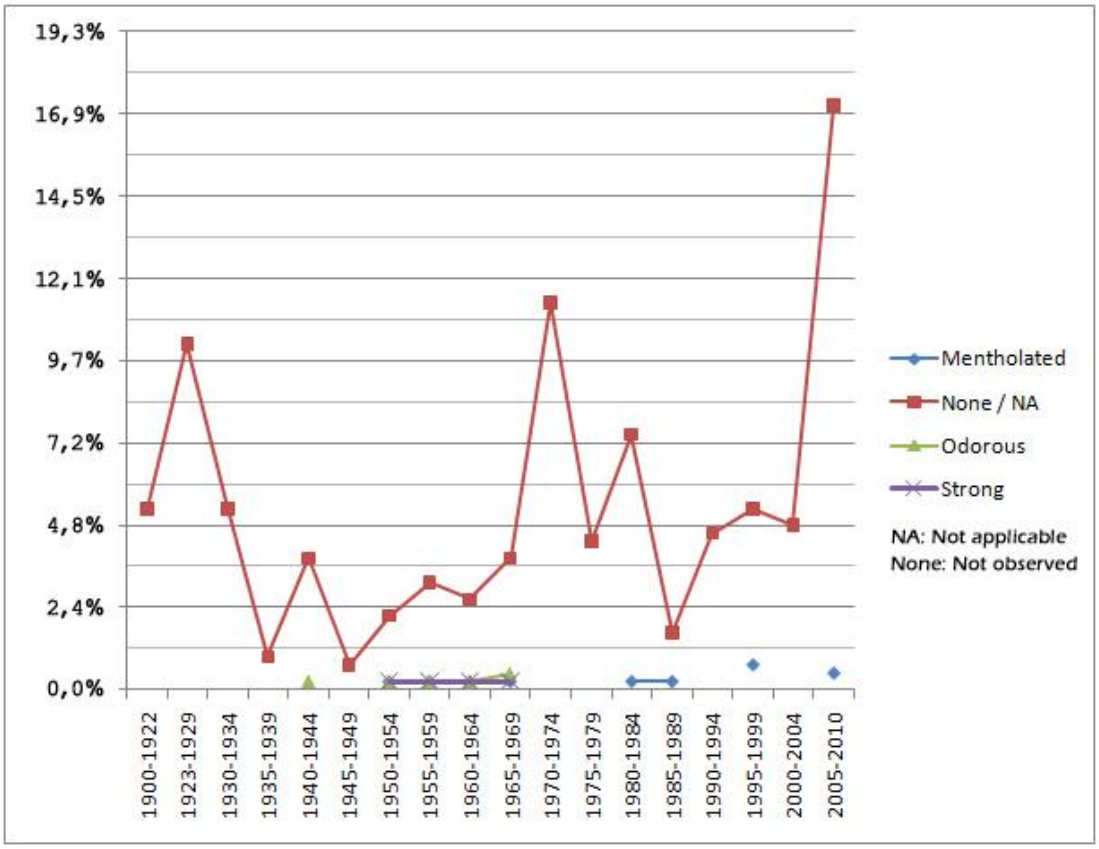

Figure 5.16 : Taste of brand cigarettes.

x) Anniversaries/Memorials/Special days and weeks

This variable was observed on special edition cigarettes and they were coded on them accordingly: 'anniversaries' (i.e. for celebrating the anniversary of an important event such as Ataturk's 100th birthday), 'memorials' (i.e. for a specific occasion such as opening ceremony of Adana cigarette factory), and 'special days and weeks' (i.e. for celebrating the civil engineers' day). The frequency of these codes in the collection is shown in Figure 5.17 below.

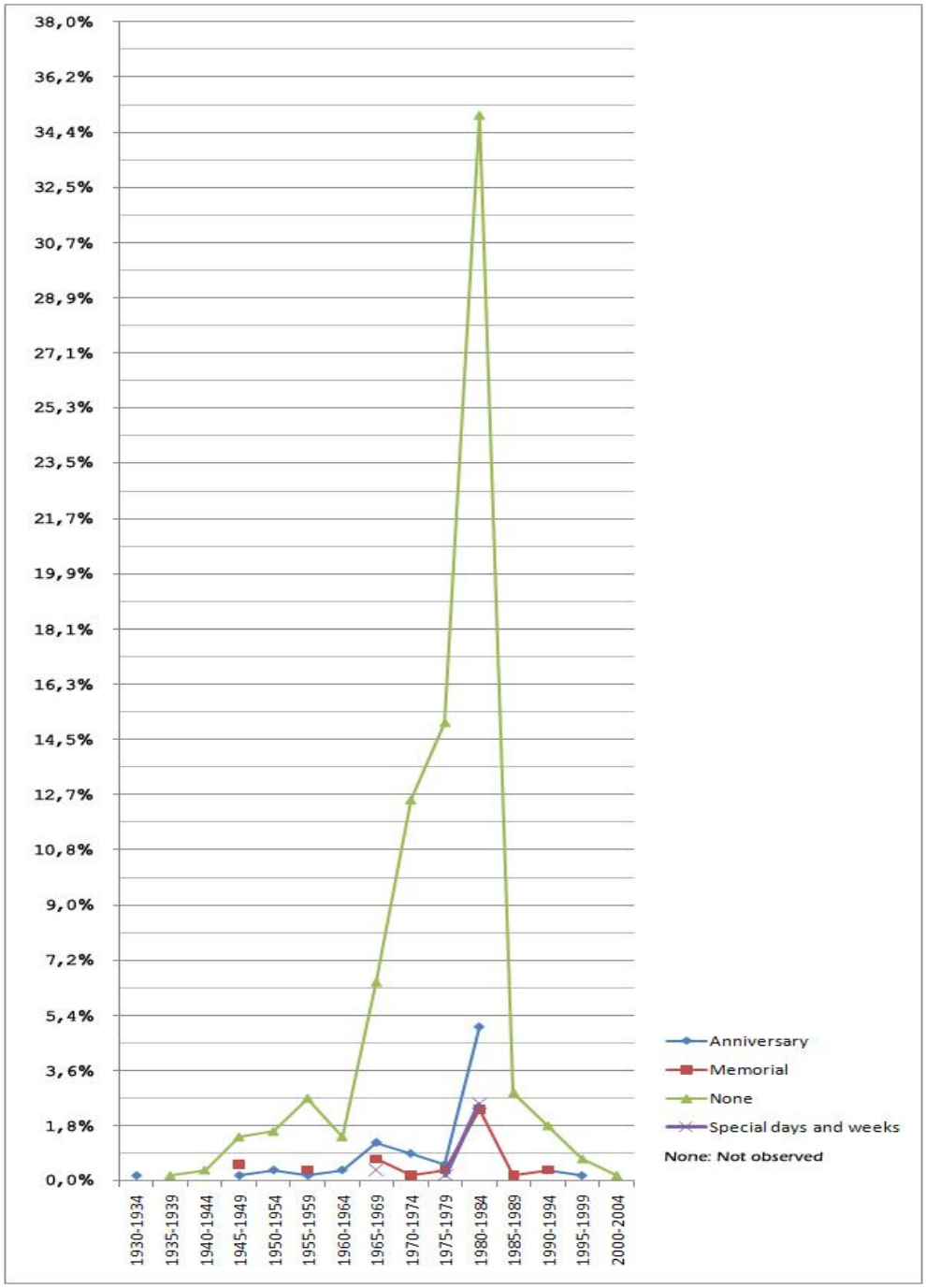

Figure 5.17 : Anniversaries/memorials/special days and weeks of special edition cigarettes

xi) Events/Institutions

This variable was observed on special edition cigarettes and they were coded accordingly. The code of 'events' refers to special edition cigarettes that were produced for several different events. These events were campaigns, competitions, exhibitions, fairs, festivals, and meetings. The code of 'institutions' refers to special edition cigarettes that were produced for several different institutions. These institutions were associations, companies, governmental institutions, organizations,

political parties, and sports clubs. The code of 'hybrid' refers to special edition cigarettes that were produced for both events and institutions such as for a general meeting of a political party. The frequency of these codes in the collection is shown in Figure 5.18 below.

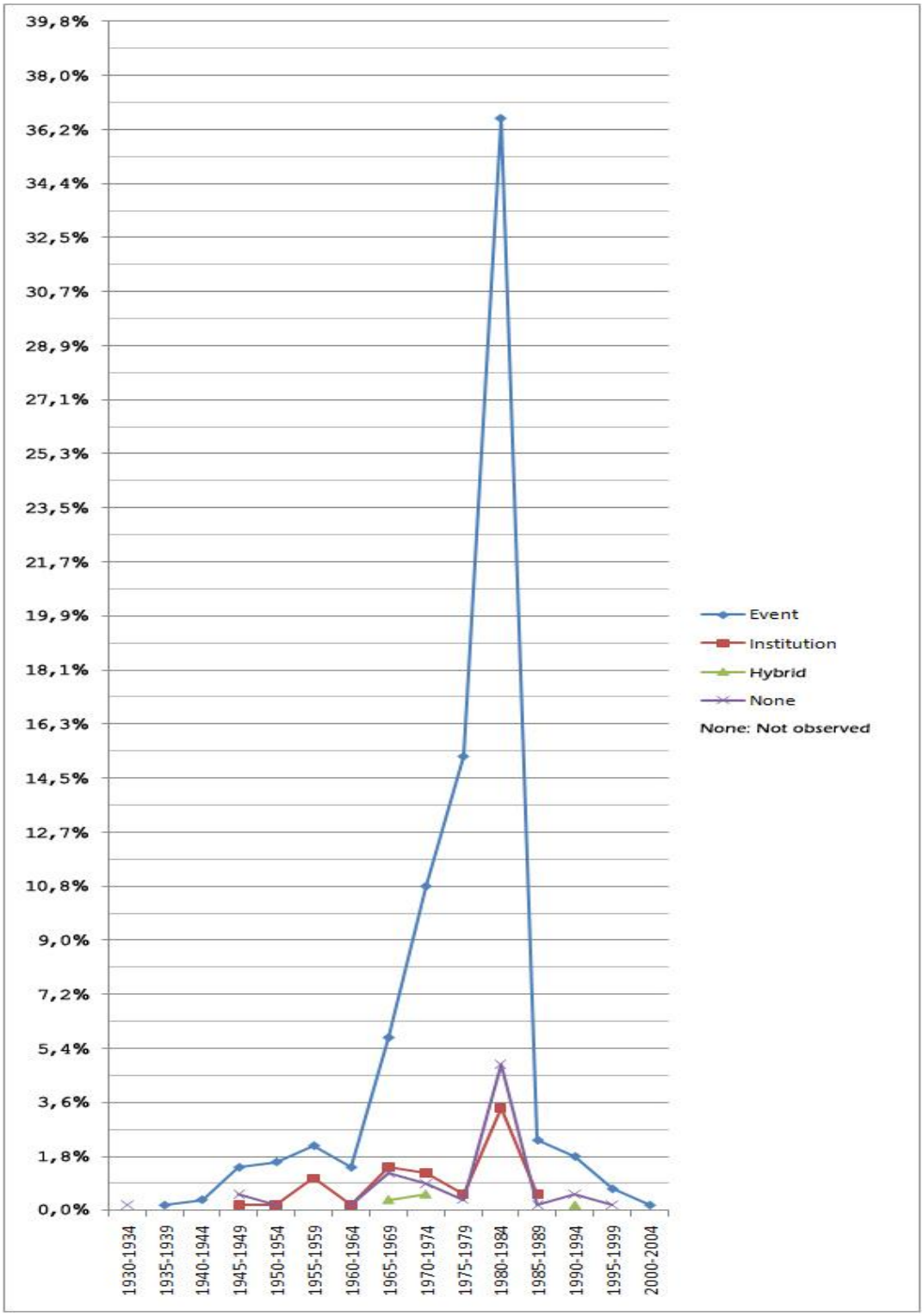

Figure 5.18 : Events/Institutions of special edition cigarettes.

xii) Provinces

This variable indicates the names of provinces, their cities and towns observed on the special edition cigarettes, which were produced for the events that were held in those places. This variable is important for revealing the spread of special edition cigarettes throughout Turkey as representatives of Turkish socio-culture. These cigarettes were only distributed to these cities and sold there. 470 special edition cigarettes out of 553 in the collection belong to this group and they were named after 48 out of the 67 provinces (which there were at that time) in Turkey that branch further to cities and towns. These provinces of Turkey are Adana, Afyonkarahisar, Aksaray, Amasya, Ankara, Antalya, Aydın, Balıkesir, Bilecik, Bitlis, Bolu, Burdur, Bursa, Çanakkale, Çorum, Denizli, Diyarbakır, Edirne, Erzurum, Eskişehir, Gaziantep, İstanbul, İzmir, Kahramanmaraş, Karaman, Kastamonu, Kayseri, Kırşehir, Kocaeli, Konya, Kütahya, Malatya, Manisa, Mersin, Muğla, Nevşehir, Rize, Sakarya, Samsun, Siirt, Sinop, Sivas, Şanlıurfa, Tekirdağ, Tokat, Trabzon, Yalova, and Zonguldak.

5.3 Graph and Matrix Results of Design Variables Studies

Design variables are the design related variables of cigarettes and cigarette packages that refer to the design elements of cigarette and cigarette package making.

In this part, the design elements of cigarettes and cigarette packages were investigated with a quantitative study, and some graphs and matrixes were obtained. Only the package graphics, which is actually part of the design variables, was investigated with a qualitative study that is explained at the end of this chapter.

Later in this part, the change in design of cigarettes and cigarette packages were analyzed and interpreted through the change in their design elements observed in graphs and matrixes with reference to Darwinian evolution theory, memes and different types of memes (recipemes, selectemes, explanemes).

The first phenomenon of interest in this study is to check if the change in design of cigarettes and cigarette packages through their design elements follows the requirements of Darwinian evolution theory, which are; ‘variety’, ‘competition between varieties’, ‘imperfect replication’, ‘appearance of new varieties’, ‘repetition of the process’ and ‘change in rules of competition’.

Darwinian evolution theory requires an imperfect replicator, which is the meme. The study of change in the design of cigarettes and cigarette packages through their

design elements is actually the study of these memes; and these memes are expected to follow the requirements of Darwinian evolution theory.

Other related phenomenon of interest is in the different types of memes, as developed by Langrish (1999). The designed objects are enclosed within a complex system of designers/producers, entities of design context, and other entities. Different types of memes overcome the problem of describing the change of designed objects in a complex environment.

As mentioned before; two kinds of recipemes, selectemes, and explanemes worked at the micro and the macro levels while they interacted among themselves and with each other as a result of change in the design of cigarettes and cigarette packages.

Recipemes at the micro level are the ideas on design elements that make the cigarettes and cigarette packages. Therefore, recipemes are actually studied in terms of change in the design of cigarettes and cigarette packages. Recipemes at the macro level are the technologies and the styles that are directly related to recipemes at the micro level. Selectemes at the micro level are the competing ideas in the brains of designers (which is not studied in detail in this research but an example is given in the last chapter as the decision making process of the designer). The selectemes at the macro level provide the environment for recipemes both at micro and macro levels to compete. Other entities in the environment such as man-made events and climate also act in the competition of recipemes. The explanemes at the micro and the macro levels are the attempts at the rationality of selectemes, which sometimes appear.

These theories are used in the analysis and interpretation on the results.

5.3.1 Cigarette design

The technology of cigarette making was explained in Chapter 2, which corresponds to the recipeme at the macro level. It is closely related to the recipemes at the micro level for cigarettes. In this part, first these recipemes at the micro level, in other words, ‘how to put things on a cigarette’, are explained through the design elements of a cigarette, then the results of these recipemes at the micro level are successively given as graphs and matrixes and explained.

5.3.1.1 Ideas about cigarettes: Recipemes at the micro level

As mentioned previously, the design elements of a cigarette, which were shaped by recipemes, varied due to alternative ideas. These alternative ideas on design

elements of cigarettes were coded, and then counted to observe how the design of cigarettes changed through years within a quantitative study.

The alternative ideas for ‘cigarette thickness’ were identified and coded as “regular”, “thick” and “slim”. Although it was not observed in the collection, the scale of cigarette thickness was wider in the 1900s. The first list of cigarettes from the Ottoman Emperor dating back to 1906 (Doğruel and Doğruel, 2000) includes “very slim” and “very thick” alternative ideas as well.

The alternative ideas for ‘cigarette calibre form’ were identified and coded as “oval” and “round”.

The alternative ideas for ‘cigarette length’ were identified and coded as “68 mm.”, “74 mm.”, “80 mm.”, “85 mm.”, “100 mm.” and “160 mm.” Among these codes, “74 mm.” could not be shown in graphs since the dates of this kind of cigarettes could not be ranged to 5-year.

As mentioned previously, the alternative ideas for ‘cigarette tip’ were identified and coded as “filter”, “sleeve”, “mouthpiece & sleeve”, and “plain”.

Although a further study on ‘cigarette tips’ and ‘cigarette paper’ wanted to be carried out, it could not be completed due to limited access to cigarettes sealed inside the packages. However, the initial findings are given here in order to introduce Turkish cigarettes more. “Sleeve” cigarettes varied due to alternative materials used; which were “cork” and “paper”. “Paper sleeve” cigarettes varied due to alternative colours used; which were “purple”, “red”, “corn colour”, “green”, “blue”, and “gold bronze”. “Paper sleeve” cigarettes also varied due to alternative textures used; which were “stripes” and “tree-like texture”. “Filter” cigarettes varied due to alternative types of filters, which were “standard” and “recessed” (tipping paper is longer that the filter). “Filter” cigarettes also varied due to alternative colours and textures used; which were “corn colour”, “white”, and “cork-like texture”. Lastly, ‘cigarette paper’ varied due to alternative colours, which were “white”, “black”, “pink” and “lilac”.

All these coded alternative ideas are the recipemes at the micro level. They are shown within illustrations and/or photographs of cigarettes in Figures 5.19-23 below.

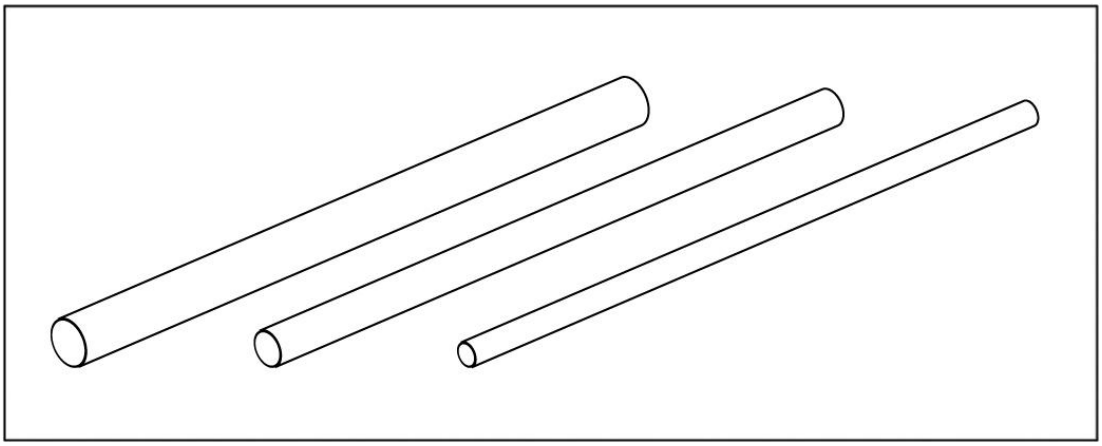

Figure 5.19 : “Round” cigarettes with different thicknesses of “thick”, “regular”, and “slim”.

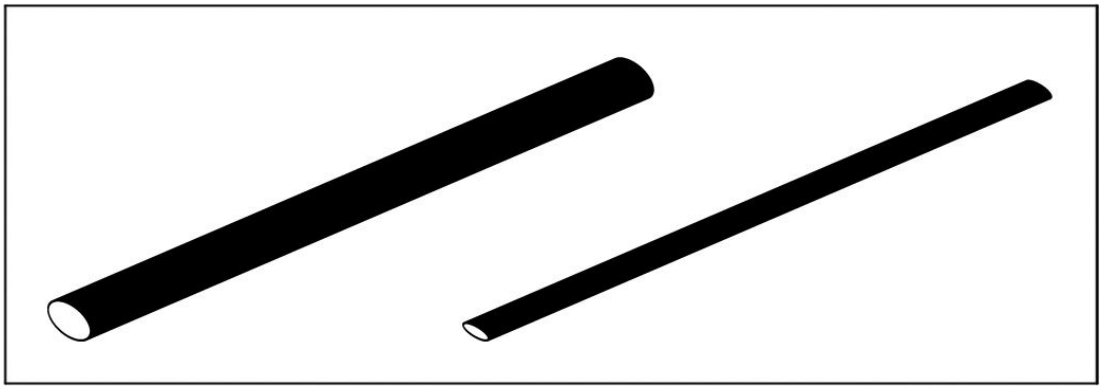

Figure 5.20 : “Oval” cigarettes with different thicknesses of “thick” and “slim”.

Figure 5.21 : Cigarette thicknesses of “slim”, “regular” and “thick”; calibre forms of “round” and “oval”; lengths of “68 mm.” and “74 mm.”; tips of “plain” and “sleeve”.

Figure 5.22 : Cigarette thicknesses of “regular” and “thick”; calibre forms of “round” and “oval”; lengths of “68 mm.”, “85 mm.” and “100 mm.”; tips of “plain”, “sleeve”, and “filter”.

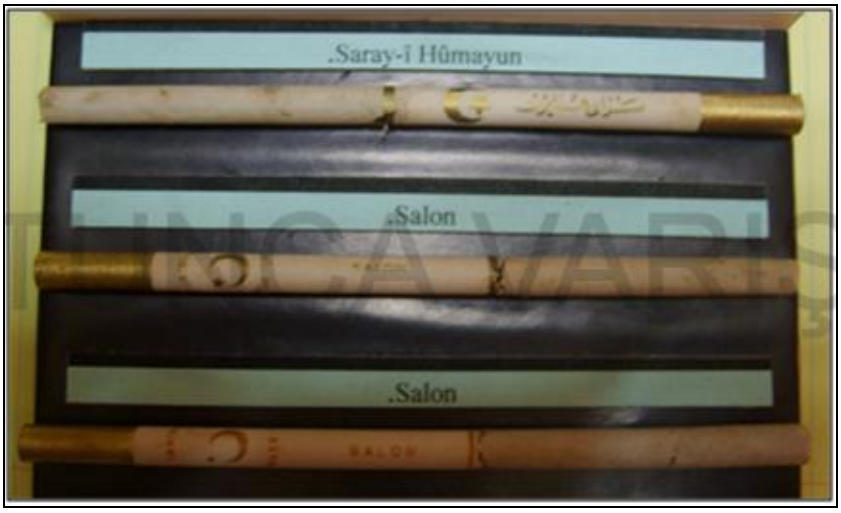

Figure 5.23 : Cigarette thickness of “thick”; calibre form of “round”; length of “160 mm”; tip of “mouthpiece & sleeve”.

5.3.1.2 Graph results and analysis

The alternative ideas of design elements of cigarettes were coded and recorded in an Excel table regarding the “Date Range” of cigarette packages and the “Brand/Special Edition” context variable. By this way, the codes were counted through years separately for brand and special edition cigarettes.

In this part, the frequency of codes changing through years for special edition and brand cigarettes are shown within graphs and analyzed briefly to be further analyzed and interpreted with reference to theories used in this thesis.

i) Cigarette thickness

The frequency of codes regarding the 'cigarette thickness' design element is shown below in Figure 5.24 for brand cigarettes and in Figure 5.25 for special edition cigarettes.

Since the data of alternative ideas on cigarettes were collected from the packages, then these were coded and counted accordingly; the code "mixed" refers to the cigarette packages that contain cigarettes with different thicknesses. The code "NA" refers to the cigarette packages that could not be coded.

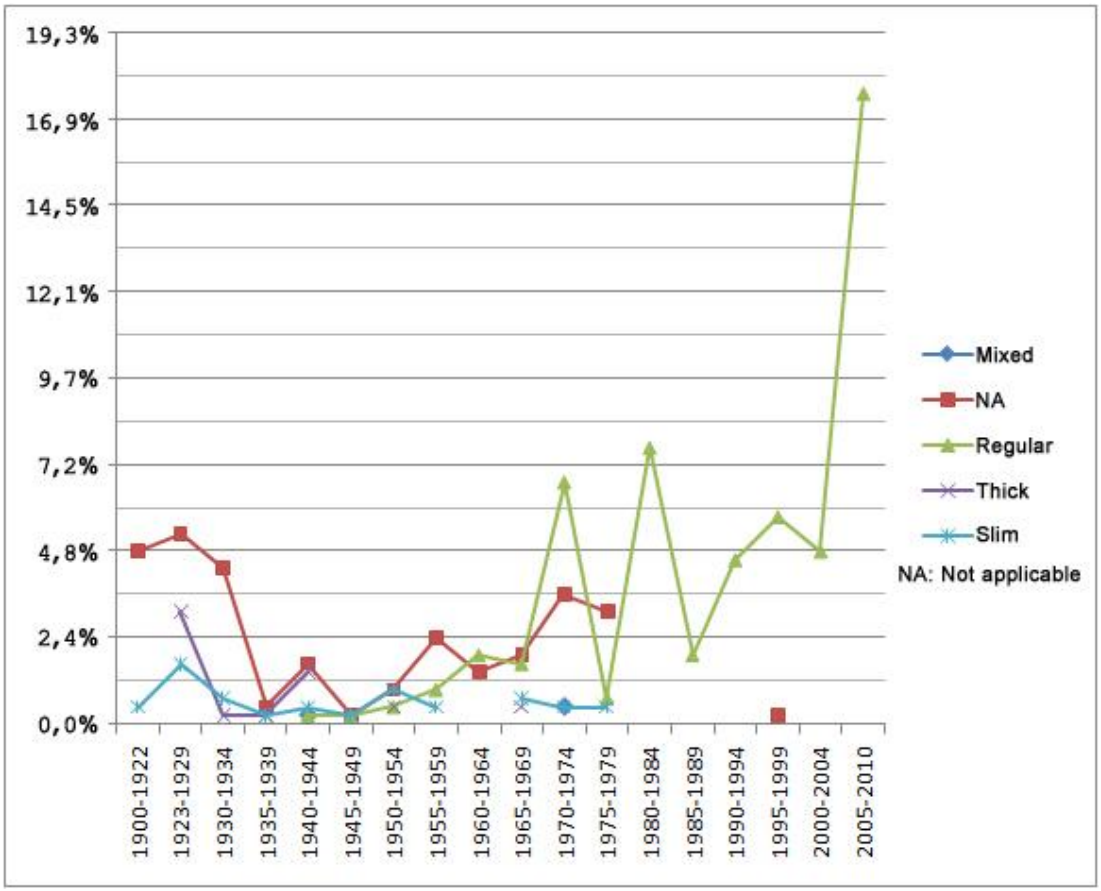

Figure 5.24 : Thickness of brand cigarettes.

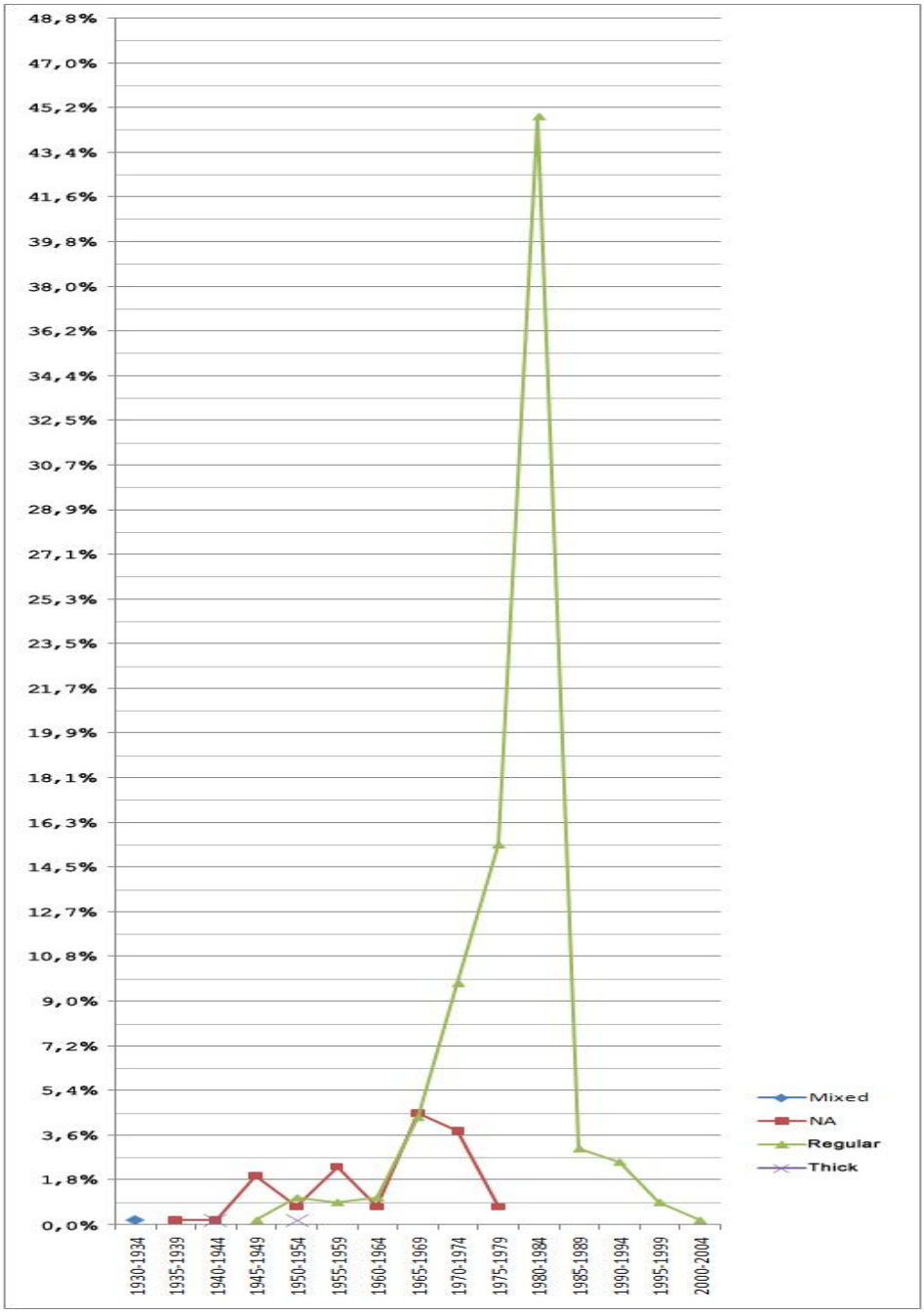

Figure 5.25 : Thickness of special edition cigarettes.

The highlights from the analysis of Figures 5.24 and 5.25 are listed below:

- Brand cigarettes were coded with “thick”, “regular” and “slim” while special editions were only coded with “regular” and “thick”.

- It can be said that “thick” and “slim” cigarettes date back to the beginning of the 1900s. Although there are “NA” cigarettes at those times, these are more likely to be considered as “thick” or “slim” cigarettes rather than “regular” ones due to the first list of cigarettes mentioned before.

- “Regular” cigarettes appeared during World War II (at the first half of 1940s) in brands’ graph; and right after the war (at the latter half of 1940s) in special editions’ graph.
- It can be said that “thick” and “slim” cigarettes disappeared just before 1980 and then tried to reappear in the latter half of 1990s in brand cigarettes, since “NA” cigarettes might have belonged to this group.
- The increase and decrease in the frequencies of these codes in both graphs are compatible with the frequency of brand and special edition cigarettes in the collection, which was shown in Figure 5.4 previously and was analyzed in detail.

The main result from this analysis is that the “regular” cigarette thickness recipeme at the micro level was the ‘winning’ thickness among others and was replicated up to today. This is how the thickness of Turkish cigarettes has changed. But why did it change in this way? What happened in World War II for this new ‘winning’ type of thickness to appear? Why were “slim” and “thick” cigarettes eliminated just before 1980? After other graphs are analyzed, these and similar questions are answered within further analysis and interpretation with reference to theories.

ii) Cigarette calibre form

The frequency of codes regarding the ‘cigarette calibre form’ design element is shown below in Figure 5.26 for brand cigarettes and in Figure 5.27 for special edition cigarettes.

Since the data of alternative ideas on cigarettes were collected from the packages, then these were coded and counted accordingly; the code “mixed” refers to the cigarette packages that contain cigarettes with different calibre forms. The code “NA” refers to the cigarette packages that could not be coded.

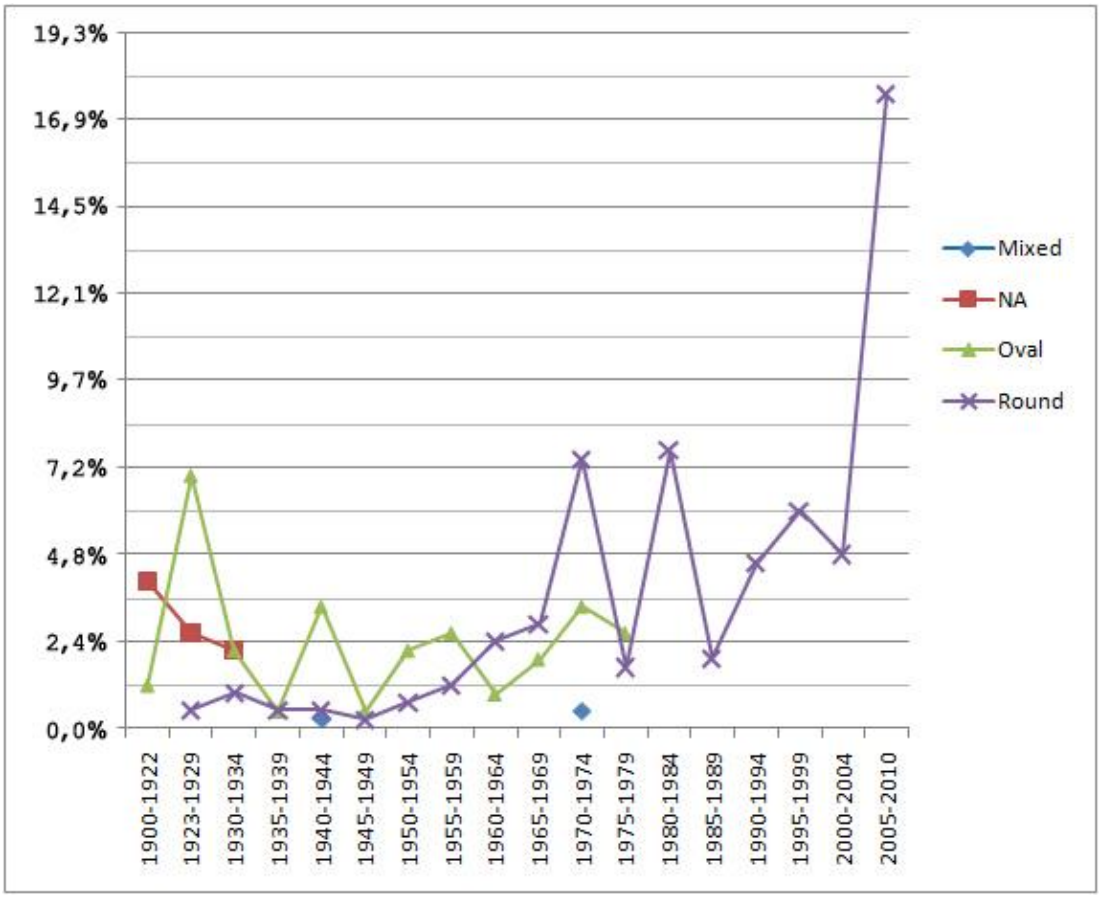

Figure 5.26 : Calibre form of brand cigarettes.

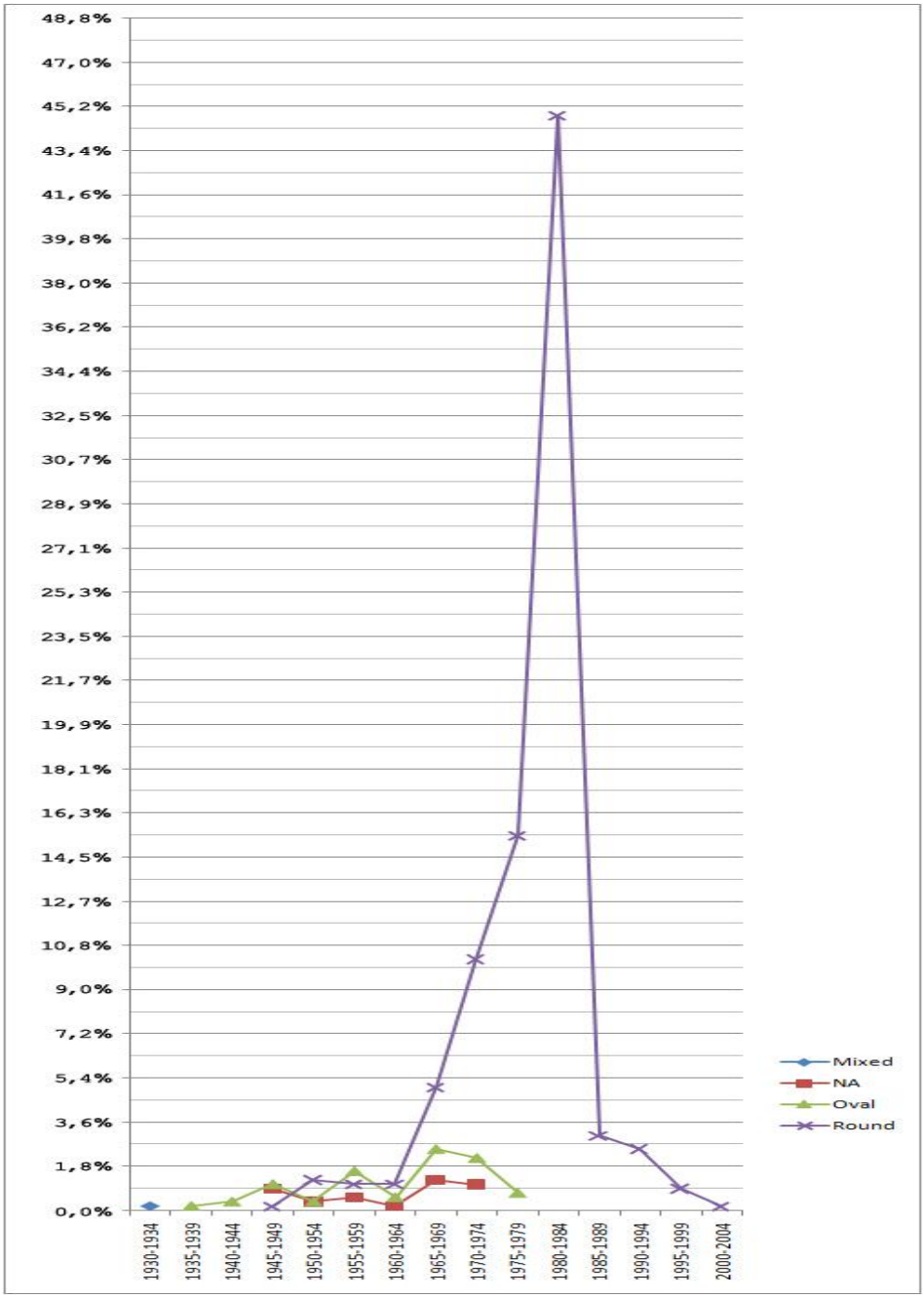

Figure 5.27 : Calibre form of special edition cigarettes.

The highlights from the analysis of Figures 5.26 and 5.27 are listed below:

- Brand and special edition cigarettes were both coded with “oval” and “round”.
- It can be said that “oval” and “round” cigarettes date back to the beginning of the 1900s. Although there are “NA” cigarettes at those times, these can be considered to be both “oval” and/or “round” cigarettes.
- “Round” cigarettes appeared in special edition cigarettes in the latter half of the 1940s.
- “Oval” cigarettes disappeared just before 1980 in both brand and special edition cigarettes.

- The increase and decrease in the frequencies of these codes in both graphs are compatible with the frequency of brand and special edition cigarettes in the collection, which was shown in Figure 5.4 previously and was analyzed in detail.

The main result from this analysis is that the “round” cigarette calibre form recipeme at the micro level was the ‘winning’ calibre form against the “oval” one, and was replicated up to today. This is how the calibre form of Turkish cigarettes has changed. But why did it change in this way? Why did “oval” cigarettes disappear although they were identified as Turkish cigarettes and were fashionable abroad? After other graphs are analyzed, these and similar questions are answered within further analysis and interpretation with reference to theories.

iii) Cigarette length

The frequency of codes regarding the ‘cigarette length’ design element is shown below in Figure 5.28 for brand cigarettes and in Figure 5.29 for special edition cigarettes.

Since the data of alternative ideas on cigarettes were collected from the packages, then these were coded and counted accordingly; the code “mixed” refers to the cigarette packages that contain cigarettes with different lengths. The code “NA” refers to the cigarette packages that could not be coded.

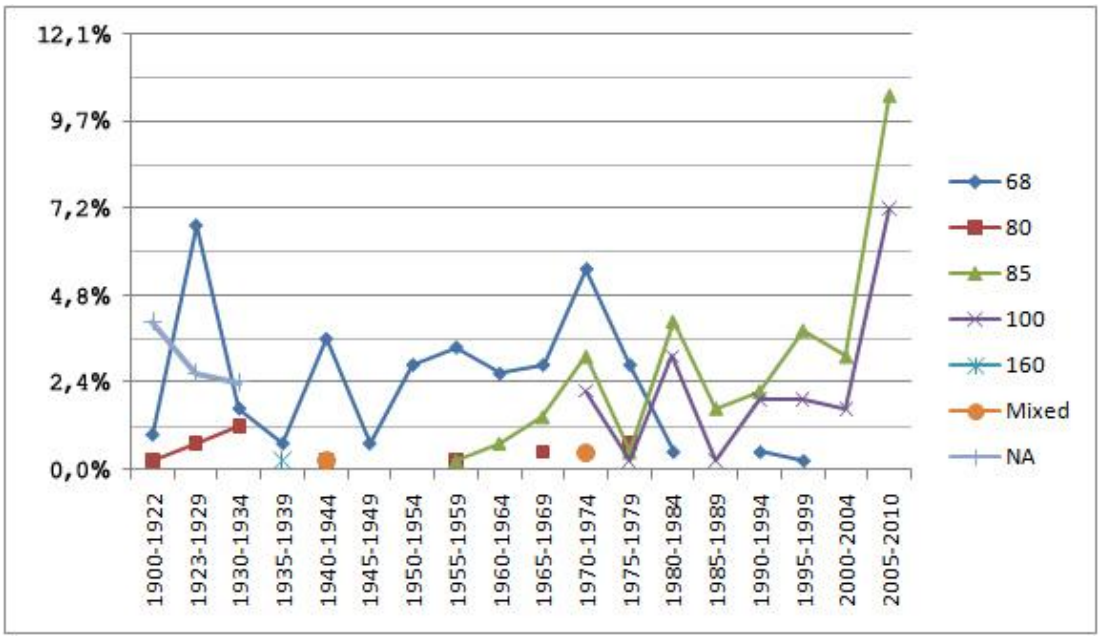

Figure 5.28 : Length of brand cigarettes.

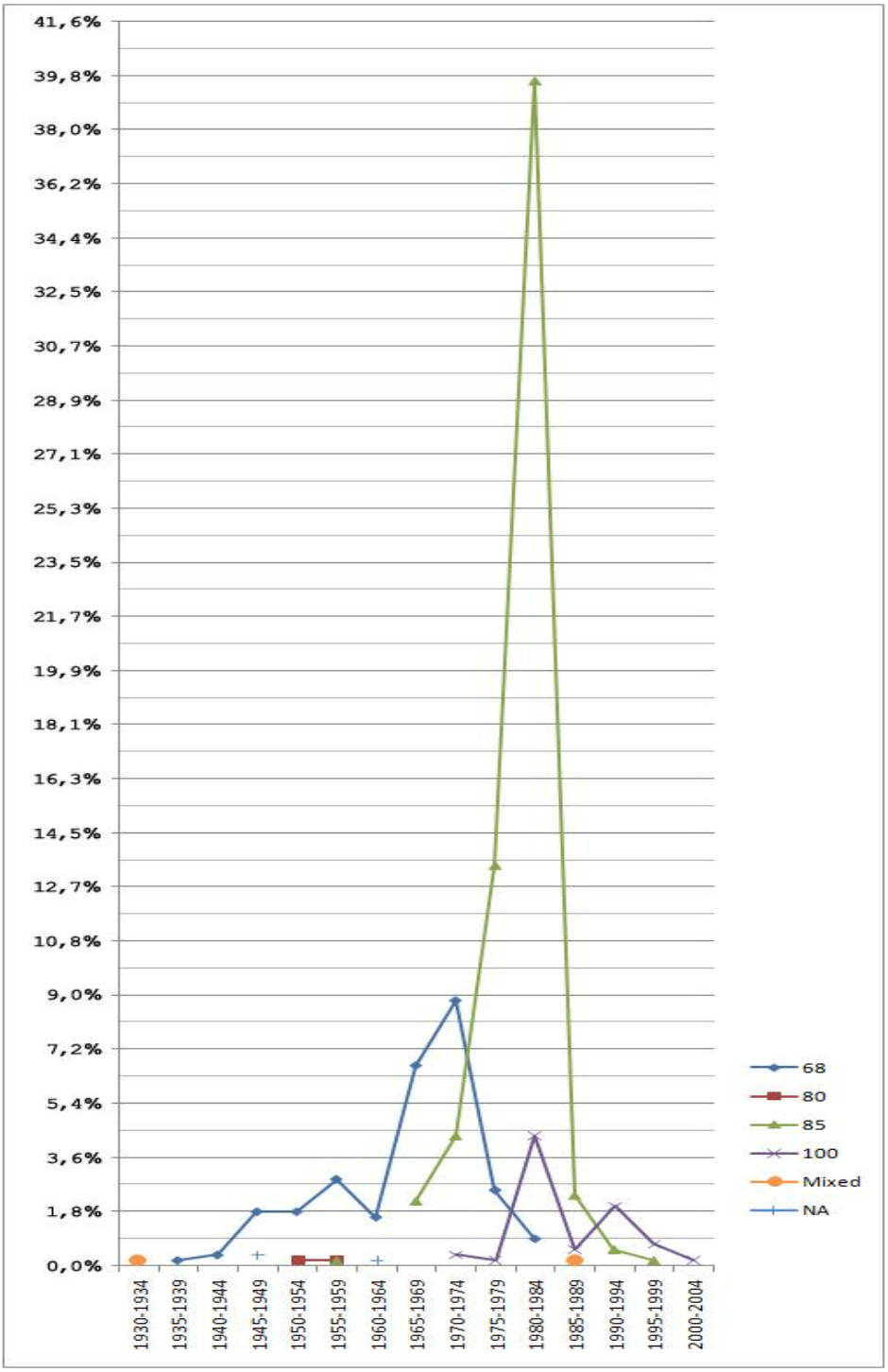

Figure 5.29 : Length of special edition cigarettes.

The highlights from the analysis of Figures 5.28 and 5.29 are listed below:

- Brand cigarettes were coded with “68 mm”, “80 mm”, “85 mm”, “100 mm” and “160 mm” while special editions were coded similarly except for the “160 mm” one.

- It can be said that “68 mm” and “80 mm” cigarettes date back to the beginnings of 1900s. Although there are “NA” cigarettes at those times, these can be considered to be both “68 mm” and/or “80 mm” cigarettes.

- Firstly, “80 mm” brand cigarettes disappeared at the first half of 1930s. Then the code reappeared in special edition cigarettes between 1950 and 1960. Then the code reappeared again in brand cigarettes in the latter halves of the 1960s and 70s.
- “160 mm” cigarettes appeared and disappeared in the latter half of the 1930s only in brand cigarettes.
- “85 mm” cigarettes appeared in the latter half of the 1950s in brand cigarettes and in the latter half of the 1960s in special edition cigarettes.
- “100 mm” cigarettes appeared in both brand and special edition cigarettes in the first half of the 1970s.
- “68 mm” cigarettes disappeared from both brand and special edition cigarettes in the first half of the 1980s. Then the code reappeared between 1990 and 2000 in brand cigarettes.
- The increase and decrease in the frequencies of these codes in both graphs are compatible with the frequency of brand and special edition cigarettes in the collection, which was shown in Figure 5.4 previously and was analyzed in detail. But it is more fragmented this time. To be more specific, the two peaks of “brand” code between 1960 and 1990 appear again in the cigarette length graph of brand cigarettes; however this time the first peak belongs to “68 mm”, and the second belongs to the sum of “85 mm” and “100 mm” codes. Similarly, the dramatic increase of “special edition” code is reflected in the cigarette length graph of special edition cigarettes with the increase of “68 mm” code, and later with the increase of “85 mm” code as the continuation. These all indicate the tough competition and the struggle of “68 mm” code against “85 mm” and” 100 mm” codes since the time they had appeared in the market.

The main result from this analysis is that the “85 mm” and “100 mm” cigarette length recipemes at the micro level were the ‘winning’ lengths among others, and they were replicated up to today. This is how the length of Turkish cigarettes has changed. But why it changed this way? Why other codes, especially the highly selected “68 mm” one, were eliminated? After other graphs are analyzed, these and similar questions are answered within further analysis and interpretation with reference to theories.

iv) Cigarette tip

The frequency of codes regarding the ‘cigarette tip’ design element is shown below in Figure 5.30 for brand cigarettes and in Figure 5.31 for special edition cigarettes.

Since the data of alternative ideas on cigarettes were collected from the packages, then these were coded and counted accordingly; the code “mixed” refers to the cigarette packages that contain cigarettes with different tips. The code “NA” refers to the cigarette packages that could not be coded.

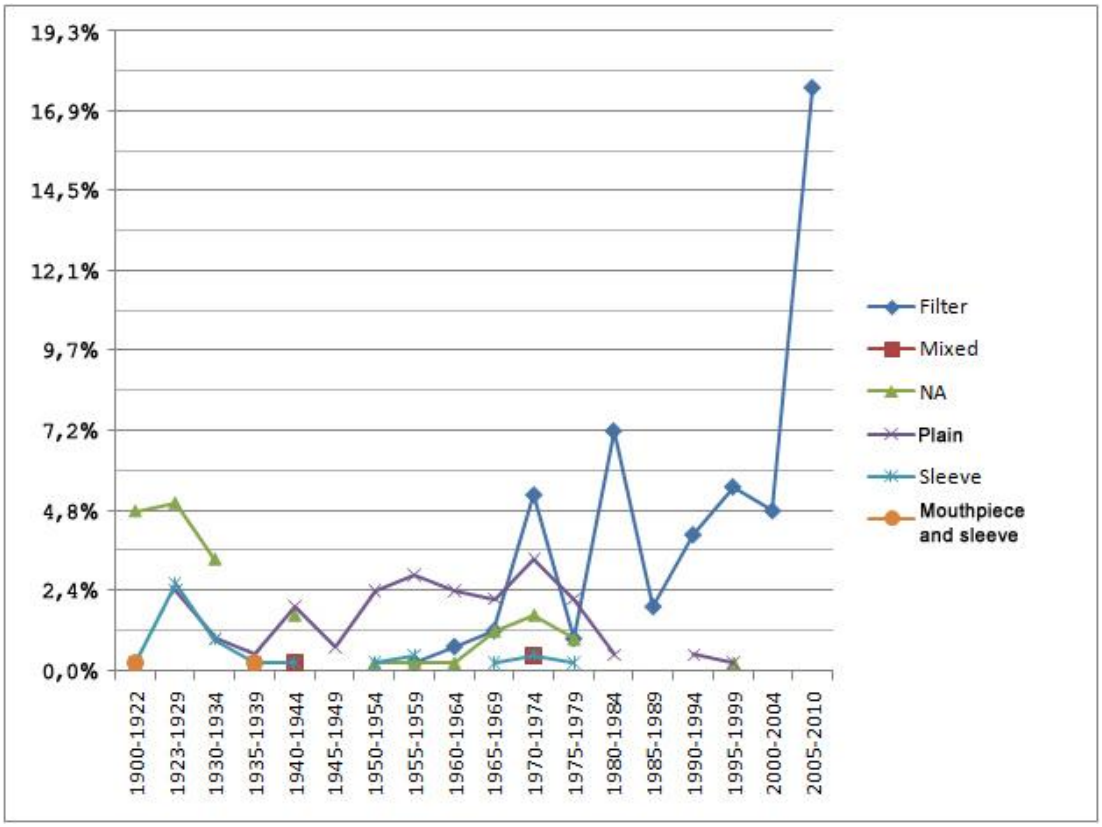

Figure 5.30 : Tip of brand cigarettes.

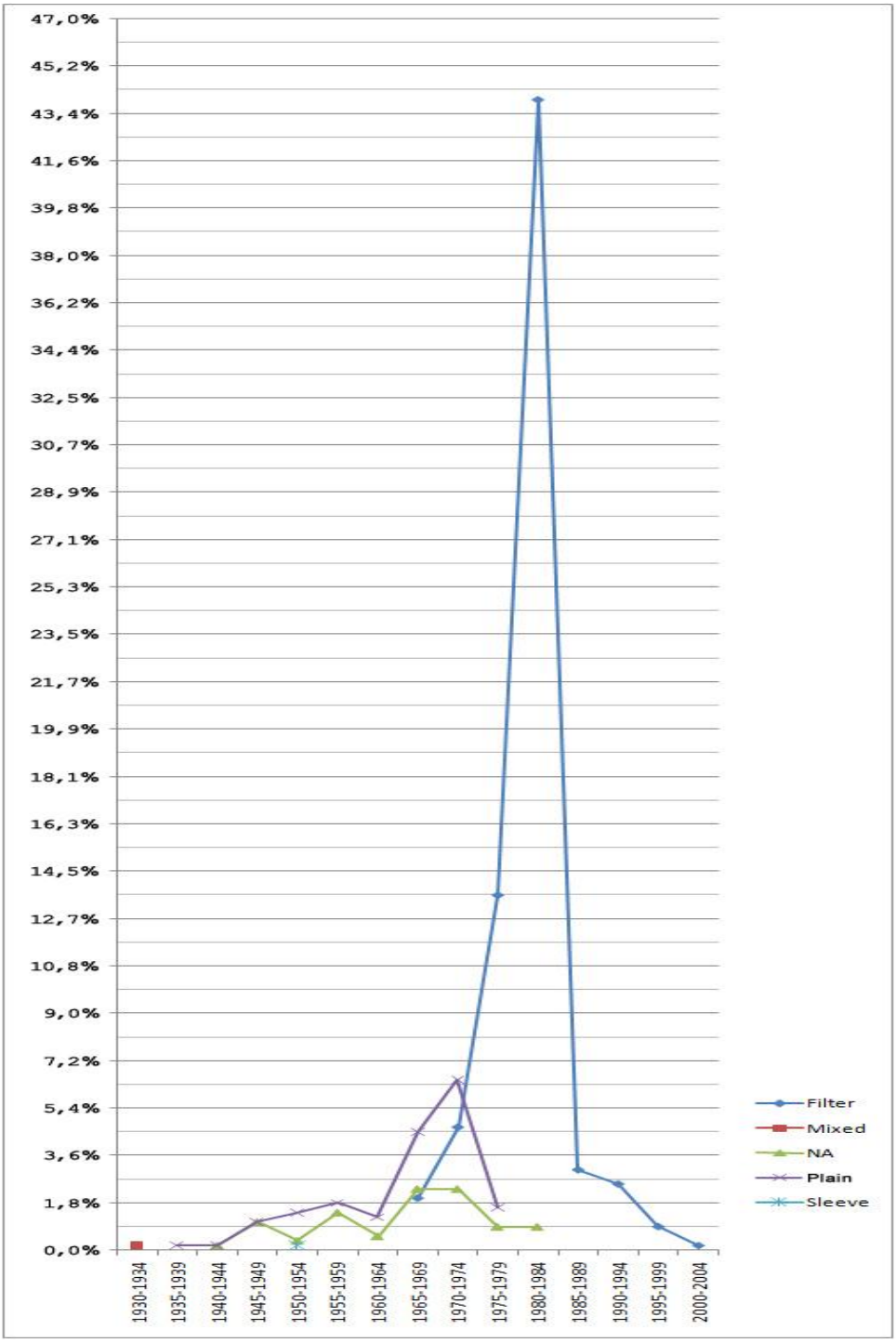

Figure 5.31 : Tip of special edition cigarettes.

The highlights from the analysis of Figures 5.30 and 5.31 are listed below:

- Brand cigarettes were coded with “filter”, “sleeve”, “mouthpiece & sleeve”, and “plain”; while special editions were coded similarly except for the “mouthpiece & sleeve”.

- It can be said that “sleeve” and “mouthpiece & sleeve” cigarettes date back to the beginnings of 1900s. Although there are “NA” cigarettes at those times, these can be considered to be these codes.

- “Mouthpiece & sleeve” appeared twice in brand cigarettes, once in Ottoman Empire times and then at the latter half of 1930s.
- “Sleeve” cigarettes disappeared during World War II at the first half of 1940s; then reappeared twice between 1950 and 1960, and 1965 and 1980. Although they seem to disappear again in this period, there are “NA” cigarettes that might have been “sleeve” cigarettes. For special edition cigarettes, “sleeve” was not selected as much as it was selected for brand cigarettes. It only appeared at the first half of 1950s with low frequency. Although there are “NA” cigarettes in the graph, it is hard to consider them as “sleeve” cigarettes due to their low frequency of appearance in special edition cigarettes.
- “Plain” appeared during the foundation years of the Republic of Turkey in 1920s in brand cigarettes. Then disappeared at the first half of 1980s; however reappeared again between 1990 and 2000 in brand cigarettes. For special edition cigarettes, “plain” appeared at the latter half of 1930s and disappeared before 1980.
- “Filter” appeared in the latter half of the 1950s in brand cigarettes and in the latter half of the 1960s in special edition cigarettes.
- The increase and decrease in the frequencies of these codes in both graphs are compatible with the frequency of brand and special edition cigarettes in the collection, which was shown in Figure 5.4 previously where it was analyzed in detail. But it is more fragmented this time. To be more specific, the two peaks of “brand” code between 1960 and 1990 appear again in the cigarette tip graph of brand cigarettes; however this time the first peak belongs to the sum of “filter”, “plain”, and “sleeve” codes. Similarly, the dramatic increase of the “special edition” code is reflected in the cigarette tip graph of special edition cigarettes with the increase of the “plain” code, and later with the increase of “filter” code as the continuation. These all indicate the tough competition and the struggle of “plain” and “sleeve” codes against the “filter” code since the time it had appeared in the market.

The main result from this analysis is that the “filter” cigarette tip recipeme at the micro level was the ‘winning’ cigarette tip among others, and was replicated up to today. This is how the tip of Turkish cigarettes has changed. But why has it changed in this way? Why did the “filter” code win the competition against “plain” and “sleeve” codes? These and similar other questions, which have been raised up until now, are answered within further analysis and interpretation with reference to theories in the next part.

5.3.1.3 Matrix results and analysis

In addition to the graphs shown and analyzed in the previous part, a matrix was prepared to measure the associations between these codes, in other words, between alternative ideas (different recipemes at the micro level), to create possible configurations of a cigarette. The matrix of codes of cigarettes is shown in Table 5.2 below. The numbers in the table indicate the total number of cigarette packages from the collection that were counted for both intersecting codes.

Table 5.2 : Matrix for the associations of codes of cigarettes.

	Oval	Round	68 mm	80 mm	85 mm	100 mm	160 mm	Plain	Filter	Sleeve	Mouthpiece & sleeve
Thick	22	5	26	1	0	0	1	9	0	6	1
Regular	0	696	99	0	473	123	0	75	597	0	0
Slim	17	10	25	1	0	0	0	12	0	7	1
Oval			155	16	0	0	0	99	0	22	1
Round			125	1	477	123	1	99	598	3	1
68 mm								190	0	20	1
80 mm								4	1	4	0
85 mm								4	473	0	0
100 mm								0	123	0	0
160 mm								0	0	0	1

Since some of the design elements of cigarettes could not be coded in the Excel table due to limited access to cigarette packages, they were coded and counted as “NA” (not applicable), and were not shown in the matrix above.

The highlighted results from the matrix can be summarized as follows:

- The configuration of “regular” and “oval” was never selected.
- The configuration of “regular”, ”round”, “85 mm” and “filter” was mainly selected.
- The configuration of “regular”, ”round”, “100 mm” and “filter” was mainly selected.

- The configuration of “regular”, ”round”, “68 mm” and “plain” was mainly selected.
- The configuration of “thick” or “slim”, “oval”, “68 mm” and “plain” was mainly selected.
- The configuration of “thick” or “slim”, “oval”, “68 mm” and “sleeve” was mainly selected.
- The configuration of “regular”, “round”, “160 mm” and “mouthpiece & sleeve” was selected for once in the collection.

These are the recipemes at the micro level for cigarettes that worked more together in a black box system to give the cigarettes their final form.

These results of graphs and matrixes, and their initial analysis are gathered in the following parts for further analysis and interpretation with reference to the theories of this thesis.

5.3.2 Cigarette packaging design

The technology of cigarette packaging and printing was explained in Chapter 2, which corresponds to the recipemes at the macro level. It is closely related to the recipemes at the micro level for cigarette packages. In this part, first these recipemes at the micro level, in other words, ‘how to put things on a cigarette package’, are explained through the design elements of a cigarette package, then the results of these recipemes at the micro level are successively given as graphs and matrixes and explained.

As the recipeme at the macro level, the manufacturing of cigarette packages was studied by coding the packages in the collection as “hand” and “machine”. This coding was carried out due to ‘package opening mechanism’ and its codes, which are explained in detail in the following part. The codes of this design element are “soft”, “envelope”, “flip-top”, “flip-top (long edge)”, “hinged-lid”, “hinged-lid (short edge)”, and “sliding”. In reference to the interviews[61] carried out during this research, cigarette packages with the following opening mechanisms were partially manufactured by hand: “envelope”, “hinged-lid”, “hinged-lid (short edge)”, and “sliding”. Therefore, these packages were coded as “hand” while the others were coded as “machine”.

The manufacturing of brand cigarette packages is shown in Figure 5.32 and the manufacturing of special edition cigarette packages is shown in Graph 5.33 below with the frequencies of “hand” and “machine” codes. Accordingly, 265 packages

[61] Personal interviews with Alparslan Çetin (2010), Nejat Oğuztaş (2010), and Tunca Varış (2008-2011).

were hand-made and 702 packages were machine-made out of 967 packages in the collection that could be studied due the 5-year date range.

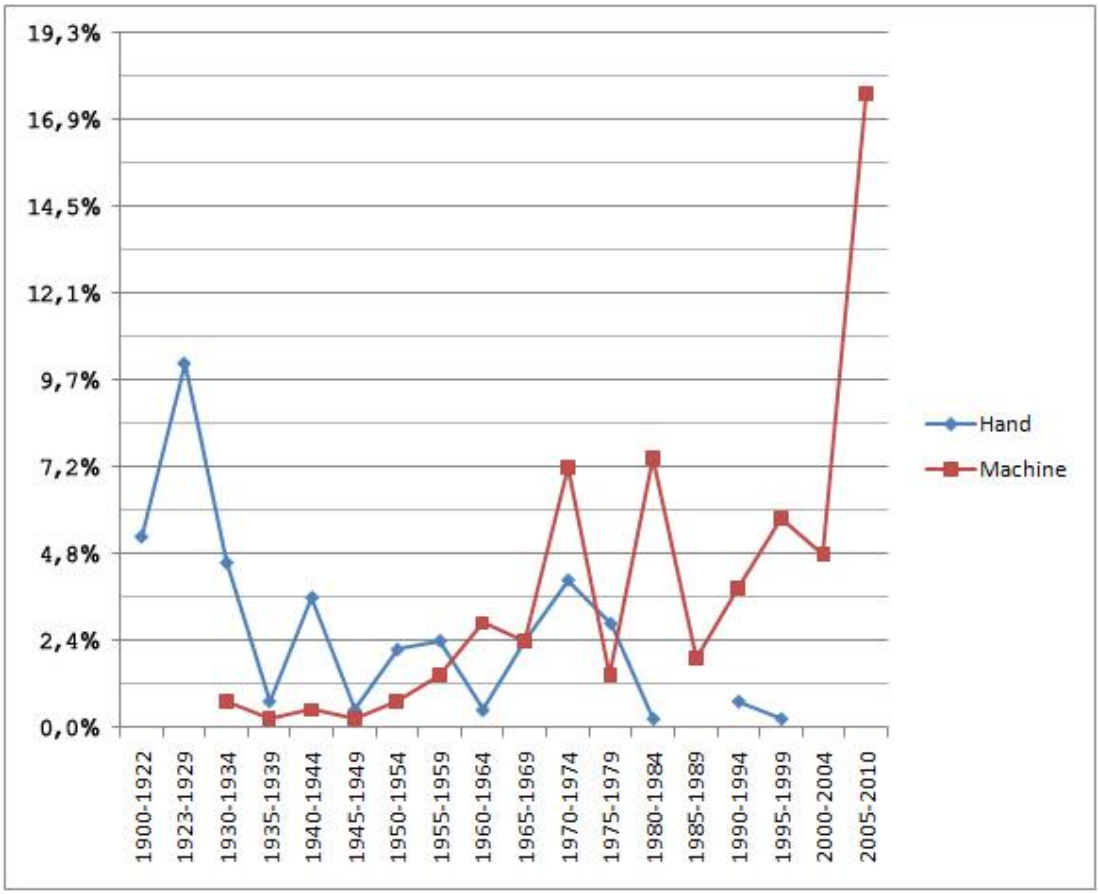

Figure 5.32 : Manufacturing of brand cigarette packages.

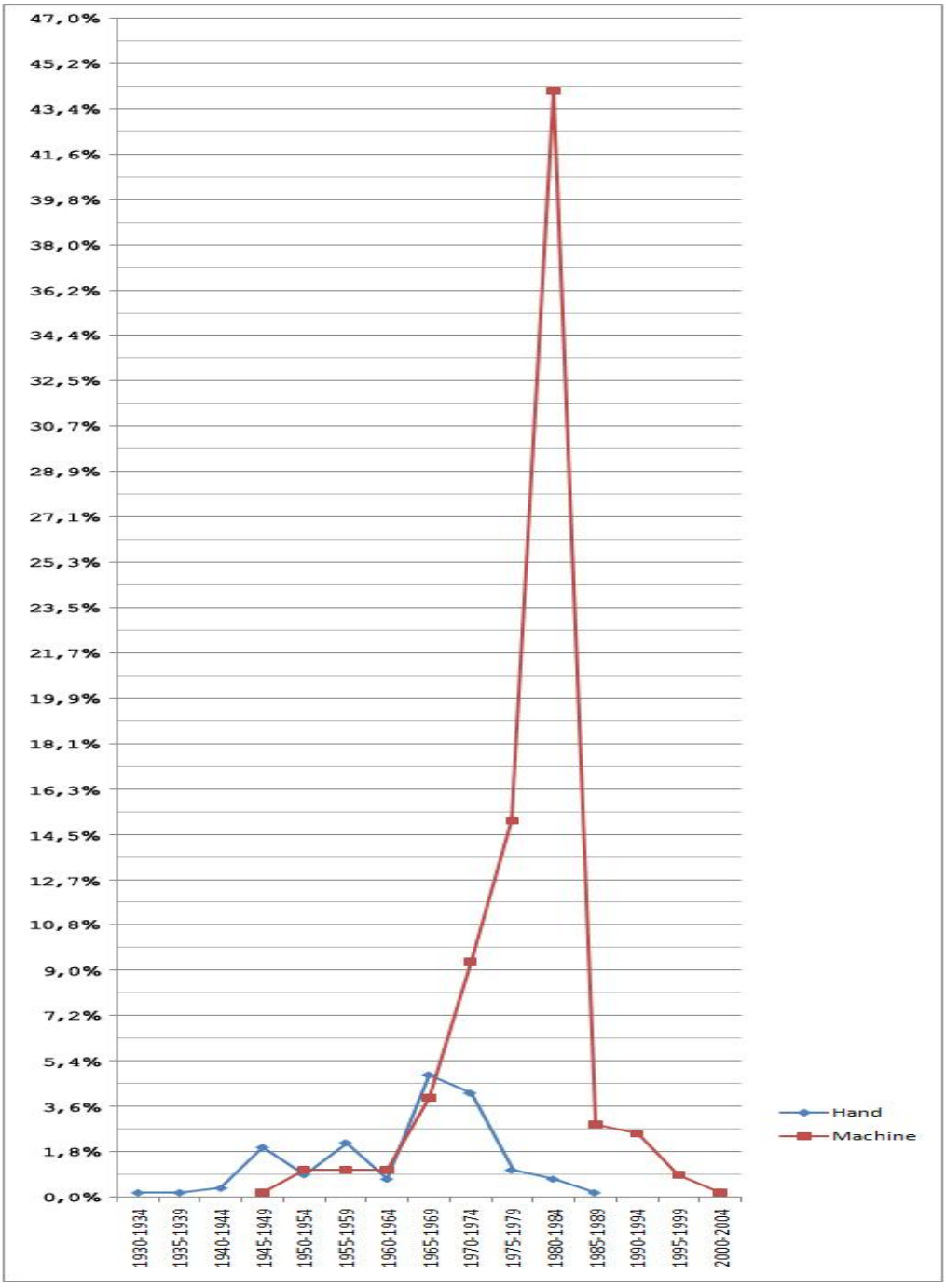

Figure 5.33 : Manufacturing of special edition cigarette packages.

5.3.2.1 Ideas about cigarette packages: Recipemes at the micro level

Recipemes at the micro level shape the design of cigarette packages through their design elements, which were determined as ‘cigarette package form’, ‘cigarette package opening mechanism’, ‘cigarette package capacity’, and ‘cigarette package material’ to be studied in this thesis.

These design elements of a cigarette package varied due to alternative ideas. These alternative ideas were coded, and then counted to observe how the design of cigarette packages changed through years within this quantitative study.

The alternative ideas for 'cigarette package form' were identified and coded as "soft pack", "sharp-corner box", "round-corner box" and "octagonal-corner box".

The alternative ideas for 'cigarette package opening mechanism' were identified and coded as "soft", "envelope", "flip-top", "flip-top (long edge)", "hinged-lid", "hinged-lid (short edge)" and "sliding".

The alternative ideas for 'cigarette package capacity' were identified and coded as "3", "4", "5", "10", "20", "25", "50", "84", "100", and "120". Among these codes, "3" and "4" could not be shown in graphs since the dates of this kind of cigarette packages could not be ranged to 5-years. In addition, although "5" code refers to the containment of 5 cigarettes, some packages (which were opened) contained 3 cigarettes instead of 5 with folded edges. These kinds of packages were regarded as "5" code as well. Although it was not observed in the collection, the scale of cigarette package capacity was wider in the 1900s. The first list of cigarettes from the Ottoman Emperor dating back to 1906 (Doğruel and Doğruel, 2000) includes packages with "500" capacity. In addition, Oğuztaş[62] stated that there were packages with "1000" capacity as well.

The alternative ideas for 'cigarette package material' were identified and coded as "paper", "transparent paper", "paperboard" and "tin".

Package colours were also studied in general; which were then studied again within a qualitative study at the end of this chapter. The alternative ideas for 'cigarette package colours' were identified and coded as "Red", "Blue", "Brown", "Yellow", "Black", "White", "Silver Gilt", "Golden Gilt", "Orange", "Green", "Gray", "Pink", and "Purple".

All these coded alternative ideas are the recipemes at the micro level. They are shown within the photographs of cigarette packages in Figures 5.34-5.54 below.

[62] Personal interview with Nejat Oğuztaş (2010).

Figure 5.34 : Folding cartons for ‘form’ of “sharp-corner box”, “octagonal-corner box” and “round-corner box” with ‘material’ of “paperboard” (left to right).

Figure 5.35 : Folding paper for ‘form’ of “soft pack” with ‘material’ of “paper”.

Figure 5.36 : 'Opening mechanism' of "soft".

Figure 5.37 : 'Opening mechanism' of "flip-top".

Figure 5.38 : 'Opening mechanism' of "flip-top (long-edge)".

Figure 5.39 : 'Opening mechanism' of "hinged-lid".

Figure 5.40 : 'Opening mechanism' of "sliding".

Figure 5.41 : An example of "sharp-corner", "hinged-lid", "paperboard", "120" package.

Figure 5.42 : An example of “round-corner”, “hinged-lid”, “tin”, “100” package.

Figure 5.43 : An example of “sharp-corner”, “hinged-lid”, “paperboard”, “50” package.

Figure 5.44 : An example of “sharp-corner”, “hinged-lid”, “paperboard”, “50” package.

Figure 5.45 : An example of “soft pack”, “soft”, “paper”, “20” package.

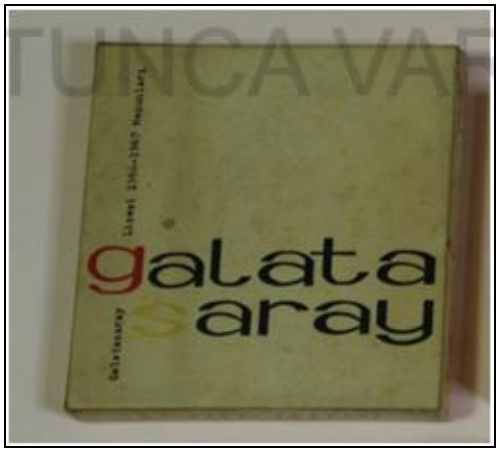

Figure 5.46 : An example of “sharp-corner”, “hinged-lid”, “paperboard”, “10” package.

Figure 5.47 : An example of “sharp-corner”, “sliding”, “paperboard”, “5” package.

Figure 5.48 : An example of “round-corner”, “flip-top”, “paperboard”, “20” package.

Figure 5.49 : An example of “octagonal-corner”, “flip-top”, “paperboard”, “20” package.

Figure 5.50 : An example of “sharp-corner”, “flip-top”, “paperboard”, “20” package.

Figure 5.51 : An example of “envelope”, “soft”, “transparent paper”, “5” package.

Figure 5.52 : An example of “sharp-corner”, “hinged-lid (short edge)”, “paperboard”, “20” package.

Figure 5.53 : An example of “sharp-corner”, “sliding”, “paperboard”, “20” package.

Figure 5.54 : An example of “sharp-corner”, “flip-top (long edge)”, “paperboard”, “20” package.

5.3.2.2 Graph results and analysis

The alternative ideas of design elements of cigarette packages were coded and recorded in an Excel table regarding the “Date Range” of cigarette packages and the “Brand/Special Edition” context variable. By this way, the codes were counted through years separately for brand and special edition cigarette packages.

In this part, the frequency of codes changing through years for special edition and brand cigarette packages are shown within graphs and analyzed briefly to be further analyzed and interpreted with reference to theories used in this thesis.

i) Cigarette package form

The frequency of codes regarding the ‘cigarette package form’ design element is shown below in Figure 5.55 for brand cigarette packages and in Figure 5.56 for special edition cigarette packages.

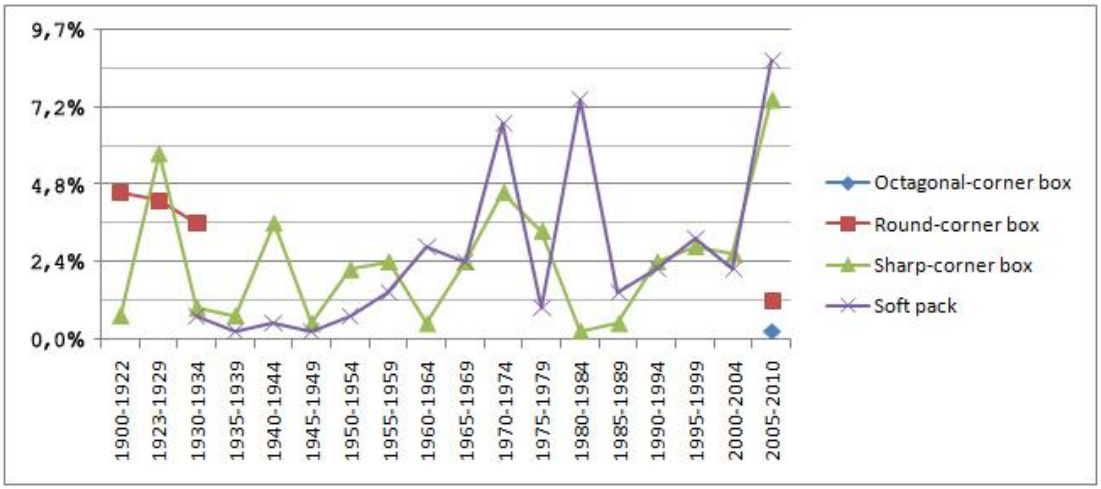

Figure 5.55 : Package form of brand cigarettes.

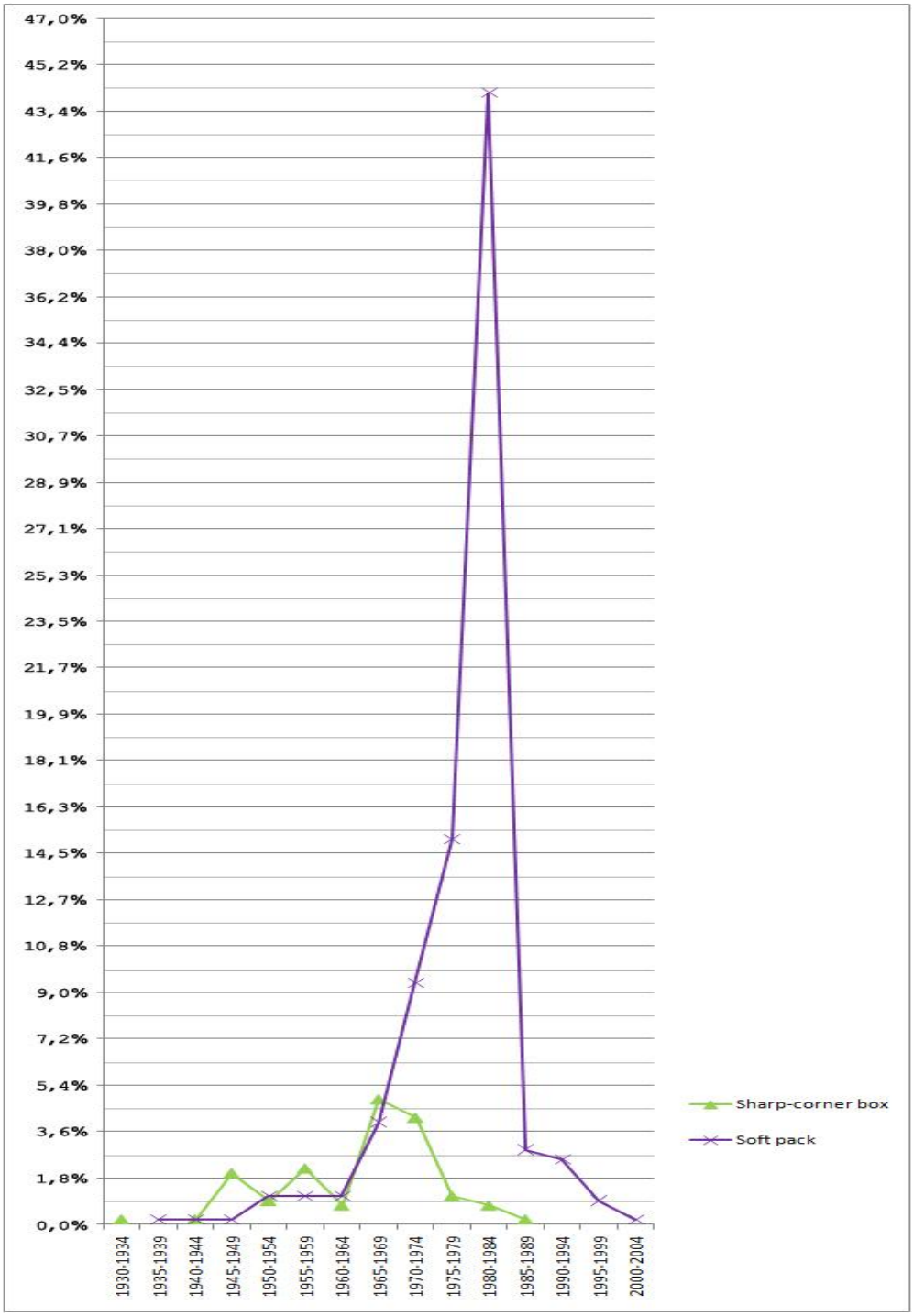

Figure 5.56 : Package form of special edition cigarettes.

The highlights from the analysis of Figures 5.55 and 5.56 are listed below:

- Brand cigarettes were coded with “soft pack”, “sharp-corner box”, “round-corner box” and “octagonal-corner box”; while special editions were only coded with “soft pack” and “sharp-corner box”.

- It can be said that “round-corner box” and “sharp-corner box” packages date back to the beginnings of 1900s.

- “Round-corner box” packages disappeared suddenly at the first half of the 1930s and then reappeared at the latter half of the 2000s, almost a hundred years later.
- “Sharp-corner box” packages had always been in the market. For special edition cigarettes, this form disappeared at the latter half of the 1980s.
- “Soft pack” packages appeared at the first half of 1930s in brand cigarettes and appeared at the latter half of the 1930s in special edition cigarettes as if substituting the “round-corner-box”; and this form dominated the market since then.
- “Octagonal-corner box” packages appeared at the latter half of the 2000s together with “round-corner box” packages.
- The increase and decrease in the frequencies of these codes in both graphs are compatible with the frequency of brand and special edition cigarettes in the collection, which was shown in Figure 5.4 previously and was analyzed in detail. But it is more fragmented this time. To be more specific, the two peaks of “brand” code between 1960 and 1990 appear again in the cigarette package form graph of brand cigarettes; however this time the first peak belongs to the sum of “sharp-corner box” and “soft pack”. Similarly, the dramatic increase of “special edition” code is reflected in the cigarette package form graph of special edition cigarettes with the increases of “sharp-corner box” and “soft pack” codes, and later with the increase of “soft pack” code as the continuation. These all indicate the tough competition between “sharp-corner box” and “soft pack” codes.

The main result from this analysis is that the “sharp-corner box” and the “soft pack” cigarette package form recipemes at the micro level were the ‘winning’ package forms among others, which dominated the market for almost a hundred years and were replicated up to today. However, the emergence of new package forms lately (“octagonal-corner box” and the reappearance of “round-corner-box”) indicates the possibility of new competitions in the market. This is how the form of Turkish cigarette packages has changed. But why did it change in this way? Why are new package forms emerging in the market? After other graphs are analyzed, these and similar questions are answered within further analysis and interpretation with reference to theories.

ii) Cigarette package opening mechanism

The frequency of codes regarding the ‘cigarette package opening mechanism’ design element is shown below in Figure 5.57 for brand cigarette packages and in Figure 5.58 for special edition cigarette packages.

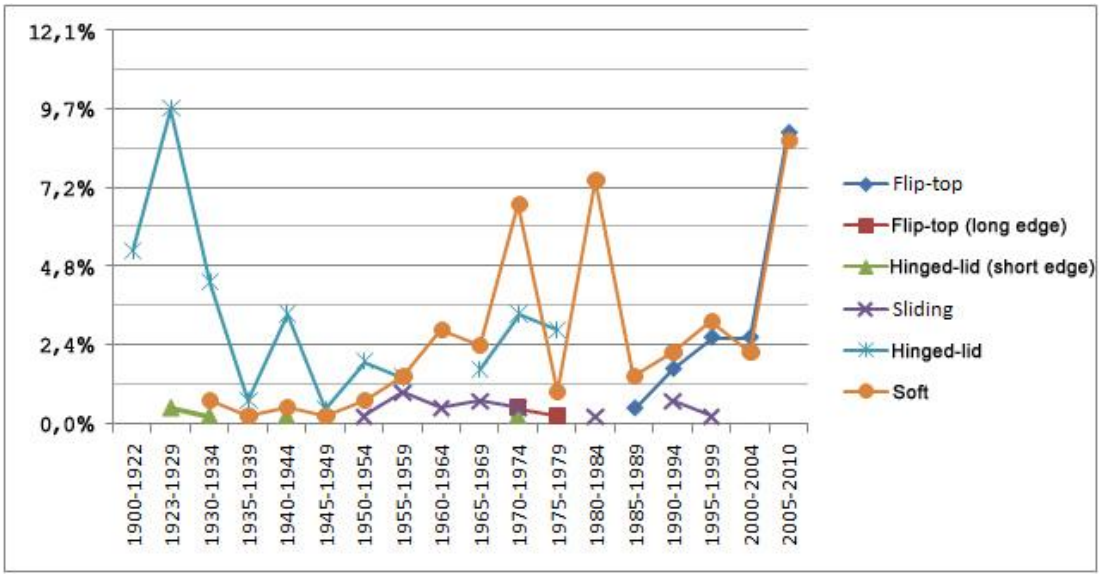

Figure 5.57 : Package opening mechanism of brand cigarettes.

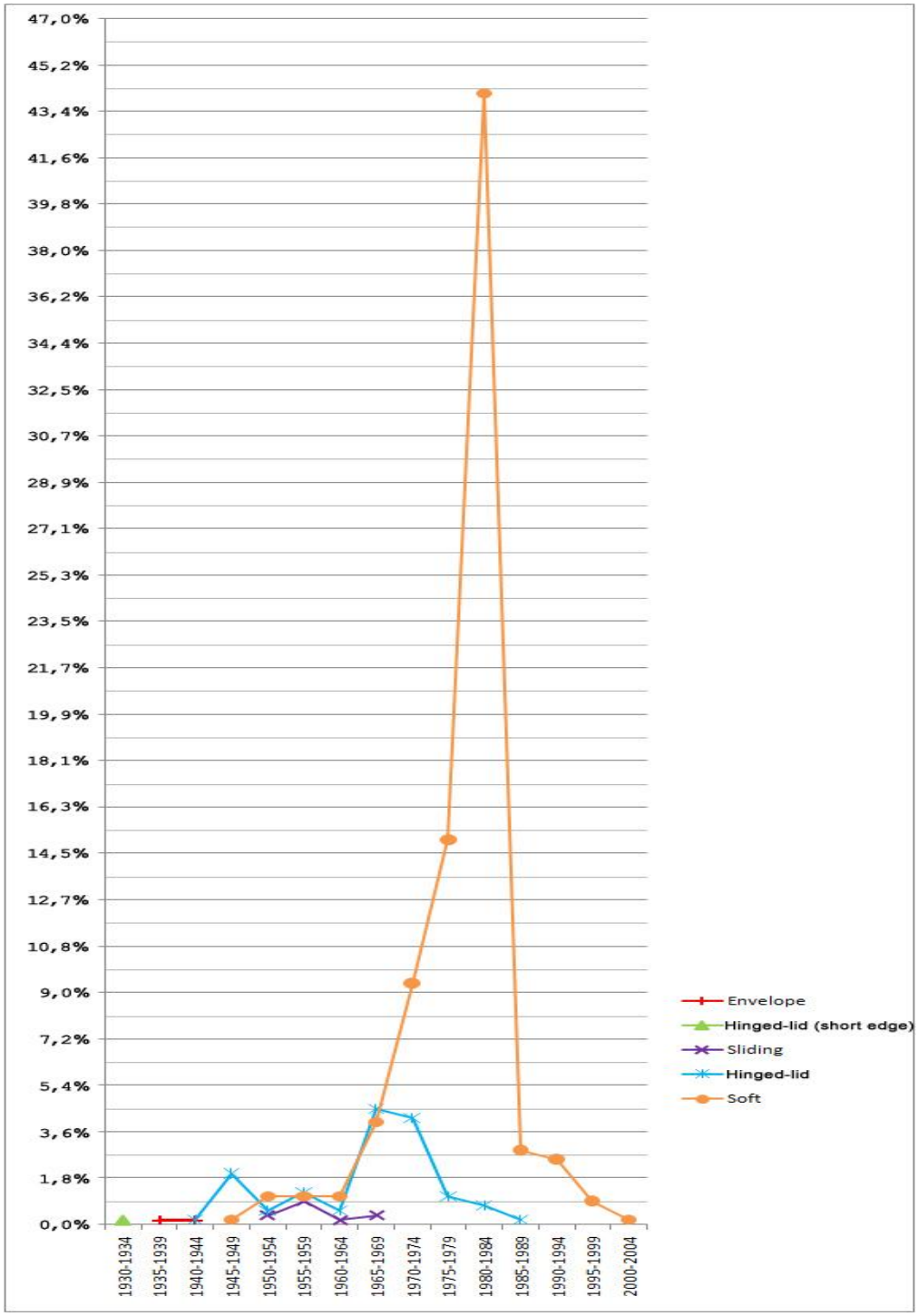

Figure 5.58 : Package opening mechanism of special edition cigarettes.

The highlights from the analysis of Figures 5.57 and 5.58 are listed below:

- Brand cigarettes were coded with “soft”, “hinged-lid”, “hinged-lid (short edge)”, “flip-top”, “flip-top (long edge)” and “sliding”; while special editions were coded with “soft”, “envelope”, “hinged-lid”, “hinged-lid (short edge)” and “sliding”.

- It can be said that “hinged-lid” and a version of it, which is “hinged-lid (short edge)”, date back to the beginnings of the 1900s.

- “Hinged-lid” packages disappeared between the years of 1955 and 1970 in brand cigarettes, however it continued in special edition cigarettes. It disappeared in brand cigarettes before 1980, and disappeared in special edition cigarettes before 1990. Its version, “hinged-lid (short edge)” appeared in brand cigarettes in the beginning of 1920s and continued till the first half of 1930s; and then it reappeared again in the first halves of the 1940s and 1970s. “Hinged-lid (short edge)” packages only appeared at the first half of the 1930s in special edition cigarettes.
- “Envelope” packages appeared in the early years of special edition cigarettes and were found in the market between 1935 and 1945.
- “Soft” packages appeared in the market at the first half of the 1930s in brand cigarettes, and at the latter half of the 1940s in special edition cigarettes. It has dominated the market since then.
- “Sliding” packages appeared in the market at the first half of the 1950s in brand and special edition cigarettes. It continued till the first half of 1970s in brand cigarettes. Then it reappeared again at the first half of the 1980s, and between 1990 and 2000 in brand cigarettes. It continued till the latter half of 1960s in special edition cigarettes.
- “Flip-top (long edge)” packages appeared in the market between 1970 and 1980 in brand cigarettes.
- “Flip-top” packages appeared at the latter half of the 1980s in brand cigarettes and dominated the market since then.
- The increase and decrease in the frequencies of these codes in both graphs are compatible with the frequency of brand and special edition cigarettes in the collection, which was shown in Figure 5.4 previously and was analyzed in detail. But it is more fragmented this time. To be more specific, the two peaks of “brand” code between 1960 and 1990 appear again in the cigarette package opening mechanism graph of brand cigarettes; however this time the first peak belongs to the sum of “soft” and “hinged-lid”. After “flip-top” code emerges into the market, it acts together with “soft” code for further increase of frequency. Similarly, the dramatic increase of “special edition” code is reflected in the cigarette package opening mechanism graph of special edition cigarettes with the increases of “hinged-lid” and “soft” codes, and later with the increase of “soft” code as the continuation. These all indicate the tough competition of “soft” and “flip-top” codes against other codes since the time they had appeared in the market.

The main result from this analysis is that the “soft” and the “flip-top” cigarette package opening mechanism recipemes at the micro level were the ‘winning’

package opening mechanisms among others, and were replicated up to today. This is how the opening mechanism of Turkish cigarette packages has changed. But why did it change in this way? After the other graphs are analyzed, this and similar questions are answered within further analysis and interpretation with reference to theories.

iii) Cigarette package capacity

The frequency of codes regarding the 'cigarette package capacity' design element is shown below in Figure 5.59 for brand cigarette packages and in Figure 5.60 for special edition cigarette packages.

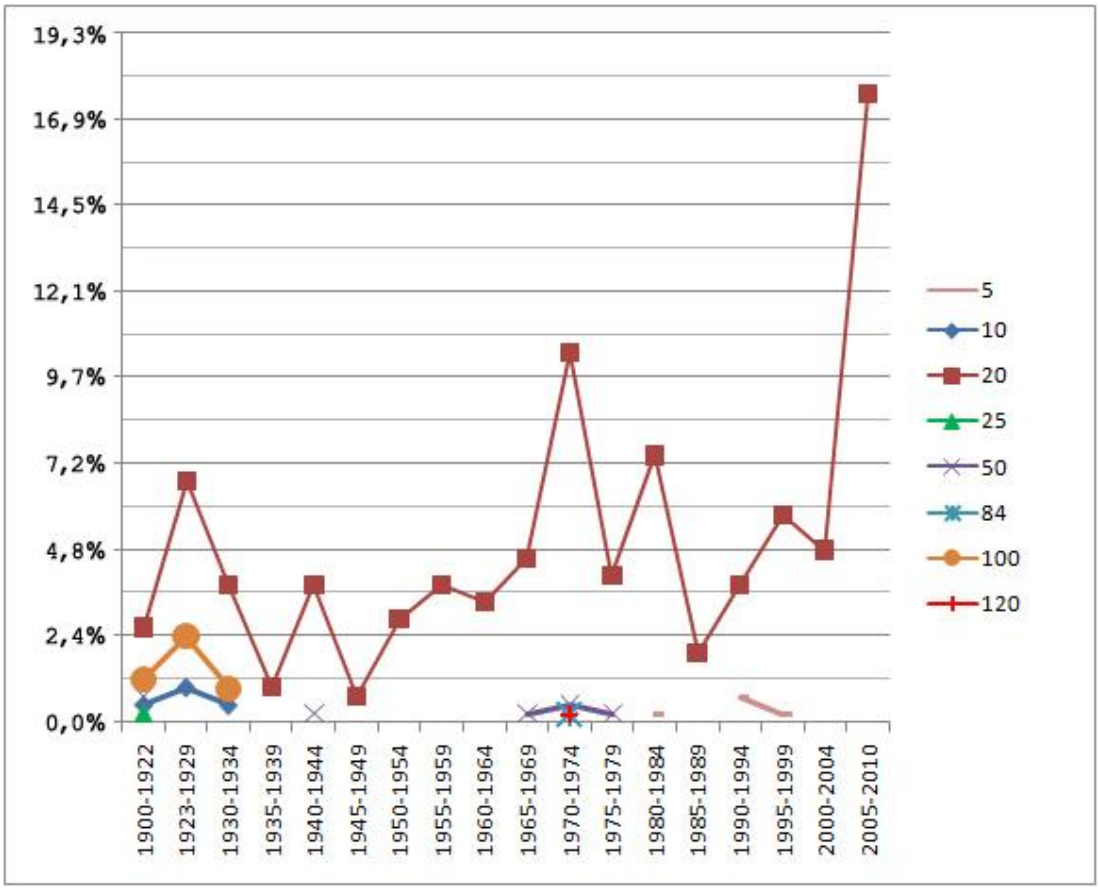

Figure 5.59 : Package capacity of brand cigarettes.

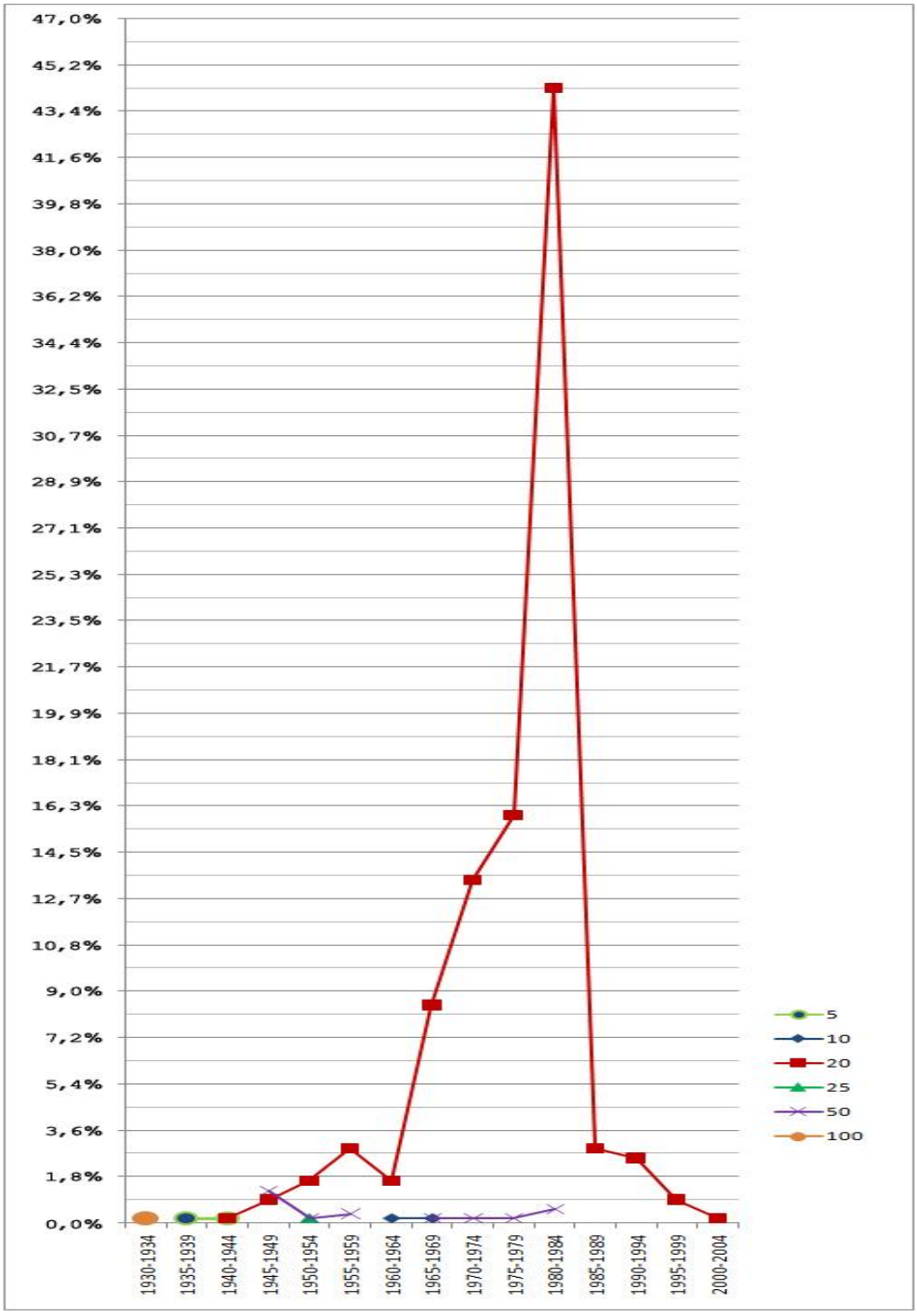

Figure 5.60 : Package capacity of special edition cigarettes.

The highlights from the analysis of Figures 5.59 and 5.60 are listed below:

- Brand cigarettes were coded with “5”, “10”, “20”, “25”, “50”, “84”, “100” and “120”; while special editions were coded with “5”, “10”, “20”, “25”, “50” and “100”. The numbers refer to number of cigarettes that can be contained in a cigarette package.
- It can be said that “10”, “20”, “25”, “100” package capacities date back to the beginnings of the 1900s.

- “5” package capacity appeared at the latter half of 1930s in special edition cigarettes; and at the first half of the 1980s, and between 1990 and 2000 in brand cigarettes.
- “10” package capacity disappeared before 1935 in brand cigarettes, and it appeared between 1960 and 1970 in special edition cigarettes.
- “20” package capacity dominated the market since the beginning of 1900s. It appeared at the beginning of the 1940s in special edition cigarettes, and it was the dominant capacity for special edition cigarettes as well.
- “25” package capacity appeared only in the Ottoman Empire period in brand cigarettes, and it appeared for a very short time at the beginning of the 1950s in special edition cigarettes.
- “50” package capacity appeared at the first half of the 1940s for a very short time, and then reappeared between 1965 and 1980 in brand cigarettes. It appeared at the latter half of the 1940s and continued till the latter half of the 1950s, then reappeared between 1965 and 1985 in special edition cigarettes.
- “84” package capacity appeared only in special edition cigarettes at the first half of the 1970s.
- “100” package capacity appeared at the beginning of the 1900s and continued till the first half of the 1930s in brand cigarettes. It also appeared in special edition cigarettes for a very short time at the first half of the 1930s.
- “120” package capacity appeared only in special edition cigarettes at the first half of the 1970s.
- The increase and decrease in the frequencies of these codes in both graphs are compatible with the frequency of brand and special edition cigarettes in the collection, which was shown in Figure 5.4 previously and was analyzed in detail. “20 mm” package capacity dominates the market in a way that its frequency composes the both cigarette package capacity graphs of brand and special edition cigarettes.

The main result from this analysis is that the “20” cigarette package capacity recipeme at the micro level was the ‘winning’ package capacity among others, and was replicated up to today. This is how the capacity of Turkish cigarette packages has changed. But why it changed this way? After other graphs are analyzed, this and similar questions are answered within further analysis and interpretation with reference to theories.

iv) Cigarette package material

The frequency of codes regarding the ‘cigarette package material’ design element is shown below in Figure 5.61 for brand cigarette packages and in Figure 5.62 for special edition cigarette packages.

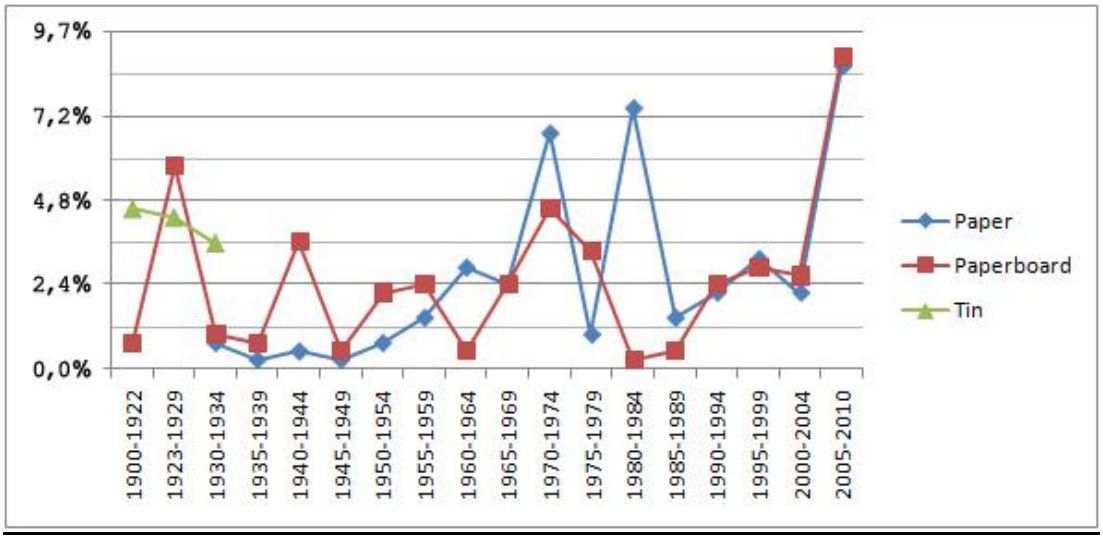

Figure 5.61 : Package material of brand cigarettes.

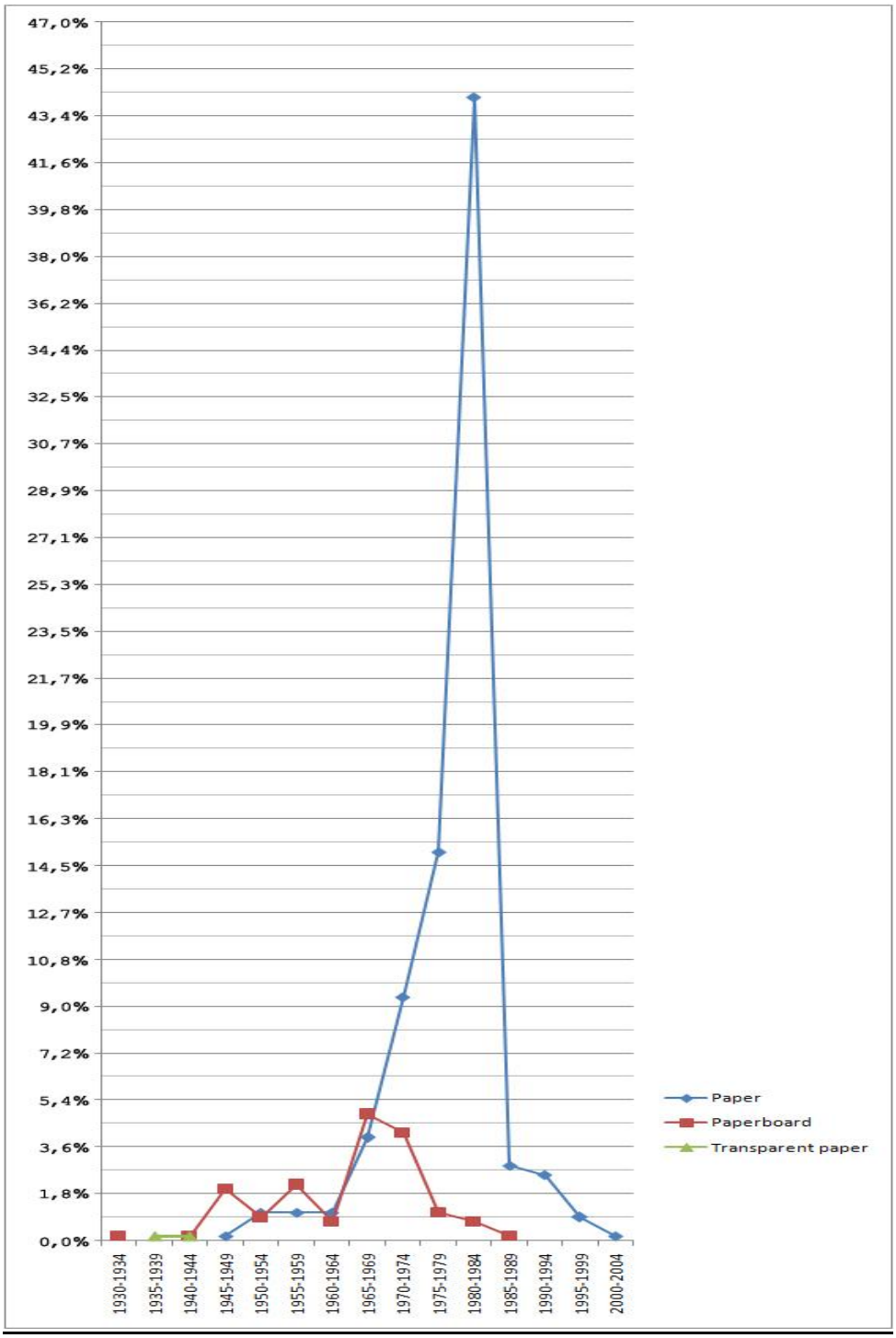

Figure 5.62 : Package material of special edition cigarettes.

The highlights from the analysis of Figures 5.61 and 5.62 are listed below:

- Brand cigarettes were coded with “paper”, “paperboard” and “tin”; while special editions were coded with “paper”, “paperboard” and “transparent paper”.

- It can be said that “tin” and “paperboard” packages date back to the beginnings of the 1900s.

- “Tin” packages disappeared in the first half of the 1930s.

- “Paperboard” packages had always been in the market. They only disappeared for a very short time at the latter half of the 1930s in special edition cigarettes.
- “Transparent paper” packages were found in the market between 1935 and 1945.
- “Paper” packages appeared in brand cigarettes at the first half of the 1930s, and appeared in special edition cigarettes at the latter half of the 1940s. They dominated the market with the “paperboard” packages since then.
- The increase and decrease in the frequencies of these codes in both graphs are compatible with the frequency of brand and special edition cigarettes in the collection, which was shown in Figure 5.4 previously and was analyzed in detail. But it is more fragmented this time. To be more specific, the two peaks of “brand” code between 1960 and 1990 appear again in the cigarette package material graph of brand cigarettes; however this time the first peak belongs to the sum of “paper” and “paperboard”; and the second one belongs to the “paper”. Similarly, the dramatic increase of “special edition” code is reflected in the cigarette package material graph of special edition cigarettes with the increases of “paper” and “paperboard” codes, and later with the increase of “paper” code as the continuation. These all indicate the tough competition and the struggle between “paperboard” and “paper” packages since the time they had appeared in the market.

The main result from this analysis is that both “paper” and “paperboard” cigarette package material recipemes at the micro level were the ‘winning’ package materials among others, and they were replicated up to today. This is how the material of Turkish cigarette packages has changed. But why has it changed in this way? This and similar other questions, which have been raised up until now, are answered within further analysis and interpretation with reference to theories in the next part.

v) Cigarette package colours

The frequency of codes regarding the ‘cigarette package colours’ design element is shown below in Figure 5.63 for all cigarette packages in the collection.

As observed in the graph, cigarette packages were coded with the colours of “red”, “blue”, “brown”, “yellow”, “black”, “white”, “silver gilt”, “golden gilt”, “orange”, “green”, “gray”, “pink” and “purple”.

It can be said that the mostly selected colours in all cigarette packages were “red”, “golden gilt”, “blue”, “white” and “black”.

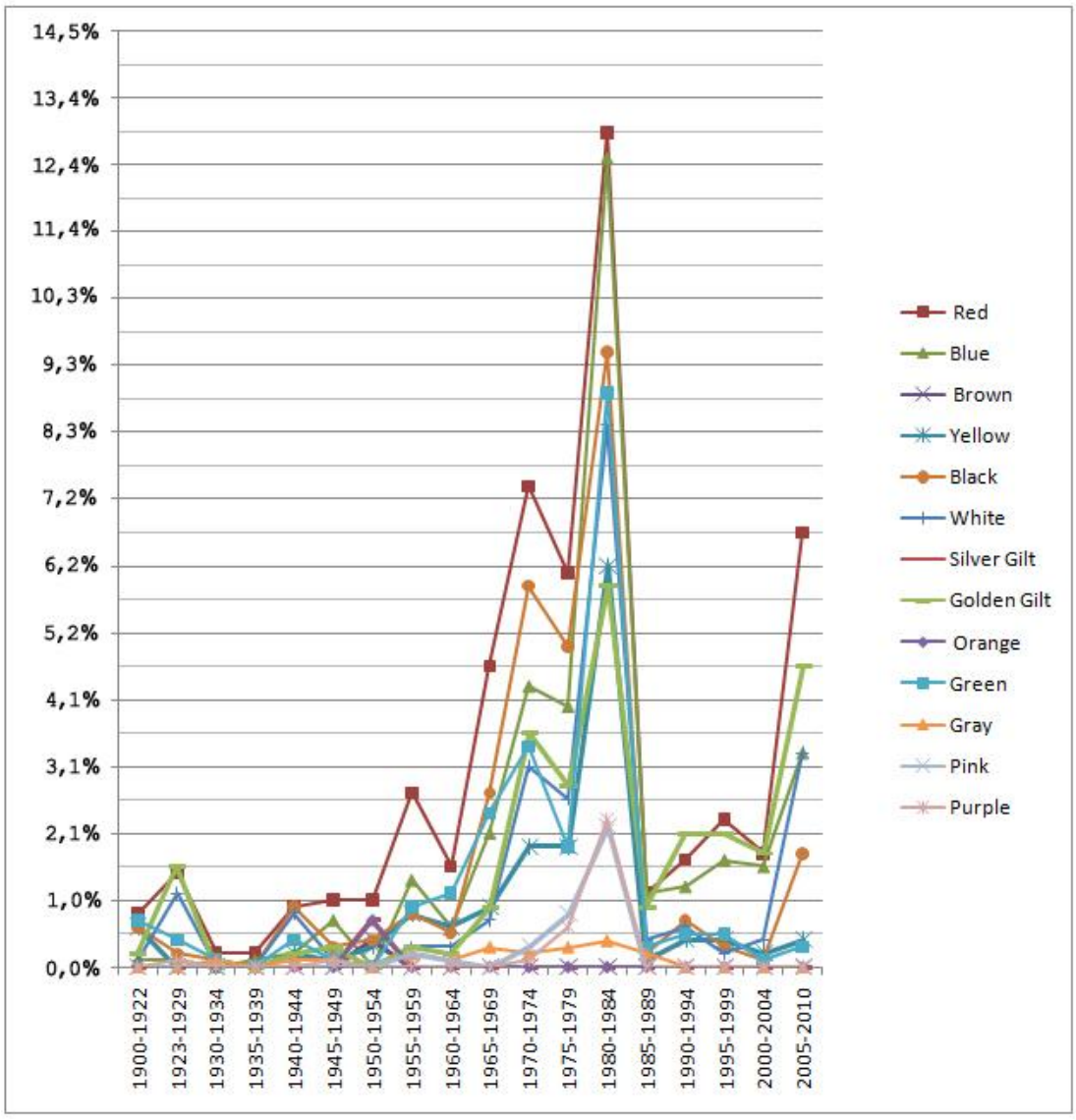

Figure 5.63 : Package colours of all cigarettes.

This quantitative study of 'cigarette package colours' design element merely gives information on characteristics of Turkish cigarette packages. It is not analyzed further. However, it is also studied qualitatively within package graphics at the end of this chapter.

5.3.2.3 Matrix results and analysis

In addition to the graphs shown and analyzed in the previous part, a matrix was prepared to measure the associations between these codes, in other words, between alternative ideas, to create possible configurations of a cigarette package. The matrix of codes of cigarette packages is shown in Table 5.3 below (except for the codes of package colours design element). The numbers in the table indicate the total number of cigarette packages that were counted for both intersecting codes.

Table 5.3 : Matrix for the associations of codes of cigarette packages.

	Soft	Envelope	Flip-top	Flip-top (long edge)	Hinged-lid	Hinged-lid (short edge)	Sliding	5	10	20	25	50	84	100	120	Paper	Transparent paper	Paperboard	Tin
Soft pack	630	2	0	0	0	0	0	2	0	630	0	0	0	0	0	630	2	0	0
Sharp-corner box	0	0	63	3	178	6	27	5	2	239	1	21	1	6	1	0	0	277	0
Round-corner box	0	0	5	0	52	0	0	0	8	31	1	3	0	14	0	0	0	5	52
Octagonal-corner box	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Soft								0	0	630	0	0	0	0	0	630	0	0	0
Envelope								2	0	0	0	0	0	0	0	0	2	0	0
Flip-top								0	0	69	0	0	0	0	0	0	0	69	0
Flip-top (long edge)								0	0	3	0	0	0	0	0	0	0	3	0
Hinged-lid								0	10	172	2	24	1	19	1	0	0	178	52
Hinged-lid (short edge)								0	0	5	0	0	0	1	0	0	0	6	0
Sliding								5	0	22	0	0	0	0	0	0	0	27	0
5																0	2	5	0
10																0	0	2	8
20																630	0	245	26
25																0	0	1	1
50																0	0	21	3
84																0	0	1	0
100																0	0	6	14
120																0	0	1	0

The highlighted results from the matrix above can be summarized as follows:
- Mainly the configuration of “soft pack”, ”soft”, “20” and “paper” was selected.
- Mainly the configuration of “sharp-corner box”, “flip-top”, “20” and “paperboard” was selected.
- Mainly the configuration of “sharp-corner box”, “sliding”, “20” and “paperboard” was selected.
- Mainly the configuration of “sharp-corner box”, “hinged-lid”, “20” and “paperboard” was selected.
- Mainly the configuration of “sharp-corner box”, “hinged-lid”, “50” and “paperboard” was selected.
- Mainly the configuration of “round-corner box”, “hinged-lid”, “20” and “tin” was selected.
- Mainly the configuration of “round-corner box”, “hinged-lid”, “100” and “tin” was mainly selected.
- The configuration of “round-corner box”, “flip-top”, “20” and “paperboard” was selected.
- The configuration of “round-corner box”, “hinged-lid”, “10” and “tin” was selected.
- The configuration of “octagonal-corner box”, “flip-top”, “20” and “paperboard” was selected for once in the collection.

These are the recipemes at the micro level for cigarette packages that worked more together in a black box system to give the cigarette packages their final form.

These results of graphs and matrixes, and their initial analysis are gathered in the following parts for further analysis and interpretation with reference to the theories of this thesis.

5.3.3 Overall matrix results and analysis

Further, an additional matrix was prepared, where the associations between the codes of cigarettes and cigarette packages were shown. This was done to observe how cigarette packaging design is related to cigarette design recipeme in a black box system.

The matrix of the codes of cigarettes and cigarette packages is shown in Table 5.4 below. The mainly selected configurations of the codes of cigarettes were compared to design elements of cigarette packages, and the number of cigarette packages that were assigned to these configurations of cigarettes and to design elements of cigarette packages were counted and written due the codes of cigarette packages in the table.

Since some of the design elements of cigarettes could not be coded in the Excel table due to limited access to cigarette packages, they were coded and counted as “NA” (not applicable), and were not shown in the matrix below.

Table 5.4 : Matrix for the associations of codes of cigarettes and cigarette packages.

	Cigarette configuration: “Regular”, ”round”, “85 mm”, “filter”	Cigarette configuration: “Regular”, ”round”, “100 mm”, “filter”	Cigarette configuration: “Regular”, ”round”, “68 mm”, “plain”	Cigarette configuration: “Thick” or “slim”, ”oval”, “68 mm”, “plain”	Cigarette configuration: “Thick” or “slim”, ”oval”, “68 mm”, “sleeve”
Package form:	“Round-corner box” = 4 “Sharp-corner box” = 72 “Soft pack” = 397	“Round-corner box” = 1 “Sharp-corner box” = 9 “Octagonal-corner box” = 1 “Soft pack” = 112	“Soft pack” = 75	“Sharp-corner box” = 14	“Round-corner box” = 3 “Sharp-corner box” = 6
Package opening mechanism:	“Flip-top” = 63 “Sliding” = 4 “Hinged-lid” = 9 “Soft” = 397	“Flip-top” = 5 “Sliding” = 3 “Hinged-lid” = 2 “Hinged-lid (short edge)” = 1 “Soft” = 112	“Soft” = 75	“Hinged-lid” = 14	“Hinged-lid” = 9
Package capacity:	“5 capacity” = 2 “10 capacity” = 1 “20 capacity” = 466 “50 capacity” = 4	“5 capacity” = 3 “20 capacity” = 118 “50 capacity” = 2	“20 capacity” = 75	“20 capacity” = 11 “100 capacity” = 3	“10 capacity” = 2 “20 capacity” = 7
Package material:	“Paper” = 397 “Paperboard” = 76	“Paper” = 112 “Paperboard” = 11	“Paper” = 75	“Paperboard” = 14	“Paperboard” = 6 “Tin” = 3

The highlighted results from the matrix above can be summarized as follows:

- The configuration of the codes of cigarettes; “regular”, “round”, “85 mm”, “filter” was mainly selected with the configuration of the codes of cigarette packages; “soft pack”, “soft”, “20”, “paper”.
- The configuration of the codes of cigarettes; “regular”, “round”, “85 mm”, “filter” was mainly selected with the configuration of the codes of cigarette packages; “sharp-corner box”, “flip-top”, “20”, “paperboard”.
- The configuration of the codes of cigarettes; “regular”, “round”, “100 mm”, “filter” was mainly selected with the configuration of the codes of cigarette packages; “soft pack”, “soft”, “20”, “paper”.
- The configuration of the codes of cigarettes; “regular”, “round”, “68 mm”, “plain” was only selected with the configuration of the codes of cigarette packages; “soft pack”, “soft”, “20”, “paper”.
- The configuration of the codes of cigarettes; “thick” or “slim”, “oval”, “68 mm”, “plain” was mainly selected with the configuration of the codes of cigarette packages; “sharp-corner box”, “hinged-lid”, “20”, “paperboard”.

- The configuration of the codes of cigarettes; “thick” or “slim”, “oval”, “68 mm”, “sleeve” was mainly selected with the configuration of the codes of cigarette packages; “sharp-corner box”, “hinged-lid”, “20”, “paperboard”.

The results of graphs and matrixes, and their initial analysis, are gathered with other results in the next part for further analysis and interpretation with reference to the theories used in this thesis.

5.3.4 Analysis and interpretation with reference to theories

First phenomenon of interest in this research is to test if the change in design of cigarettes and cigarette packages follows the requirements of Darwinian evolution theory. The change in cigarettes and cigarette packages were studied through their design variables that refer to the configurations of design elements. There were alternative ideas for design elements, which were the recipemes at the micro level that shaped the cigarettes and the cigarette packages. The study of change in cigarettes and cigarette packages were actually the study of these recipemes at the micro level, and they were the ones to follow the requirements of Darwinian evolution theory.

The requirements of Darwinian evolution theory are ‘variety’, ‘competition between varieties’, ‘imperfect replication’, ‘appearance of new varieties’, ‘repetition of the process’ and ‘change in rules of competition’. The first three requirements; ‘variety’, ‘competition between varieties’, and ‘imperfect replication’, are the bases to Darwin’s theory of the “descent with modification under natural selection”. The latter three requirements; ‘appearance of new varieties’, ‘repetition of the process’ and ‘change in rules of competition’, provide the continuation of the evolutionary process.

Other related phenomenon of interest is different types of memes, which is developed by Langrish (1999). They overcome the problem of describing the change of designed objects in a complex environment. As mentioned before, two kinds of recipemes, selectemes, and explanemes were working at the micro and the macro levels while they interacted among themselves and with each other. In this research, they were defined as follows:

- Recipemes at the micro level: Design variables, design elements, codes of the cigarettes and the cigarette packages.
- Recipemes at the macro level: Technology of cigarette making, technology of cigarette packaging, printing technologies, graphic styles, trends, fashions.
- Selectemes at the micro level: The decision making process of designers.

- Selectemes at the macro level: Context variables of the cigarette packages, economics, politics, rules/legal issues, socio-cultural aspects.
- The environment other than selectemes: Man-made and natural events.
- Explanemes at the micro and the macro levels: The attempts at the rationality of selectemes, which sometimes appear.

These theories are used in this part of the thesis for the analysis and interpretation on the results that were previously gathered within graphs, matrixes, and relevant literature search (some of which were visualized).

The recipemes of cigarettes and cigarette packages at the micro level varied. This 'variety' of ideas was already observed in the collection of Turkish cigarette packages since every package was different than the other. There were 1161 different cigarette packages in the collection (before they were eliminated for the study), which were collected in 110 years.

'Competition between varieties' and 'imperfect replication' were observed within the recipemes and selectemes of cigarettes and cigarette packages at the micro level in an environment of selectemes at the macro level and other entities.

Today, the 'winner' ideas of cigarettes (the recipemes at the micro level) are "regular", "round", "85 mm" or "100 mm" and "filter"; and the 'winner' ideas of cigarette packages (the recipemes at the micro level) are "soft pack", "soft", "20", "paper", and "sharp-corner box", "flip-top", "20", "paperboard".

How were these ideas selected among others and replicated up to today? This question is answered as follows:

i) Round vs. Oval

Round recipeme was selected over oval recipeme through the years. Once, oval recipeme had dominated the market in the Ottoman Empire and in Turkey. It was the widely known characteristic of Turkish and so-called Egyptian cigarettes abroad (Young, 1916). Although it was considered to be an ergonomic calibre profile between the fingers of a smoker at first, it was realized and further reviewed in the literature that this form was due to the oriental tobacco used inside the cigarette. The tobacco grew within the geography of Turkey was called "oriental tobacco", which had shorter leaves than other tobacco leaves grew elsewhere. When these oriental tobacco leaves were processed and shredded, they became less hairy to be held inside the cigarette, and eventually they came out of the cigarette. To overcome this problem, more tobacco had to be filled inside the cigarette, which created smoking problems this time. These economic and technical problems of

oriental tobacco could be solved by manufacturing cigarettes within oval calibre forms. In order to avoid the further problem of tobacco coming out of the cigarette, these oval cigarettes were wrapped inside a package that held the cigarettes from both ends, which was the hinged-lid package recipeme that was selected together with the oval cigarette recipeme in those years (İlter, 1979).

The oriental tobacco was also popular due to its being used as a base for blending with other tobacco. Besides this technical reason, it fulfilled the perception of eastern allure for Western countries. Therefore, it was an important export item for the Ottoman Empire. However, during World War I, while the Ottoman Empire became the enemy to America and Britain, it lost its allure and caused the domestic manufacturers of America and Britain to step up promoting of cigarettes largely made of Virginia tobacco (Thibodeau and Martin), which were later introduced to Europe during the World War II (Mercimek, 1998).

Round recipeme of cigarettes appeared in Turkey as a new variety in the 1920s. This was probably due to the associations with the western army during the Independence War (1919-1922) of Turkey. In order to achieve this recipeme, more oriental tobacco had to be put inside the cigarette, as it was mentioned before. However, it became inevitable to produce this kind of cigarettes after the World War II when American blended tobacco within round calibre formed cigarettes invaded the world within Pax Americana years. Since then this recipeme started to compete with oval recipeme of cigarettes until the oval recipeme was eliminated at the latter half of 1970s.

ii) Regular vs. Thick/Slim

Regular thickness was selected over thick, slim; even other thicknesses of very thick and very slim. This variety of thicknesses before regular recipeme was probably due to the replication of hand-made cigarettes with varied thicknesses within the cigarette machinery. Slim cigarettes were probably produced for women since the codes of “slim” and “women” move in parallel to each other through years in the graphs. Regular recipeme appeared in Turkey as a new variety in the 1940s, probably due to the effect of World War II, and acted together with round recipeme of cigarettes since then, until the recipemes of other thicknesses were eliminated at the latter half of the 1970s.

iii) 85 mm/100 mm vs. 68mm

85 mm and 100 mm lengths were selected over 68 mm, which had once dominated the market among other cigarette lengths of 74 mm, 80 mm, and 160 mm. Although

68 mm was the selecteme at the micro level until the 1970s, it acted together with 80 mm length as optional lengths in the market. With the manufacturing of the first filtered cigarette in 1959, which was the *Samsun* brand, 85 mm recipeme started to compete with 68 mm while 100 mm joined the competition in the 1970s; and they were together selected as optional lengths over 68 mm and 80 mm by the 1980s.

iv) Filter vs. Plain/Sleeve

Filter recipeme was selected over plain, sleeve and mouthpiece-sleeve recipemes through years. Mouthpiece products were used to prevent the mouth from tobacco's flake, which were later replicated with a tube attached to cigarette that was known as Russian style cigarettes (İlter, 1979 and Young, 1916). Varış (1998) claims that people in Russia also preferred these cigarettes while wearing thick gloves in the cold weather in order to be able to smoke the cigarette till the end that is secured from the thickness of gloves by the mouthpiece. One interesting example in the collection is 160 mm cigarette with a mouthpiece-sleeve tip. This was probably produced as a style due to social modernization of Turkey in those years (1930-1940).

Another recipeme for cigarette tips was sleeve, which was a paper or cork tip wrapped at the end of the cigarette to prevent the lip of the smoker from sticking to the cigarette paper. The paper sleeves were coloured and textured. Some sleeved cigarettes produced for women were red tipped, which in addition prevented the stain of the red lipstick from the cigarette paper (Tinkler, 2006). These sleeve cigarettes were the higher quality cigarettes against the plain, non-tipped ones. Plain recipeme appeared in the market in the 1920s, which was probably due the economic situation of the young Republic of Turkey and the propagation of round recipeme.

As mentioned before, filters appeared in the market by 1959, and dominated the market since then while strengthening its co-recipemes of round, regular, 85 and 100 mm. Filters reduce the tar in tobacco smoke (Hastrup et al, 2001), and decrease the harshness of smoke. Health has always been one concern of smoking, but it dramatically became the biggest one globally after 1946 when it was scientifically proven that smoking caused lung cancer (Brandt, 2007). However, this explaneme at the macro level was not the reason of selection of the filters in Turkey. People in Turkey were thinking that Turkish oriental tobacco was not harmful and they criticized the filter claiming that it would spoil the good quality of Turkish oriental

tobacco.[63] One explaneme at the micro level was economical; less tobacco would be put in the cigarette, and the other one was the demand of customers due the trend of American brands manipulating the world since the end of World War II.

Although it was not studied in detail, one interesting note would be the colour and texture of filter paper worldwide today. In general, colour and texture of filter papers is “white-plain” or “corn colour with cork-like texture”. Probably, this “corn colour with cork-like texture” was replicated in filter paper from the cork tip used in sleeve cigarettes, which were also known as a Turkish style together with oval cigarette recipeme (Young, 1916). Cork material was used in sleeve cigarettes to prevent the lip of the smoker from sticking to the cigarette paper due to its absorbent property. The perforated property of cork was visually replicated on filter paper in order to signify the permeable property of filters.

v) Flip-top/Soft vs. Hinged-lid/Sliding

Flip-top and soft opening mechanisms of packages were selected over sliding and hinged-lid recipemes. Round recipeme of cigarettes had brought its soft packages after a while, which appeared as a new variety in packages in the 1930s. It was highly welcomed in Turkey at first; it was found trendy among customers in a way that it was carried in shirt pocket (İlter, 1979) rather than in jacket pocket as what was done with hinged-lid packages. Soft packages competed with hinged-lid recipeme until the hinged-lid recipeme was eliminated from the market by the 1980s. This was due to the faster, cheaper, totally mechanized technology of soft packages against partially hand-made hinged-lid packages. Although sliding recipeme appeared in the market later in the 1950s, it was not appealed by the customers next to soft packages and disappeared after a while (İlter, 1979). At the latter half of the 1980s flip-top packages appeared in the market; and again the recipeme was imported from the United States. Flip-top and soft opening mechanisms dominated the market since then.

vi) Paperboard/Paper vs. Tin

Paper material appeared in the market by the 1930s together with soft packages and dominated the market with paperboard material since then. Paperboard material always dominated the market due to its being used in different package types: hinged-lid, sliding, and flip-top. Tin material was used in packaging until the 1930s as the cheaper material, which was eliminated when paper material had appeared in the market and became cheaper.

[63] Personal interview with Nejat Oğuztaş (2010).

vii) Sharp-corner box/Soft pack vs. Round-corner box

Round-corner form was selected with tin material until soft pack appeared in the market in the 1930s. Then, it was replicated lately with paperboard material, whose technology was developed. In addition, octagonal-corner form has appeared lately. These new varieties appearing lately are probably due the health regularities preventing designers to come up with different package graphics and directing them to play with package configurations. Sharp-corner form was always in the market with different package types: hinged-lid, sliding, and flip-top. It was selected with paperboard in general.

viii) 20 package capacity vs. others

There were a variety of package capacities since the 1900s in the market, most of which appeared between 1900 and 1935. Probably, this was due the structure of commerce, where retail sales were not developed and customers had the habit of buying batches for their daily cigarette requirements (Doğruel and Doğruel, 2000). Among these package capacities, 20 had always dominated the market as the average daily amount of cigarettes.

ix) Socio-cultural designs

A mixture of cigarettes was contained in packages, which were designed as gifts and/or something to offer to guests as a reflection of Turkish hospitality. They were observed in the 1930s, 1940s, and 1970s in the collection.

The cigarettes were also designed for women, for different social classes and regions (for public, villagers, eastern region), for members of the police department, the military and the parliament.

5.3.5 Comparison of all results with the research by Wright (2009)

Wright (2009) studied the Littlewood's mail order catalogue archive, from 1932 to 1980, with the similar purpose of this thesis. She investigated how the designs of table lamps and clocks changed over time with reference to cycle theories and Darwinian evolution theory. The conclusions of her research showed that there was considerable correspondence between changes in the appearance of two products she studied and the socio-economic cycle she used in her research. The change in these two products was following Darwinian evolution requirements. The quantitative results showed that the design cycles of two products were linked to socio-economic phases and their design attributes were characterized by natural selection of designed objects according to the set of circumstances. She also

showed that her cycle and Darwinian evolution investigations were interlinked (Wright, 2009).

Similar to Wright's research (2009), this thesis shows that the change in the appearance of cigarettes and cigarette packages was characterized by Darwinian evolution theory. Apart from her research, different types of memes were used to define the design of cigarettes and cigarette packages, and their environment to overcome the problem of complexity of interacting systems since this thesis did not concentrated on socio-economic phases but concentrated on technologies, styles, economic and political issues, socio-cultural aspects, legal issues, man-made and natural environments enclosing the cigarettes and cigarette packages.

5.4 Time-line Board and Serial Packages Results of the Package Graphics

This part analyzes the results of the time-line board studies and the groups of serial cigarette package studies obtained from the qualitative analysis of "package graphics" that included the study of imagery, typography and colour.

Printing technologies in Turkey were explained in Chapter 2 as the recipemes at the macro level. Chromolithography, letterpress printing, linotype machinery, offset press, rotogravure and flexography printing techniques were used at the Cibali, and then at the Maltepe Packaging factory throughout time.[64] However, it was difficult to study these technologies on the cigarette packages, and so their effect on the recipemes at the micro level (the package graphics) could not be studied any further.

On the other hand, the graphic styles in the world are referenced from the book "Graphic Style: From Victorian to Digital" by Heller and Chwast (2000) as the recipemes at the macro level for style studies of the package graphics in the collection. The starting periods of the graphic styles are given as follows:

- Late 1830s Victorian style
- In 1850s Arts and Crafts
- In 1890s Art Nouveau
- In 1910s Plakatstil (Sachplakat/object poster) and Constructivism
- In 1920s Art Deco
- In 1950s International style
- In 1970s Psychedelia

[64] Personal interview with Alparslan Çetin (2010).

5.4.1 Time-lined board of cigarette packages

After the dates and/or date ranges were found, cigarette packages were time-lined in groups by using the collector's classification. They were grouped in two different coloured boxes that indicated the "Brand/Special Edition" context variable, which was explained previously in Chapter 3.

After the cigarette packages were organized by time-lines within the groups of coloured boxes, these boxes were gathered and ordered in a time-line within a board. As such, the cigarette packages could be analyzed within the groups and the groups could be analyzed within the overall board. Figure 5.64 below shows the board of time-lined "Brand/Special Edition" cigarette packages. The board was also divided into two sub-boards for further analysis, one for "Brand" cigarette packages as shown in Figure 5.65 and one for "Special Edition" cigarette packages as shown in Figure 5.66 below.

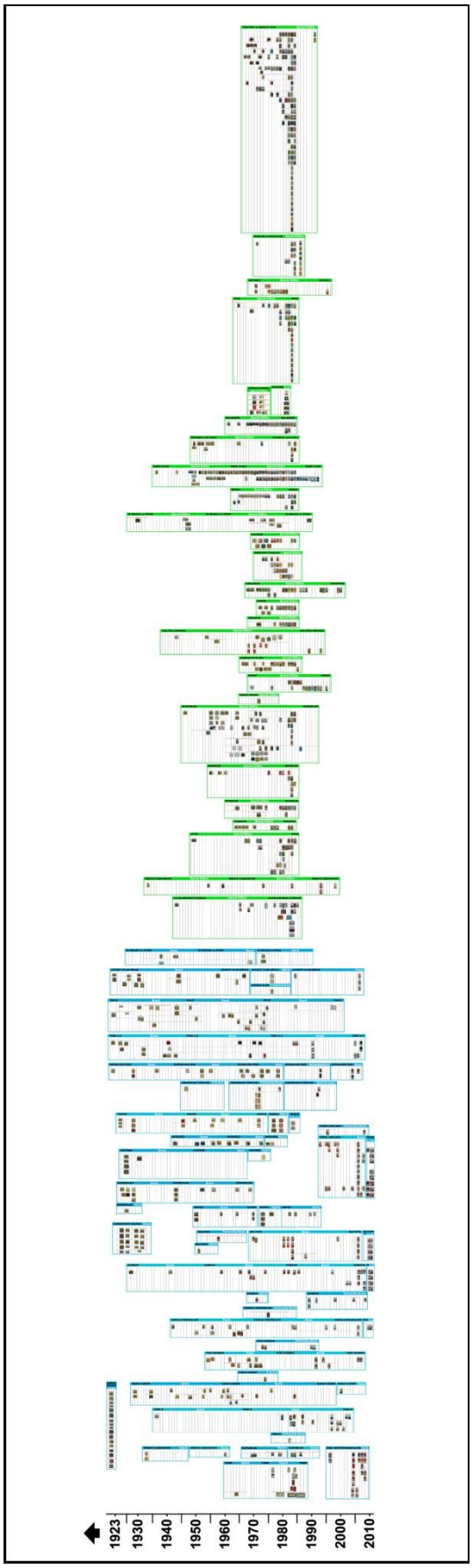

Figure 5.64 : The board of time-lined “Brand/Special Edition” cigarette packages.

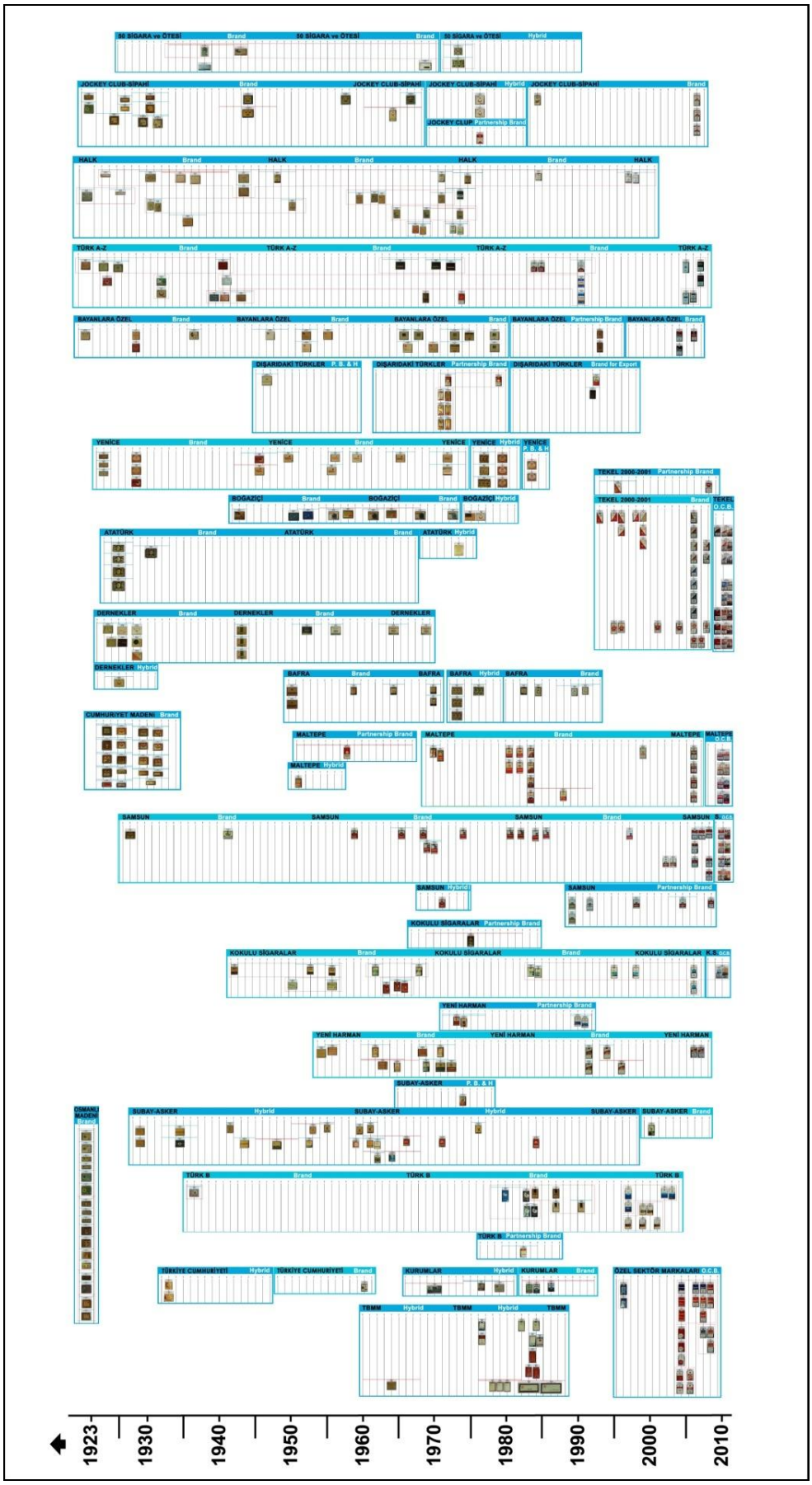

Figure 5.65 : The sub-board of time-lined “Brand” cigarette packages.

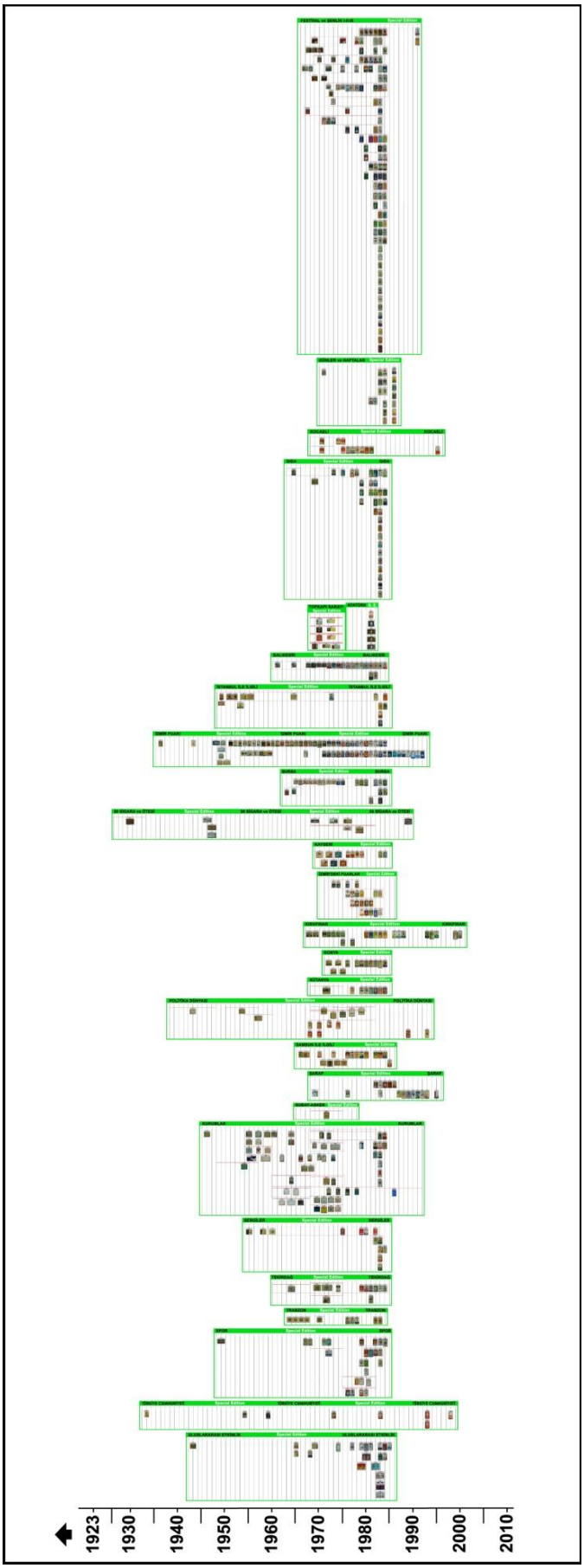

Figure 5.66 : The sub-board of time-lined “Special Edition” cigarette packages.

After the board was prepared in a way that it would be helpful during the visual analysis of cigarette packages, it was analyzed for patterns of change in package graphics including the imagery, typography and colour design elements.

These design elements of package graphics (the recipemes at the micro level) were analyzed to identify some codes in order to be studied in the overall collection. The codes identified were “Photo realistic/Realistic illustration/Abstract”, “Plain/Fancy”, “Style”, “Motif”, “Only colour change” and “Health warning”.

These codes were analyzed on the board in two different ways. They were analyzed in serial cigarette packages, i.e. which keywords appear in *Samsun* brand cigarettes and when, or one code was coloured and applied on the board to analyze the pathway of that code moving through time in the overall collection. Then these both studies were explained within selected samples of cigarette packages for further analysis and interpretation with reference to the theory.

5.4.2 Results and analysis of package graphics studies

i) “Only colour change” study

It was observed that without any change within the graphics, only colour was changing in some of the cigarette packages. Figure 5.67 shows some examples of cigarette packages regarding this study.

Figure 5.67 : Some examples of “only colour change” study.

Accordingly, Figure 5.68 shows the pathway of this study among brand cigarettes and Figure 5.69 shows the pathway of this study among special edition cigarettes. While the pathway is desultory among brand cigarettes, a consistency of the pathway appears between the 1970s and 1990s among special edition cigarettes. This recipeme at the micro level, as a cheaper solution to make difference in design, might be due to the increase in number of special edition cigarettes produced in those years, which is the decision of the state monopoly ruled within governmental policies as the selecteme at the macro level.

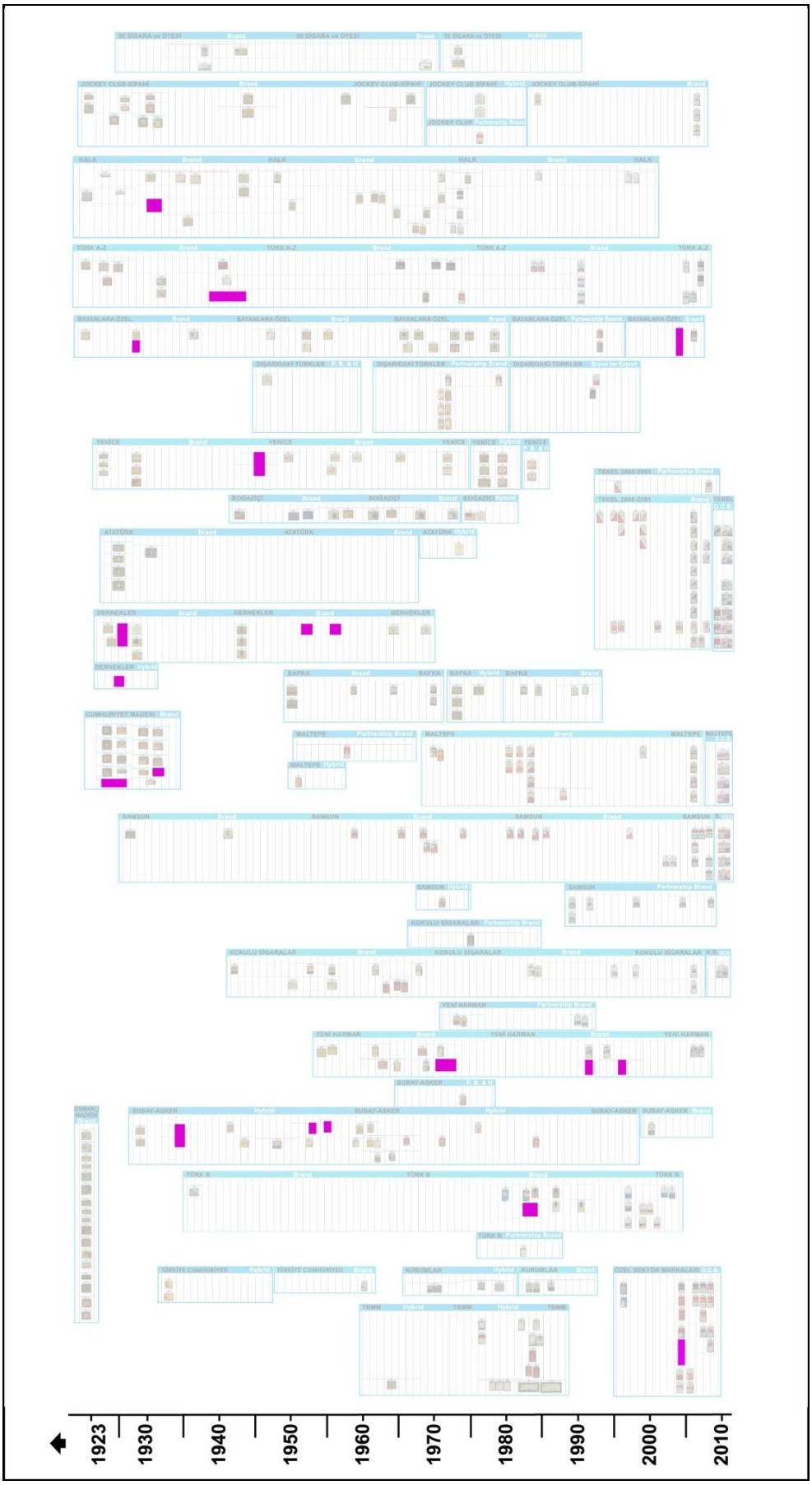

Figure 5.68 : “Only colour change” study of brand cigarettes.

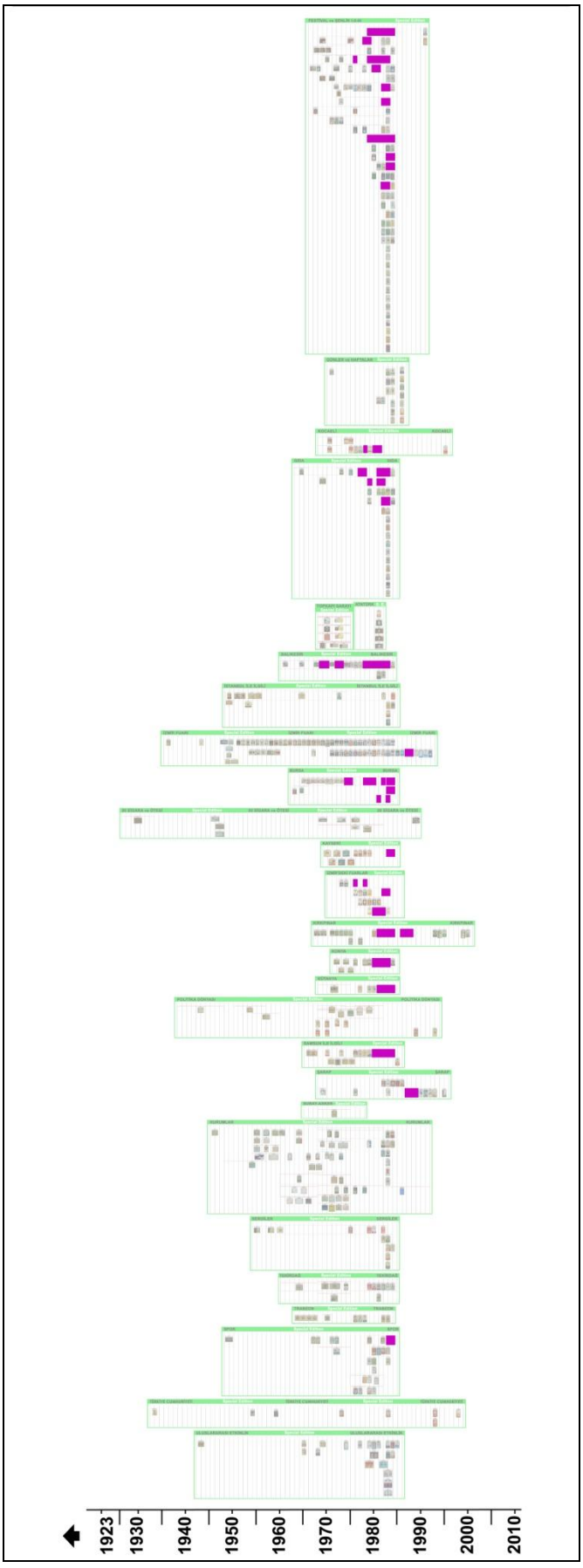

Figure 5.69 : “Only colour change” study of special edition cigarettes.

ii) "Motif" study

It was observed that some motifs were used as imageries on cigarette packages. These were Turkish folkloric signs as shown in Figure 5.70, İznik patterns as shown in Figure 5.71, and Hittite sign as shown in Figure 5.72.

Figure 5.70 : Some examples of Turkish folkloric signs of the "motif" study.

Figure 5.71 : Some examples of İznik patterns of the "motif" study.

Figure 5.72 : Some examples of Hittite sign of the "motif" study.

Accordingly, Figure 5.73 shows the pathway of this study among brand cigarettes (pink colour corresponds to Hittite sign and orange colour corresponds to İznik patterns) and Figure 5.74 shows the pathway of this study among special edition cigarettes (red colour corresponds to Turkish folkloric signs). As observed in Figure 5.73, İznik patterns appear between mid-1960s and mid-1970s, and Hittite sign appears desultorily since mid-1950s only in brand cigarettes. As observed in Figure 5.74, Turkish folkloric signs appear between 1960 and the mid-1980s only in special edition cigarettes. These recipemes at the micro level are selected and used due to the state monopolies decisions ruled within governmental policies as the selectemes at the macro level.

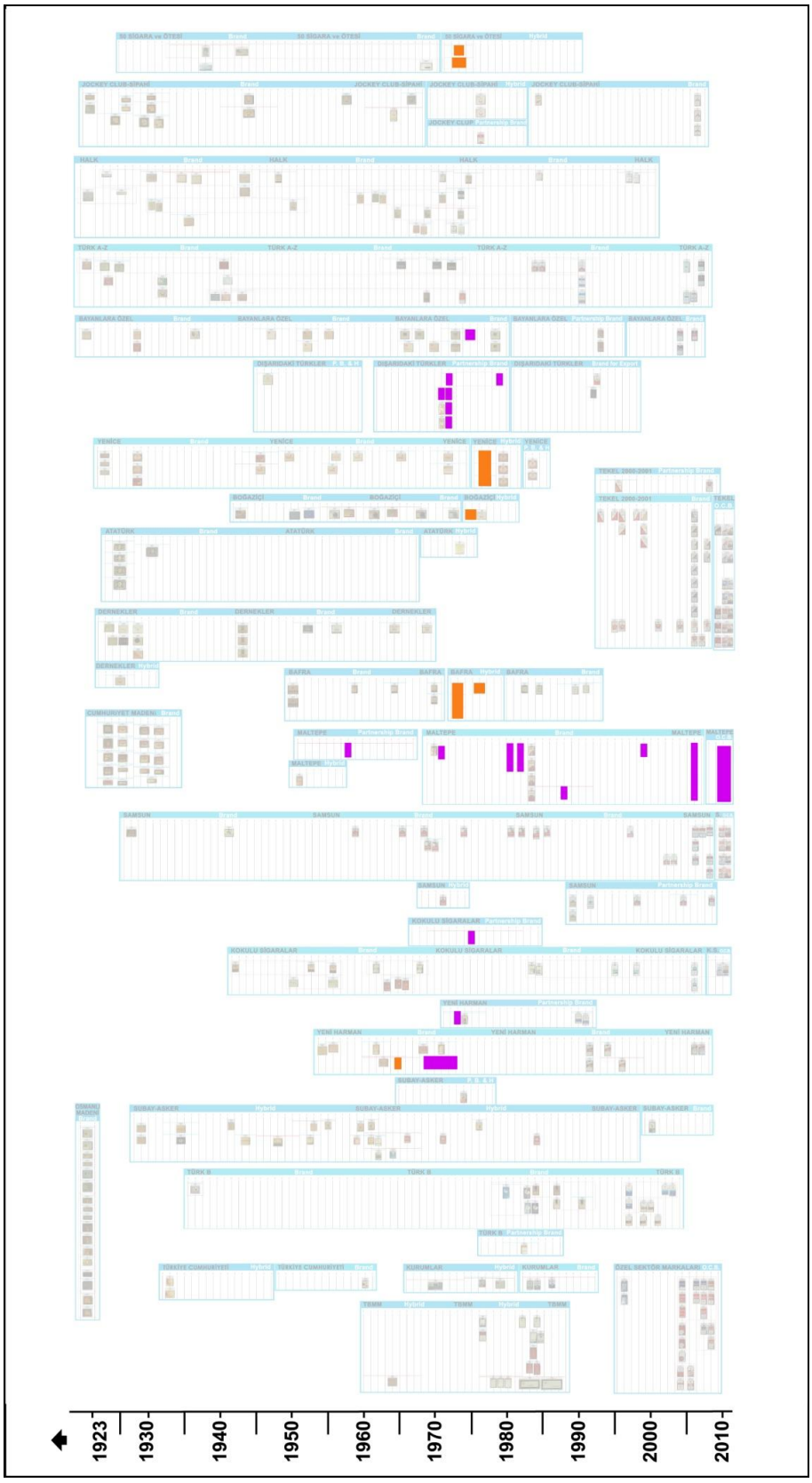

Figure 5.73 : “Motif” study of brand cigarettes.

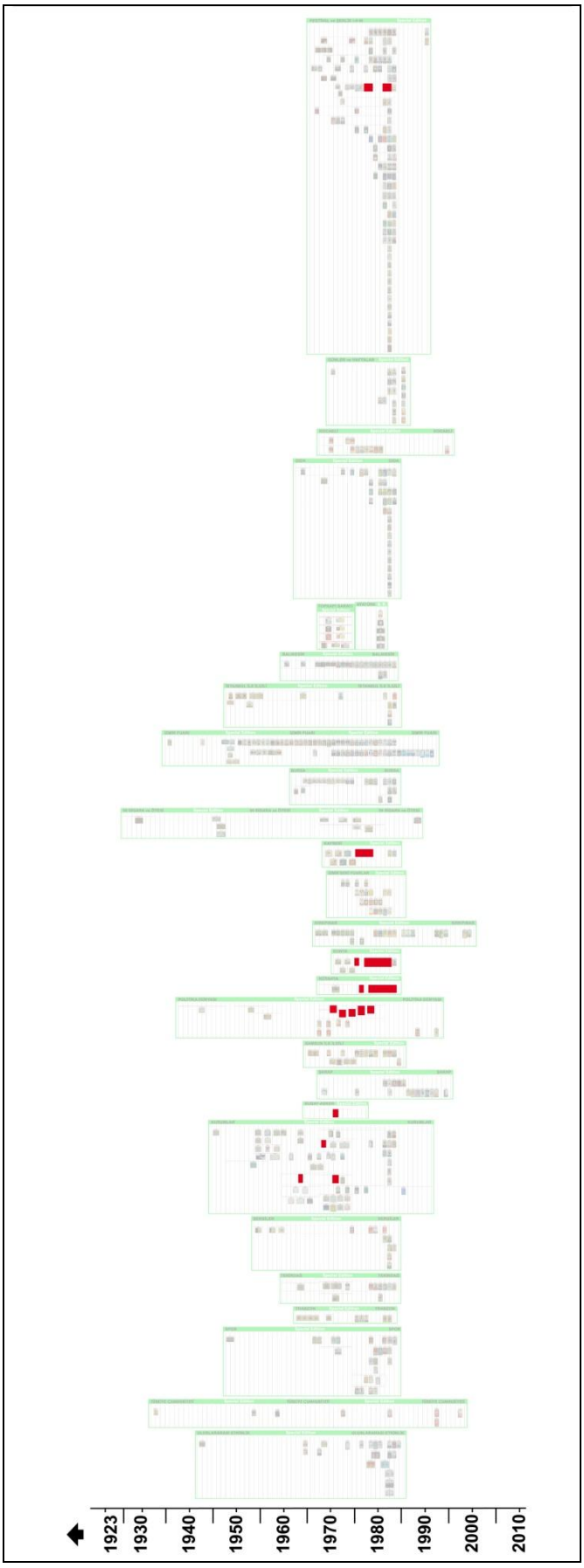

Figure 5.74 : “Motif” study of special edition cigarettes.

iii) “Plain/fancy” study

It was observed that some of the cigarette packages were plain in design and some were applied with lots of ornaments as shown in Figure 5.75 below.

Figure 5.75 : Some examples of “Plain/Fancy” study.

Accordingly, Figure 5.76 shows the pathway of this study among brand cigarettes and Figure 5.77 shows the pathway of this study among special edition cigarettes while the pink colour corresponds to “plain” and orange colour corresponds to “fancy”. As observed in the Figure 5.76, “fancy” imageries appear before 1930s in the Ottoman Empire period and between 1970 and the mid-1980s in brand cigarettes. This latter appearance of this recipeme at the micro level is compatible with the appearance of İznik patterns in brand cigarettes that was mentioned previously. As observed in the Figure 5.77, “fancy” imageries only appear in special edition packages in the 1980s as the follower of brand cigarettes, which was also observed in the design of package configuration.

Figure 5.76 : “Plain/fancy” study of brand cigarettes.

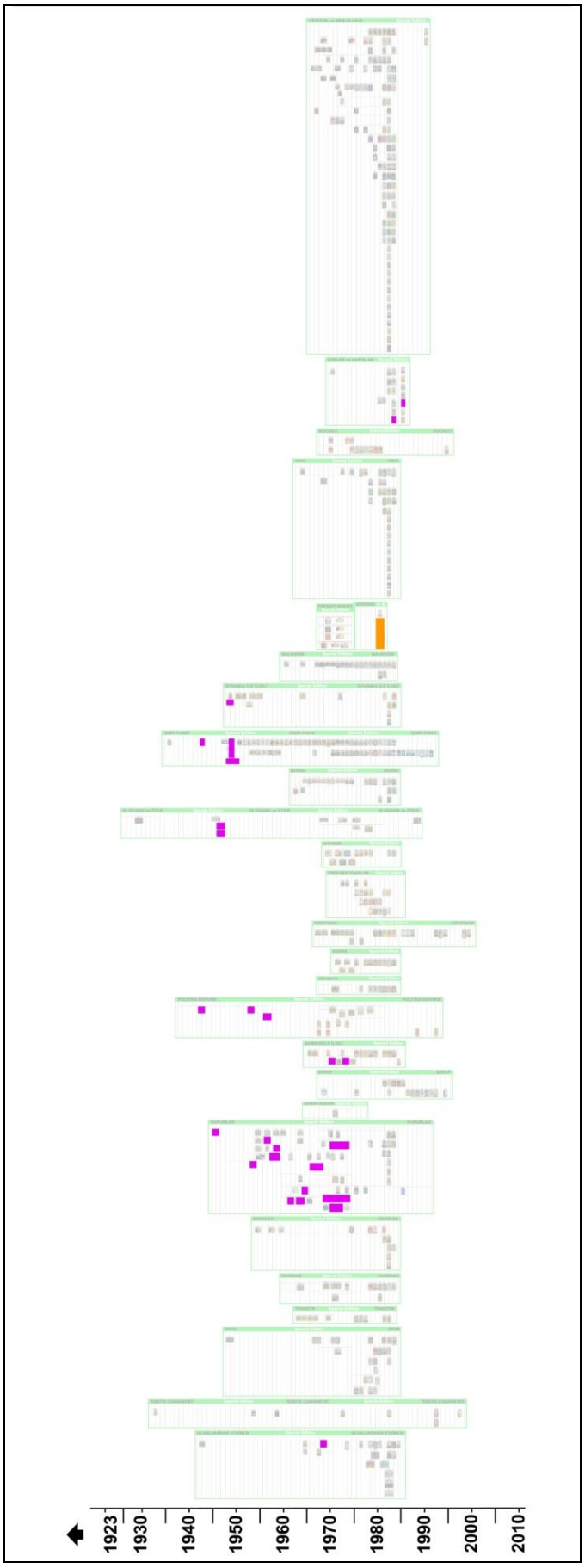

Figure 5.77 : “Plain/fancy” study of special edition cigarettes.

iv) “Photo realistic/Realistic illustration/Abstract” study

It was observed that some of the cigarette packages had photo realistic, realistic illustration or abstract imageries. Figure 5.78 shows examples of realistic illustration and abstract imageries below.

Figure 5.78 : Some examples of “Photo realistic/Realistic illustration/Abstract” study.

Accordingly, Figure 5.79 shows the pathway of this study among brand cigarettes and Figure 5.80 shows the pathway of this study among special edition cigarettes while pink colour corresponds to “photo realistic”, orange colour corresponds to “realistic illustration”, and blue colour corresponds to “abstract” imageries. As observed in Figure 5.79 “abstract” imageries appear after the 1960s, and in Figure 5.80 they appear after the 1970s as special edition cigarettes again being the follower of brand cigarettes. “Abstract” imageries appear later due to the modern style being used as the recipeme at the macro level starting from those days in Turkey.

Figure 5.79 : “Photo realistic/Realistic illustration/Abstract” study of brand cigarettes.

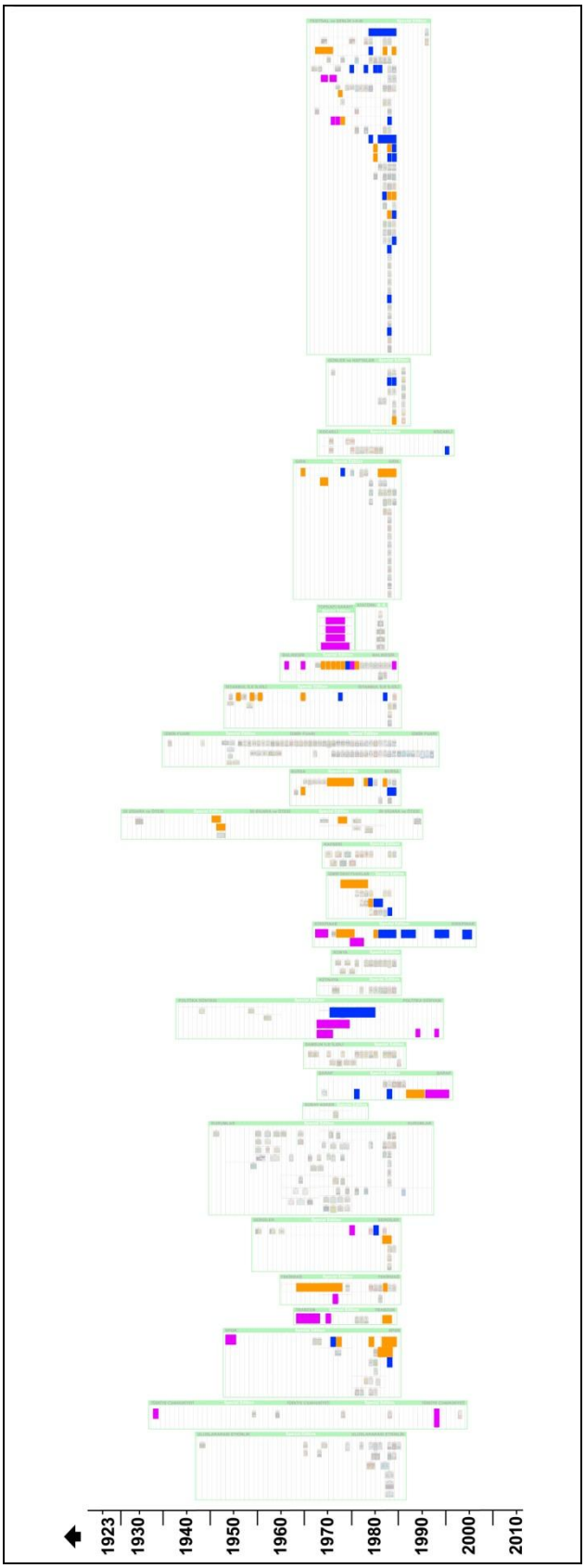

Figure 5.80 : “Photo realistic/Realistic illustration/Abstract” study of special edition cigarettes.

v) “Health warning” study

After 2006, international text warnings, and after 2010, international text and photographic warnings, were legislated to be put on the cigarette packages by the Turkish government as the selecteme at the macro level. The design consequences as the recipemes at the micro level are shown within the examples of *Tekel 2000* brand in Figure 5.81 below revealing the change in imagery in accordance with the warning label.

Figure 5.81 : Examples of *Tekel 2000* brand of the “health warning” study.

vi) “Style” study

The styles that were observed in the collection were poster-like expression, typographic illustration, psychedelia, modern, international style, arts and crafts, constructivism, sachplakat (object poster), art nouveau, and art deco, which are exemplified within the packages in Figures 5.82-5.91 below. These styles were observed desultorily among the collection; however psychedelic style used as the recipeme at the micro level was compatible with the style being used worldwide as the recipeme at the macro level.

Figure 5.82 : Examples of poster-like expression within the “style” study.

Figure 5.83 : Examples of typographic illustration within the “style” study.

Figure 5.84 : Examples of psychedelia within the “style” study.

Figure 5.85 : Examples of modern within the “style” study.

Figure 5.86 : Examples of international style within the “style” study.

Figure 5.87 : Example of arts and crafts within the “style” study.

Figure 5.88 : Examples of constructivism within the “style” study.

Figure 5.89 : Examples of sachplakat within the “style” study.

Figure 5.90 : Examples of art nouveau within the “style” study.

Figure 5.91 : Examples of art deco within the “style” study.

6. CONCLUSIONS, DISCUSSIONS AND FUTURE RESEARCH

The aim of this thesis is to add to the understanding of change in the appearance of designed objects over time by providing a wider conception of change in the design of Turkish cigarettes and cigarette packages from the beginning of the 20th century up to the present.

A collection, comprising of some 1200 Turkish cigarette packages and dating back to 1900s, was chosen to be studied in this research.

The 'long-range explanations for change' provides the 'wider conception of change' in design. Evolution is one form of long-range explanations where the influences of individuals and the environment are combined within time. Therefore, evolutionary theories –Darwinian evolution theory, memes, and their different types: recipemes, selectemes, and explanemes- were used in this thesis in the way of contributing to the knowledge in design discipline.

First, this chapter explains the key issues of the background to the research and summarizes the methodology in an engagement within the theories used in the thesis. Then, it examines and discusses what emerged from investigating the evolutionary theories in terms of quantitative and qualitative studies of changes happening to designed objects found in the collection of Turkish cigarette packages. Finally, this chapter concludes by stating what this study has revealed, what conclusions have been drawn from those findings as contribution to knowledge, and suggests future research that could be undertaken to complement or develop this study's research findings.

6.1 Key Issues of the Background to the Research

The conceptual framework of this thesis was constructed on three bases as given below, which were then explained and discussed in relation to design field of studies while some key issues were raised as the background to the research.

i) Evolutionary thinking and the biological view in science,

ii) Darwinian evolution theory and the memes,

iii) The study of designed objects: Turkish cigarettes and cigarette packages.

i) Evolutionary thinking and the biological view in science provide the third view for explaining the change in living organisms over time next to those religious and physics views. This third view features the biological world as a complex system since the biological world is multi-casual, involves fuzzy patterns, requires descriptive studies and historical analysis, does not involve predetermined patterns and welcomes variety. Similarly, the man-made world is also perceived as a complex system within these features and the artifacts of this world are perceived as the extensions of human thought, which compel the study of change in designed objects by utilizing this third view.

ii) Darwinian evolution theory is the 'descent with modification under the influence of natural selection'. It involves random and non-random processes providing gradual, accumulated change over time. Different population types such as the designed objects can be associated with Darwinian evolution theory if they are capable of fulfilling the following requirements:

1) The existence of variety
2) A competitive selection process of the 'winners'
3) A reproductive system which leads to the replication of the 'winners' and the disappearance of the 'losers'
4) A mechanism for the generation of new varieties (goes back to the first requirement) and the continuation of the process
5) A mechanism for changing the rules of the selection process

Darwinian evolution is about change and adaptation, and does not necessarily lead to progress and never leads to perfection unlike the claims of other evolution theorists Lamarck and Spencer. Besides the similarity of biological and man-made worlds being regarded as complex systems, one obvious difference between them is the human intervention, which is considered to make the man-made world predetermined, progressive and even perfectionist. However, although products of human interventions can go through a non-random selection, the outcomes are still uncertain over time.

Another obvious difference between the biological and man-made worlds is the inheritable character, the gene. A reproductive descent makes a population of living organisms look similar. The designed objects are criticized as not having a reproductive system. This problem was overcome by the introduction of memes –a new kind of replicator in human culture defined as the idea of cultural transmission- by Richard Dawkins in 1976. Although it started as an analogy, the modern neuroscience has proved the existence of memes in the brain today.

The memes are the ideas in the brains of people that replicate imperfectly over time while interacting with the ideas of other people and institutions in the environment. Taking the meme's eye view, the study of change in designed objects over time becomes the study of memes –the ideas of individual designers and the ideas of other people and institutions that produced the design context- that give the form to the designed objects over time; and it is these memes that follow the requirements of Darwinian evolution theory.

As it was mentioned before, the biological and man-made worlds are complex systems. Living organisms change in natural environment over time where Darwinian evolution takes place. The evolution in man-made world is much more complex than this. The designed objects change in natural and man-made environments over time. This environment can be described as the natural environment such as climate, earthquakes, and geography which does not change evolutionarily; the man-made environment such as wars and events which does not change evolutionarily; and the man-made environment such as economics, politics, legal issues, socio-culture, technology, styles, and what people want which changes evolutionarily. The ideas of designers that produced the designed objects interact with the ideas of other people and institutions that produced the design context, and they together go through an evolutionary process where other natural and man-made environments also take place. This complex system of evolving designed objects is simplified by the introduction of different types of memes by Langrish in 1999, which are the recipemes, selectemes and explanemes. These are defined and exemplified further in the engagement of theory with the methodology.

Besides these contributions of memes and their different types, explanemes, which are the ideas that are used in answering 'why' questions of the human propensity, also contribute to the discussion of human intervention in designed objects by revealing that the ideas of human consciousness and imagination are also due to an evolutionary change.

Another issue raised in the relevant literature review was 'how novelty in design was achieved'. This problem was discussed by Langrish through his answers of 'by experimenting', 'by accident', 'by symbiosis, and 'by survival of things that fit into complexity'.

The main theoretical contribution of the study of this thesis among other design evolution studies is the use of different types of memes –recipemes, selectemes,

explanemes. This study is also original by subjecting the Turkish cigarettes and cigarette packages, which are the actual products.

iii) A collection of Turkish cigarettes and cigarette packages dating back to 1900s up to the present was subjected to this design evolution study. These are cultural, everyday and mass-produced products, which provide a good example of the man-made world as a complex system regarding the field of cigarette design and cigarette packaging design in a specific geography and culture of Turkey; where these products are significant in terms of agricultural, economic, political, technological and socio-cultural aspects, and found in a rather stable environment due to Turkish state monopoly of tobacco.

6.2 Methodology Summary and Engagement with the Theory

This thesis has explanatory and descriptive research purposes by adding to the understanding of change in the appearance of designed objects over time. It also has an exploratory research purpose by discovering and setting out the characteristics of Turkish cigarettes and cigarette packages in the collection that have not been published before.

This research is a form of case, in which the subject matter study (Turkish cigarettes and cigarette packages) becomes one single case as in the studies of biology and history.

The methodological research aims of this thesis are as follows:

1) To identify and examine changes in the design of Turkish cigarettes and cigarette packages;

2) To use data gathered from the collection of Turkish cigarette packages – including cigarettes- to test Darwinian evolution theory and to examine different types of memes;

3) To compare the data gathered and evaluated from the studies of Turkish cigarettes and cigarette packages with the literature studied in order to arrive at informed conclusions that would be 'an addition to knowledge'.

In order to examine changes in design of Turkish cigarettes and cigarette packages, first of all, the ideas embodied in the cigarettes and cigarette packages were identified. There were two different kinds of ideas, which were defined as ‘design variables’ and ‘context variables’.

6.2.1 Design variables

Design variables are the design related ideas embodied in cigarettes and cigarette packages. They correspond to the recipemes at the micro level. They are the ideas of how to make cigarettes and cigarette packages in the head of designers. For example; if there is a 68 mm long cigarette, then ideas of how to make a 68 mm long cigarette in the head of designer are the recipemes at the micro level. The technologies of making cigarettes –as well as making and printing cigarette packages- are the recipemes at the macro level, which are the institutionalized ideas in direct relation to the recipemes at the micro level. These recipemes replicate only by imitation. If the designer selects 68 mm over 85 mm for the length of the cigarette as a better design, then this idea of betterness is a selecteme at the micro level, which replicates by societal means. However, 68 mm long cigarette and/or 85 mm long cigarette is still a recipeme at the micro level.

Accordingly, the distinctive design elements of cigarettes and cigarette packages were determined for the study of design variables, in other words, for the study of the recipemes at the micro level. The determined design elements of cigarettes were the length, the calibre profile, the thickness, and the tip; and the determined design elements of cigarette packages were the form, the opening mechanism, the capacity, the material, the colour, and the package graphics.

A quantitative study was carried out within these determined design elements of cigarettes and cigarette packages (except the package graphics) in the collection. First the design elements were coded, i.e. the varying forms of cigarette packages in the collection were coded as “soft pack”, “sharp-corner box”, “round-corner box” and “octagonal-corner box”. Then these codes were organized in an Excel table, and counted through time within graphs, and also counted through comparisons within matrixes. By this way, the recipemes at the micro level were analyzed through time for describing the change in design of cigarettes and cigarette packages.

A qualitative study was carried out within the determined design element; package graphics. All cigarette packages in the collection were grouped as serial packages and these groups were time-lined on a board. Then they were visually analyzed, and the recognized patterns of change were coded by colour on the board, or investigated within the groups of serial packages. For example, if there are “realistic” or “abstract” imageries on the packages, these ideas were coded with colour on the board. By this way, the recipemes at the micro level were analyzed through time for describing the change in design of package graphics. In addition, some samples of

cigarette packages were chosen from the board to reveal and describe the changes in package graphics.

6.2.2 Context variables

The other ideas embodied in the cigarette packages were the context variables. Context variables are the ideas about the decisions of the State Monopoly conveyed by the cigarette packages. These are the selectemes at the macro level that are in the heads of people and institutions other than the designers, which replicate by societal means. Selectemes at the macro level provide an environment for the recipemes at the micro and macro levels to compete. For example, if a cigarette package is selected to be produced for Atatürk –the founder of Turkey-, then the recipemes at the micro and the macro levels compete within this environment i.e. the ideas of how to design Turkish ornaments within an Atatürk illustration on the cigarette package compete in the head of the designer among the optional printing technologies.

The context variables of Turkish cigarette packages were identified for two reasons in this thesis; to obtain selectemes at the macro level from the cigarette packages themselves and to explore the characteristics of Turkish cigarettes and cigarette packages since these products have not been studied scientifically before.

After the context variables were identified, a quantitative study was carried out by coding and organizing the codes in an Excel table. Then the codes were counted through years within graphs. By this way, the selectemes at the macro level changing through time were obtained.

6.2.3 Different types of memes and the environment issue

As mentioned previously, the use of recipemes, selectemes and explanemes simplifies the complex system of evolving designed objects. The selectemes provide an environment for recipemes to compete; selectemes themselves compete for attention; and explanemes compete as the attempts at rationality. These memes interact with each other within natural and other man-made environments over time.

In the light of this explanation and the examples given previously, the design variables of cigarettes and cigarette packages correspond to the recipemes at the micro level and the context variables of cigarette packages correspond to the selectemes at the macro level.

The other selectemes at the macro level that were gathered from references and visualized within a figure and a graph for this thesis were the changing economic

policy of Turkey within the world (1923-2010), which enclosed the decisions for the Turkish State Monopoly as well, and the changing GDP per capita in Turkey (1913-2007). Besides these selectemes at the macro level, other man-made events that are not due to an evolutionary change were gathered from references and visualized within a figure, which included wars, foundation of Turkey, military coups, etc. In addition, the change of population in Turkey (1913-2008) was gathered from a reference and visualized within a graph as the natural environment. These selectemes at the macro level and the other man-made events together with the changing population of Turkey were used as the environment of the cigarettes and cigarette packages in this study.

The recipemes at the macro level are the technologies (cigarette manufacturing, package manufacturing and package printing) and the styles (graphics styles) that are in direct relation with the recipemes at the micro level –the design variables of cigarettes and cigarette packages. They are also like a man-made environment for the recipemes at the micro level. The data about these recipemes at the macro level were collected from field trips to factories, interviews with the experts, and the related literature in order to be studied in this thesis. A figure for changing graphic styles in the world was used from a reference.

The selectemes at the micro level are the ideas of ‘betterness’ in the heads of designers. They compete in the head of a designer while the object is designed. Since this thesis focuses on the designed objects, not the designing process; the selectemes at the micro level were not studied any further; however it is discussed further in this chapter. The ideas of betterness in the heads of customers are the selectemes at the macro level, in which the design variables of cigarettes and cigarette packages that are the recipemes at the micro level compete, and this is studied in this thesis.

When there is a reason, explanemes come into play at the micro and the macro levels. They replicate by learning, which requires a language or symbols. They can work in pairs with selectemes, i.e. they appear in the head of the designer at the micro level as “why that length is better than the others for the cigarette”. At the macro level, they form part of an evolutionary system which sometimes involves institutions such as science, regulation, law and government that compete within institutional frameworks. The explanemes were reviewed in the literature when necessary in order to be used in this study.

6.3 Research Findings and Discussions

Findings from the dating analysis method, the portraying of the environment of Turkish cigarette packages, the characteristics analysis of Turkish cigarette packages and the design evolution study of Turkish cigarette packages are given in this part.

6.3.1 Dating analysis method of the cigarette packages

There were 1161 cigarette packages in the collection, 1116 of which were chosen to be studied. 45 of them were removed due to their being same packages, prototype packages, fake packages and tobacco packages.

Since the dates are at most importance in this study, a dating analysis method had to be developed to find the dates of 463 cigarette packages out of 1116, which did not have dates written on them.

During the method, a periodical list of Turkish cigarette brands that have appeared in the market in years was prepared by cross-checking several references with the known dates of the cigarette packages in the collection. This is the largest periodical list of Turkish cigarette packages ever prepared and the most detailed one including the design specifications and necessary notes about the cigarette packages (see Appendix D).

Other findings from the development of this method are identification of changing names of the Turkish State Monopoly through years, which was gathered from the collection and visualized accordingly (see Figure 4.1); and fixation of prices of the cigarette packages by date in a list, which was studied through calculations and pattern recognition (see Appendix H).

After the application of this method, the dates of 450 cigarette packages out of 463 could be ranged while the dates of 44 cigarette packages were exactly found (see Table 4.3).

The determined date range of cigarette packages that would be studied was 5 years which compromised with 315 cigarette packages out of 450.

As a result, 967 cigarette packages out of 1161 in the collection could be used in this study (see Table 4.4).

6.3.2 Environment of Turkish cigarette packages

As mentioned before, in order to study how the design of Turkish cigarettes and cigarette packages has changed over time, their environment was required to be portrayed.

The graphs of context variables as the selectemes at the macro level were obtained, which are explained in the following part.

The other selectemes at the macro level, the man-made events, and the changing population of Turkey were gathered from several references and visualized within figures (see Figure 3.14 and Figures 5.1-3).

6.3.3 Characteristics of Turkish cigarette packages

The context variables of Turkish cigarette packages were identified to reveal the characteristics of Turkish cigarette packages and to be used as the selectemes at the macro level for this study.

The context variables that were identified in the collection and quantitatively studied within graphs were; “Brand/Special Edition”, “Manufacturing factories”, “Sales”, “Distribution”, “Company types”, “Export/Import”, “Sub-brands”, “Differentiation due to consumers”, “Quality”, “Taste”, “Anniversaries /Memorials/Special days and weeks”, “Events/Institutions”, and “Provinces”.

i) Brand/Special Edition

This context variable was the most important contribution to this study in regard to the classification of cigarette packages in the collection. The quantitative and qualitative studies of cigarettes and cigarette packages were prepared according to this classification. This context variable acted as the selecteme at the macro level in a way that the design variables of cigarettes and cigarette packages that are the recipemes at the micro level were analyzed from the decision of brand or special edition cigarette production by the Turkish State Monopoly. Even other context variables, selectemes at the macro level, were studied within this classification.

The highlighted findings from the study of brand/special edition cigarettes can be summarized as follows:

- Among the studied 967 cigarettes, 414 of them were brand and 553 of them were special edition cigarettes.
- Due the events, institutions and people constantly changing in 110 years of Turkey, the frequency of appearance of new special edition cigarettes was higher than the brand cigarettes. In addition, their design should be different every time for

being a special edition. This is why the amount of special edition cigarettes is higher than the 'brand' cigarettes in the collection.

- Special edition cigarettes appeared in the market in 1933 and disappeared in 2003.
- The appearance of special edition cigarettes can be related to "Milliyetçilik"[65] and "Devletçilik"[66] ideologies of the young Turkish Republic. They were produced for specific events, institutions and people including anniversaries, memorials and special days/weeks that supported the republic's efforts for founding a nation state by creating a historical base for itself and strengthening its ideologies.
- From the beginning of 1960s up to beginning of 1980s, a boom in the frequency of special edition cigarettes appears that almost 26% of cigarette packages in the collection belong to this group. This boom can be explained with the economic policy of planning and import-substituting industrialization stages of those years together with its socio-cultural impacts. In addition, new, fast and cheap technologies of filtered cigarettes and their packages might have supported this increase.
- By going back to civil governance in 1983, a dramatic decrease in the frequency of brand and special edition cigarettes is observed due to the end of import-substituting period.
- Turkey struggles with series of economic shocks between 2000 and 2001. Later in 2003, the State Monopoly's tobacco department was put up for privatization, which also ended up the production of special edition cigarettes.

ii) Manufacturing factories

This context variable indicated the different factories that were opened and contributed in the manufacturing of cigarettes through years in Turkey. The names of the factories that were identified are 'Adana', 'Ballıca', 'Bitlis', 'Istanbul-Cibali', 'Istanbul-Maltepe', 'Istanbul (Cibali or Maltepe)' –factories of these packages were not specified-, 'Izmir', 'Malatya', 'Samsun', and 'Tokat'. This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

iii) Sales

This context variable indicated if the cigarettes were 'for sale' or 'not for sale'. Only a few cigarette packages were 'not for sale' in brand and special edition cigarettes. The reasons for 'not for sale' in brand cigarettes are; their being produced for

[65] Nationalism.
[66] Statism.

promotion of the brand, for advertising the State Monopoly and for ration to workers. The reasons for 'not for sale' in special edition cigarettes are; their being produced as New Year gifts; as anniversary and memorial gifts for events, people and institutions; and as advertising gifts for intuitions and companies. One significant reason 'for sale' of special edition cigarettes was their being produced for donation for some political parties and for some sports clubs. This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

iv) Distribution

This context variable indicated the differing distribution of cigarettes. For brand cigarettes, these were 'domestic' (distributed to overall Turkey), 'villages/Eastern Anatolia' (only distributed to villages and to eastern region of Turkey), 'specific place' (distributed to specific places in Turkey such as military zone, parliament buildings and security buildings), 'duty free' (distributed to duty free shops in Turkey), and 'overseas' (distributed to Arab and Turkic countries, to USA, to Japan and to others that were unknown). For special edition cigarettes, these were 'domestic' and 'specific place/city' (distributed to events' specific places, cities, and regions in Turkey). This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

v) Company types

This context variable indicated differing production companies of the brand cigarettes. There is no such variable for special edition cigarettes since they were all produced by the State Monopoly. The brand cigarettes of differing production companies were identified as 'state monopoly brands', 'other company brands' and 'partnership brands', which were revealed in detail in a table with names and production countries of different types of the companies (see Table 5.1). This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

vi) Export/Import

This context variable indicated if the cigarettes were exported or imported. Special edition cigarettes were not imported or exported so that this variable was valid only for brand cigarettes. Export/import of brand cigarettes happened in 1970s and between 1985 and 2005. This context variable only contributed to the identification

of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

vii) Sub-brands

This context variable indicated the differentiation of some of the cigarettes from the mainstream brands by taste, quality, distribution and health reasons. These cigarettes were identified according to the copy keywords used in naming the sub-brands, which were; '216', 'Gold', 'Luxury', 'International' and 'Lights'. These sub-brands appeared since the latter half of 1980s. This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

viii) Differentiation due to consumers

This context variable indicated the differentiation of brands due to consumers. These cigarettes were identified as 'for women' (specifically produced for women), 'for foreigners' (only produced for foreigners who could buy these cigarettes with passports), and 'for employees/members' (only produced for employees such as policemen and for members of the military and the parliament). This cigarette production due to consumers happened fragmentally through years. Only cigarettes 'for women' were used as the selecteme at the macro level during the analysis of design variables of cigarettes –recipemes at the micro level.

ix) Quality

This context variable for the quality of tobacco and cigarettes was identified in brand cigarettes as 'regular' and 'high'. 'High' quality was used for both special type and ambassador type cigarettes. Although these types disappeared through years (probably in 1930s), the brands, which were known by different quality and were produced for a long time, were kept been observed until they disappeared from the market in 1980s. This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

x) Taste

This context variable indicated different tastes of brand cigarettes. The tastes were identified as 'aniseed', 'mentholated', 'mild-aromatic', 'odorous', and 'strong'. These tastes appeared fragmentally through years while 'strong' and 'odorous' tastes appeared mainly between 1950 and 1970. Among these tastes, it is interesting to observe the taste of 'aniseed' for a cigarette. This attempt can be related to so-

called national drink of Turkey that is "*rakı*" which is made of aniseed. Only one special edition cigarette was observed to be tasted in the collection and that was 'odorous'. This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

xi) Anniversaries/Memorials/Special days and weeks

This context variable was observed on special edition cigarettes and they were identified accordingly: 'anniversaries' (i.e. for celebrating the anniversary of an important event such as Ataturk's 100th birthday), 'memorials' (i.e. for a specific occasion such as opening ceremony of Adana cigarette factory), and 'special days and weeks' (i.e. for celebrating the civil engineers' day). 'Anniversaries' appeared mainly between 1945 and 1985; 'memorials' appeared mainly between 1945 and 1995; 'special days and weeks' appeared mainly between 1975 and 1985. This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

xii) Events/Institutions

This context variable was observed on special edition cigarettes and was identified as follows: 'Events' referred to special edition cigarettes that were produced for several different events. These events were campaigns, competitions, exhibitions, fairs, festivals, and meetings. 'Institutions' referred to special edition cigarettes that were produced for several different institutions. These institutions were associations, companies, governmental institutions, organizations, political parties, and sports clubs. 'Hybrid' referred to special edition cigarettes that were produced for both events and institutions such as for a general meeting of a political party. This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

xiii) Provinces

This context variable indicated the names of provinces, their cities and towns observed on the special edition cigarettes, which were produced for the events that took place in those places. This context variable was important for revealing the spread of special edition cigarettes to overall Turkey as representatives of Turkish socio-culture. These cigarettes were only distributed to these cities and sold there. 470 special edition cigarettes out of 553 in the collection belonged to this group and they were named after 48 provinces out of 67 (which there were at that time) in

Turkey that branched further to cities and towns. These provinces of Turkey are Adana, Afyonkarahisar, Aksaray, Amasya, Ankara, Antalya, Aydın, Balıkesir, Bilecik, Bitlis, Bolu, Burdur, Bursa, Çanakkale, Çorum, Denizli, Diyarbakır, Edirne, Erzurum, Eskişehir, Gaziantep, İstanbul, İzmir, Kahramanmaraş, Karaman, Kastamonu, Kayseri, Kırşehir, Kocaeli, Konya, Kütahya, Malatya, Manisa, Mersin, Muğla, Nevşehir, Rize, Sakarya, Samsun, Siirt, Sinop, Sivas, Şanlıurfa, Tekirdağ, Tokat, Trabzon, Yalova, and Zonguldak. This context variable only contributed to the identification of characteristics of Turkish cigarette packages and was not studied as the selecteme at the macro level any further.

6.3.4 Design evolution of Turkish cigarette packages

The design variables of cigarettes and cigarette packages that correspond to memes at the micro level were identified through design elements of these products, which were coded and counted accordingly within graphs and matrixes in a quantitative study.

The graphs of design variables, which were obtained for both brand and special edition cigarettes separately, revealed how the frequency of codes of design elements of cigarettes and cigarette packages moved through time. The matrixes gathered and compared these codes for revealing the most likely design options for cigarettes and cigarette packages.

6.3.4.1 Quantitative study: Findings of graphs

i) Cigarette thickness

- Different thicknesses of cigarettes were coded as ‘thick’, ‘slim’ and ‘regular’ recipemes in the overall collection, which fulfil the “variety” requirement of the Darwinian evolution theory. Although not observed in the collection, there were ‘very slim’ and ‘very thick’ cigarettes as well among Turkish cigarettes.

- ‘Thick’, ‘slim’, ‘very slim’ and ‘very thick’ recipemes were observed at the beginning of 20th century as they were replicated from the times of hand-rolled cigarettes. Only ‘thick’ and ‘slim’ recipemes were replicated among others since only they were found in the collection. This reveals the fulfilment of other requirements of the Darwinian evolution theory that are “the competitive selection process of the ‘winners’” and “the replication of the ‘winners’ and the disappearance of the ‘losers’”.

- ‘Regular’ thickness recipeme appeared in 1940s as a new variety among Turkish cigarettes, which was probably due to the World War II and the start of Pax Americana period that Americans propagated the regular recipeme. Consequently,

the ‘regular’ thickness recipeme started to compete with ‘thick’ and ‘slim’ recipemes. This fulfils “the mechanism for the generation of new varieties and the continuation of the process” requirement of Darwinian evolution theory.

- ‘Regular’ thickness recipeme became the winner and the other recipemes got eliminated in 1980. At this time, second wave of globalization appeared worldwide, which was followed by Turkey with searching for a new state model. ‘Regualar’ thickness recipeme got replicated as the winner recipeme since then.

- It was observed that the appearance of ‘slim’ recipeme in the graph was compatible with the cigarettes produced for women, which was revealed in a graph of context variables.

- Thickness of special edition cigarettes changed similarly, only less variety was observed among them and the appearance of the new variety –the regular recipeme- was later than the brand cigarettes.

ii) Cigarette calibre form

- ‘Oval’ and ‘round’ recipemes were found in the collection indicating the variety of cigarettes.

- Only ‘oval’ recipeme was observed at the beginning of 20th century, which was due to the characteristic of oriental tobacco that could not be formed into round (oriental tobacco came out of the cigarette; then the amount of tobacco inside required to be increased, which caused an economical problem together with a smoking problem). This form was known as Turkish/Egyptian cigarette in abroad. Although this ‘oval’ recipeme could be related to selectemes at the macro level such as customers demand and economy, however it was rather related to reciepeme at the macro level; manufacturing technology of cigarettes with oriental tobacco, and not the other recipeme at the macro level; the style.

- ‘Round’ recipeme appeared in 1920s in brand cigarettes and at the latter half of 1940s in special edition cigarettes. Former one could be due to the World War I (oriental tobacco could not be exported to Britain and USA, they promoted Virginia tobacco) and the Independence War (Turks were introduced to Virginia tobacco with ‘round’ recipeme), and the latter one could be due to the World War II (Virginia tobacco with ‘round’ recipeme was introduced to Europe and invaded the world – Pax Americana period).

- ‘Round’ and ‘oval’ recipemes went through a competitive selection process.

- ‘Oval’ recipeme was eliminated in 1980 in both brand and special edition cigarettes. At this time, second wave of globalization appeared worldwide, which was followed by Turkey with searching for a new state model. ‘Round’ recipeme was replicated as the winner recipeme since then.

iii) Cigarette length

- ‘68 mm’, ‘74 mm’, ‘80 mm’, ‘85 mm’, ‘100 mm’, and ‘160 mm’ recipemes were found in the collection indicating the variety of cigarettes. ‘74 mm’ recipeme could not be studied further since the dates of these cigarettes could not be ranged to 5 years.

- Only ‘68 mm’ and ’80 mm’ recipemes were observed at the beginning of 20th century.

- ‘68 mm’ was winner over ‘80 mm’ recipeme. ‘80 mm’ recipeme fragmentally appeared in the market in both brand and special edition cigarettes. These recipemes acted together as optional cigarette lengths in a way.

- With the manufacturing of the first filtered cigarette in 1959, which was the *Samsun* brand, ‘85 mm’ recipeme started to compete with ‘68 mm’ while ‘100 mm’ joined the competition in 1970s in brand cigarettes.

- ‘85 mm’ recipeme later appeared at the latter half of 1960s in special edition cigarettes; and ‘100 mm’ recipeme appeared at the same time with brand cigarettes in 1970s.

- ‘68 mm’ recipeme disappeared in 1980s in both brand and special edition cigarettes. At this time, second wave of globalization appeared worldwide, which was followed by Turkey with searching for a new state model. ‘68 mm’ recipeme reappeared in 1990s for a short period of time in brand cigarettes probably to fulfil the demand of plain cigarettes (produced at 68 mm length) from the customers.

- ‘85 mm’ and ‘100 mm’ became the new optional cigarette lengths that were the winners and got replicated since then.

- ‘160 mm’ recipeme appeared in the latter half of 1930s as a new variety in brand cigarettes; however it was eliminated quickly. If this recipeme can be regarded as a novelty, it can be said that this novelty was achieved by symbiosis while the function of a mouthpiece (tube) was combined with the style of an extended smoking product, which was compatible with the social modernization of Turkey in those years (1930-1940).

iv) Cigarette tip

- ‘Filter, ‘plain’, ‘sleeve’, and ‘mouthpiece and sleeve’ recipemes were found in the collection indicating the variety of cigarettes.

- Only ‘sleeve’ and ‘mouthpiece and sleeve’ recipemes were found at the beginning of 20th century. ‘Sleeve’ recipeme, which was a paper or cork tip wrapped at the end of the cigarette, prevented the lip sticking to cigarette paper and ‘mouthpiece’ prevented the mouth from the tobacco’s flake. The ‘mouthpiece’ recipeme, which was a tube attached to the cigarette, was replicated from the Russian style cigarettes, which were also used to secure the cigarette from thick gloves worn in the cold weather. ‘Sleeve’ and ‘sleeve and mouthpiece’ recipemes were for higher quality cigarettes.

- ‘Plain’ recipeme appeared in 1920s in brand cigarettes, which was probably due the economic situation of the young Republic of Turkey and the propagation of ‘round’ recipeme.

- ‘Plain’ recipeme went through a competitive selection process rather with ‘sleeve’ since ‘mouthpiece and sleeve’ recipeme appeared very rare. ‘Sleeve’ recipeme got eliminated in 1980 and ‘plain’ recipeme got eliminated shortly after in 1980s. At this time, second wave of globalization appeared worldwide, which was followed by Turkey with searching for a new state model.

- It was observed that the appearance of ‘sleeve’ recipeme in the graph between 1970 and 1980 was compatible with the cigarettes produced for women, which was revealed in a graph of context variables. ‘Sleeve’ recipeme with red colour was also used to prevent the cigarette paper from the stain of the lipstick.

- ‘Plain’ recipeme got eliminated in 1980; ‘sleeve’ recipeme only appeared for a very short time in 1950s; ‘mouthpiece and sleeve recipeme’ was not observed at all in special edition cigarettes.

- ‘Filter’ recipeme, which reduced the harm of tobacco, prevented the lip from sticking on the cigarette paper and prevented the mouth from the tobacco’s flake; appeared in the market in 1959. It competed with ‘sleeve’ recipeme and became the winner. It dominated the market since then while strengthening its co-recipemes of ‘round’, ‘regular’, ’85 mm’ and ‘100 mm’. ‘Filter’ recipeme was more advantageous than the other recipemes in several ways: i) It was proved that cigarettes caused lung cancer. This is an explaneme at the macro level, which strengthened the use of filters. ii) It was more economical since less tobacco was filled into cigarettes. This is an explaneme at the micro level acting with the betterness idea of selecteme at the

micro level. This also shows how economy –selecteme at the macro level- provides an environment for cigarette tip recipemes to compete. iii) It was an American style cigarette, which allured the customers –recipeme at the macro level- although Turkish customers criticized 'filter' recipeme as it would spoil the taste of tobacco –selecteme at the macro level.

- As a novelty in design, 'filter' recipeme was invented from a trial-error process.

- Although it was not studied in detail, one interesting note would be the colour and texture of filter paper worldwide today. In general, colour and texture of filter papers is "white-plain" or "corn colour with cork-like texture". Probably, this "corn colour with cork-like texture" was replicated in filter paper from the cork tip used in sleeve cigarettes, which were also known as a Turkish style together with 'oval' calibre form recipeme. Cork material was used in sleeve cigarettes to prevent the lip of the smoker from sticking to the cigarette paper due to its absorbent property. The perforated property of cork was visually replicated on filter paper in order to signify the permeable property of filters.

v) Cigarette package form

- 'Sharp-corner box', 'round-corner box', 'octagonal-corner box', and 'soft pack' recipemes were found in the collection indicating the variety of cigarette packages.

- Only 'sharp-corner box' and 'round-corner box' recipemes were found at the beginning of 20th century. Their manufacturing was partly hand-made –recipeme at the macro level.

- 'Round-corner box' recipeme was eliminated in 1930s while 'soft pack' recipeme appeared as a new variety at that time. 'Soft pack' recipeme depends on machinery production as the recipeme at the macro level. Population in the world and in Turkey was increasing steadily and the technologies of cigarette and cigarette package manufacturing were developed to produce more cigarettes and cigarette packages. 'Soft pack' recipeme was highly welcomed in Turkey at first; it was found trendy among customers in a way that it was carried in shirt pocket rather than in jacket pocket as what was done with hinged-lid packages –selecteme at the macro level. 'Soft pack' recipeme generally acted with 'round' and 'regular' cigarette recipemes.

- 'Sharp-corner box' recipeme was always in the market; it started to compete with 'soft pack' recipeme since 1930s; and both were the winners and got replicated until today.

- Only ‘sharp-corner box’ and ‘soft pack’ recipemes were observed in special edition cigarettes.

- Lately, ‘round-corner box’ recipeme appeared again in brand cigarettes in the latter half of 2000; this time it was used together with ‘paperboard’ material recipeme different than 100 years ago when it was used with ‘tin’ material recipeme. ‘Octagonal-corner box’ recipeme appeared as a new variety with ‘round-corner box’ recipeme as well. These are actually both novelties of different form giving to ‘paperboard’ material recipeme within the development of technology by trial and error. These new varieties appearing lately are probably due the health regularities – selectemes at the macro level- preventing designers to come up with different package graphics and directing them to make changes within package configurations. This is an example for “the mechanism for changing the rules of the selection process” requirement of Darwinian evolution theory.

vi) Cigarette package opening mechanism

- ‘Flip-top’, ‘flip-top (log edge)’, ‘hinged-lid’, ‘hinged lid (short edge)’, ‘sliding’, ‘soft’, and ‘envelope’ recipemes were found in the collection indicating the variety of cigarette packages.

- Only ‘hinged-lid’ recipeme was observed at the beginning of 20th century. Then ‘hinged-lid (short edge)’ recipeme appeared in 1920s as a slightly new variety. This was probably indication of the new Republic of Turkey.

- ‘Soft’ opening mechanism recipeme appeared in the market in 1930s, which was only used with ‘soft pack’ form recipeme.

- ‘Sliding’ recipeme appeared in the market in 1950s as a new variety. This recipeme was already in use in western countries. Its appearance in 1950s might be due to the economic policies of the new parliament when multi-party period took place and free foreign trade was applied indicating the efforts for new relations with western countries –selecteme at the macro level.

- ‘Hinged-lid’, ‘hinged-lid (short edge), ‘soft’ and ‘sliding’ recipemes competed in the market; however only ‘soft’ recipeme was totally manufactured by machine among others and it dominated the market as being faster and cheaper; especially against the ‘hinged-lid’ recipeme, which was the second popular. ‘Hinged-lid’ recipeme was mainly used with ‘oval’ recipeme since oval cigarettes were wrapped inside a package that held the cigarettes from both ends. Therefore, the competition between ‘soft pack’ and ‘hinged-lid’ package recipemes meant the competition between ‘round’ and ‘oval’ cigarette recipemes.

- ‘Hinged-lid’ recipeme was eliminated from the market in 1980. At this time, second wave of globalization appeared worldwide, which was followed by Turkey with searching for a new state model.

- Sliding’ recipeme appeared in the market fragmentally, and it disappeared totally in the latter half of 1990.

- ‘Flip-top (long edge)’ recipeme appeared in the market as a new variety in 1970s. It was produced by machinery. This recipeme was probably replicated from Marlboro cigarettes in which ‘flip-top’ recipeme was first used in 1954. It was replicated imperfectly with a different size, more close to sizes of ‘hinged-lid (short edge)’ and ‘sliding’ recipemes. It was eliminated in 1980 as well.

- ‘Flip-top’ recipeme appeared in the market as a new variety in the latter half of 1980s; its technology –recipeme at the macro level- was imported from the United States.

- ‘Flip-top’ and ‘soft’ recipemes were replicated and dominated the market since then.

- First special edition cigarette used ‘hinged-lid (short edge)’ recipeme as being “new” in the market. Other recipemes used in special edition cigarettes were ‘hinged-lid’, ‘sliding’, ‘soft’ and ‘envelope’. ‘Envelope’ recipeme was used between 1935 and 1945 for advertisement and promotion. These were also the beginnings of special edition cigarettes.

vii) Cigarette package capacity

- ‘3’, ‘4’, ‘5’, ‘10’, ‘20’, ‘25’, ‘50’, ‘84’, ‘100’, and ‘120’ recipemes were found in the collection indicating the variety of cigarette packages. Among these, ‘3’ and ‘4’ recipemes could not be ranged to 5 years and so could not be studied. Besides these, ‘500’ and ‘1000’ recipemes were also reviewed in the literature, which were indicated to be observed at the beginning of 20th century.

- ‘10’, ’20’, ‘25’, ‘100’ capacity recipemes, together with ‘500’ and ‘1000’ recipemes, were observed at the beginning of 20th century. The higher amount of cigarettes in the packages was probably due to the structure of commerce in those years, where retail sales were not developed and customers had the habit of buying batches for their daily cigarette requirements –selectemes at the macro level.

- ‘50’, ‘84’ and ‘120’ capacity recipemes were observed between 1965 and 1975, which was probably due to nostalgic reasons and retro style since these packages

were similar to old packages produced about 50 years ago –recipemes at the macro level.

- Among these recipemes, ‘20’ recipeme dominated the market and replicated up to today as the closest average of cigarettes smoked in a day, which indicates the changed structure of commerce based on daily consumption –selecteme at the macro level.

- Special edition cigarettes included less variety on capacity recipemes, in which ‘50’ recipeme was the second popular one through years of 1945-1960 and 1965-1985.

viii) Cigarette package material

- ‘Paper’, ‘transparent paper’, ‘paperboard’ and ‘tin’ material recipemes were found in the collection indicating the variety of cigarette packages.

- Only ‘tin’ and ‘paperboard’ recipemes were observed at the beginning of 20th century, and they were used for hand-made packages. ‘Tin’ recipeme was observed for packaging of other goods such as tea, sugar, etc. at those times.

- ‘Tin’ recipeme was eliminated from the market and the ‘paper’ recipeme appeared in the market in 1930s with ‘soft pack’ recipeme.

- ‘Paperboard’ and ‘paper’ material recipemes were replicated since then.

- ‘Paperboard’ recipeme was always in the market since this material was used both in hand-made and machine-made cigarette packages: hinged-lid, sliding, and flip-top.

- Only ‘paper’, ‘paperboard’ and ‘transparent paper’ recipemes were observed in special edition cigarettes. ‘Paper’ recipeme appeared later in special edition cigarettes compared to brand cigarettes, which was the latter half of 1940s. ‘Transparent’ recipeme was used with ‘envelope’ recipeme that appeared between 1935 and 1945 for advertisement and promotion.

ix) Cigarette package colour

Package colours were studied generally within a quantitative study. The colour recipemes observed in the cigarette packages were ‘Red’, ‘Blue’, ‘Brown’, ‘Yellow’, ‘Black’, ‘White’, ‘Silver Gilt’, ‘Golden Gilt’, ‘Orange’, ‘Green’, ‘Gray’, ‘Pink’, and ‘Purple’. The most selected colour recipemes were ‘red’, ‘golden gilt’, ‘blue’, ‘white’ and ‘black’.

6.3.4.2 Quantitative study: Findings of matrixes

Matrixes were prepared through associations of cigarette recipemes and cigarette package recipemes among and in between themselves. These matrixes provided the interaction of recipemes at the micro level.

It was observed that some recipemes acted together forming the final appearance of cigarettes and cigarette packages. They were selected and replicated together; or eliminated from the market together.

It was also observed that some of the cigarette package recipemes directly depended on cigarette recipemes in a way that they were selected and replicated together; or eliminated from the market together.

Findings from the matrix that revealed the associations of cigarette recipemes are as follows:

- ‘Regular’ and ‘oval’ recipemes were never used together.
- ‘Regular’, ‘round’, ‘85 mm’ and ‘filter’ recipemes were mainly used together.
- ‘Regular’, ‘round’, ‘100 mm’ and ‘filter’ recipemes were mainly used together.
- ‘Regular’, ‘round’, ‘68 mm’ and ‘plain’ recipemes were mainly used together.
- ‘Thick’ or ‘slim’, ‘oval’, ‘68 mm’ and ‘plain’ recipemes were mainly used together.
- ‘Thick’ or ‘slim’, ‘oval’, ‘68 mm’ and ‘sleeve’ recipemes were mainly used together.
- ‘Regular’, ‘round’, ‘160 mm’ and ‘mouthpiece & sleeve’ recipemes were used together for once in the collection.

Findings from the matrix that revealed the associations of cigarette package recipemes are as follows:

- ‘Soft pack’, ‘soft’, ‘20’ and ‘paper’ recipemes were mainly used together.
- ‘Sharp-corner box’, ‘flip-top’, ‘20’ and ‘paperboard’ recipemes were mainly used together.
- ‘Sharp-corner box’, ‘sliding’, ‘20’ and ‘paperboard’ recipemes were mainly used together.
- ‘Sharp-corner box’, ‘hinged-lid’, ‘20’ and ‘paperboard’ recipemes were mainly used together.
- ‘Sharp-corner box’, ‘hinged-lid’, ‘50’ and ‘paperboard’ recipemes were mainly used together.
- ‘Round-corner box’, ‘hinged-lid’, ‘20’ and ‘tin’ recipemes were mainly used together.
- ‘Round-corner box’, ‘hinged-lid’, ‘100’ and ‘tin’ recipemes were mainly used together.

- ‘Round-corner box’, ‘flip-top’, ‘20’ and ‘paperboard’ recipemes were mainly used together.
- ‘Round-corner box’, ‘hinged-lid’, ‘10’ and ‘tin’ recipemes were mainly used together.
- ‘Octagonal-corner box’, ‘flip-top’, ‘20’ and ‘paperboard’ recipemes were used together for once in the collection.

Findings from the matrix that revealed the associations of cigarette and cigarette package recipemes are as follows:
- ‘Regular’, ‘round’, ‘85 mm’, ‘filter’ cigarette recipemes were mainly used together with ‘soft pack’, ‘soft’, ‘20’, ‘paper’ cigarette package recipemes.
- ‘Regular’, ‘round’, ‘85 mm’, ‘filter’ cigarette recipemes were mainly used together with ‘sharp-corner box’, ‘flip-top’, ‘20’, ‘paperboard’ cigarette package recipemes.
- ‘Regular’, ‘round’, ‘100 mm’, ‘filter’ cigarette recipemes were mainly used together with ‘soft pack’, ‘soft’, ‘20’, ‘paper’ cigarette package recipemes.
- ‘Regular’, ‘round’, ‘68 mm’, ‘plain’ cigarette recipemes were mainly used together with ‘soft pack’, ‘soft’, ‘20’, ‘paper’ cigarette package recipemes.
- ‘Thick’ or ‘slim’, ‘oval’, ‘68 mm’, ‘plain’ cigarette recipemes were mainly used together with ‘sharp-corner box’, ‘hinged-lid’, ‘20’, ‘paperboard’ cigarette package recipemes.
- ‘Thick’ or ‘slim’, ‘oval’, ‘68 mm’, ‘sleeve’ cigarette recipemes were mainly used together with ‘sharp-corner box’, ‘hinged-lid’, ‘20’, ‘paperboard’ cigarette package recipemes.

6.3.4.3 Qualitative study: Findings of time-lined board and serial cigarette packages

The design elements of package graphics (the recipemes at the micro level) were analyzed to identify some codes in order to be studied in the overall collection. The codes identified were “Photo realistic/Realistic illustration/Abstract”, “Plain/Fancy”, “Style”, “Motif”, “Only colour change” and “Health warning”.

i) “Only colour change” study

It was observed that without any change within the graphics, only colour was changing in some of the cigarette packages. The pathway in the time-lined board was desultory among brand cigarettes and a consistency of the pathway appeared between the 1970s and 1990s among special edition cigarettes. This recipeme at the micro level, as a cheaper solution to make difference in design, might be due to the increase in number of special edition cigarettes produced in those years, which

was the decision of the state monopoly ruled within governmental policies as the selecteme at the macro level.

ii) "Motif" study

It was observed that some motifs (Turkish folkloric signs, İznik patterns, Hittite sign) were used as imageries on cigarette packages. Due to the pathways in the time-lined board, İznik patterns appeared between mid-1960s and mid-1970s, and Hittite sign appeared desultorily since mid-1950s only in brand cigarettes. Turkish folkloric signs appeared between 1960 and the mid-1980s only in special edition cigarettes. These recipemes at the micro level were selected and used due to the state monopolies decisions ruled within governmental policies as the selectemes at the macro level.

iii) "Plain/fancy" study

It was observed that some of the cigarette packages were plain in design and some were applied with lots of ornaments. Due to the pathways in the time-lined board, "fancy" imageries appeared before 1930s in the Ottoman Empire period and between 1970 and the mid-1980s in brand cigarettes. This latter appearance of this recipeme at the micro level is compatible with the appearance of İznik patterns in brand cigarettes. "Fancy" imageries only appeared in special edition packages in the 1980s as the follower of brand cigarettes, which was also observed in the design of package configuration.

iv) "Photo realistic/Realistic illustration/Abstract" study

It was observed that some of the cigarette packages had photo realistic, realistic illustration or abstract imageries. Due to the pathways in the time-lined board, "abstract" imageries appeared after the 1960s, and they appeared after the 1970s as special edition cigarettes again being the follower of brand cigarettes. "Abstract" imageries appeared again later due to the modern style being used as the recipeme at the macro level starting from those days in Turkey.

v) "Health warning" study

After 2006, international text warnings, and after 2010, international text and photographic warnings, were legislated to be put on the cigarette packages by the Turkish government as the selecteme at the macro level. The design consequences as the recipemes at the micro level revealed the change in imagery of cigarette packages in accordance with the warning label as observed in the serial packages of the Tekel 2000 brand.

vi) "Style" study

The styles that were observed in the collection were poster-like expression, typographic illustration, psychedelia, modern, international style, arts and crafts, constructivism, sachplakat (object poster), art nouveau, and art deco. These styles were observed desultorily among the collection; however psychedelic style used as the recipeme at the micro level was compatible with the style being used worldwide as the recipeme at the macro level.

6.3.4.4 Discussions through new designs of cigarettes and cigarette packages

Slim cigarettes of foreign brands entered into Turkish tobacco market within the open economy system in 1984. They were mainly selected by women smokers likewise in the world. Today, slim cigarettes have become popular again; however this time their selection is also due to health and economic issues next to the gender. There are even three different thicknesses of slim cigarettes in the market today that are "slim", "extra slim" and "super slim"[67]. The selectemes at the macro level have changed, the explanemes at the macro level are strengthened, and so the 'slim' recipeme at the micro level still gets replicated.

Lately, new varieties of filters have appeared in the market due to changing technology and health awareness such as "recessed", "charcoal", "triple", and "dual segment" filters. In recessed filtered cigarette, the filter tipping paper is thicker and longer than the filter. When the Parliament brand cigarette, which has recessed filter, entered into Turkish cigarette market, the manufacturers targeted high-class consumer groups. However, the purchase numbers showed that these cigarettes were mainly consumed in the Eastern Turkey, where is known as underdeveloped region of Turkey. Then it appeared to be that these cigarettes were mainly consumed by long-distance truck drivers in Eastern and South-eastern regions of Turkey due to the cigarette's recessed filter, which provided longer duration in the mouth while driving the truck.[68] It was rather selected due to its function than as a style.

A new cigarette filter appeared worldwide lately, which is called "switch" filter. This filter has a capsule inside that is filled with mentholated particles. If the consumer wants to smoke a mentholated cigarette, he/she presses the filter between fingers, and the cigarette becomes mentholated. This indicates achievement of novelty in design.

[67] Personal interview with Barış Karacaoğlu (2009).
[68] Personal interview with Barış Karacaoğlu (2009).

In order to overcome the problem of passive smoking, the idea of ‘smokeless cigarette’ was developed through numerous prototype products. The recipeme of smoking behaviour is replicated with the imitated e-cigarette product with the exception of fulfilling the ritual of lighting the cigarette.

Also different types of cigarette packages appeared in the market lately such as lighter packs.

These new varieties in the design of cigarettes and cigarette packages is more due health regulations that keep designers away from the graphic design and direct them into the designing of new package configurations and cigarettes.

6.3.4.5 Discussions on design process of Tekel 2000 brand: Selectemes at the micro level

As mentioned before, the selection of ideas –memes- about the designed objects happen within two kinds of environments successively; in the brains of people as the ideas, and in the environment outside the body as the sketches, computer models, prototypes, final designed objects, etc. that are the different mediums for design ideas.

Regarding the first kind of environment, this thesis subjects the final designed objects that compete in the Turkish market by investigating the selected and replicated design ideas of the cigarettes and the cigarette packages

In this part, the second kind of environment is revealed within an example of Tekel 2000 brand to clarify the difference between the two kinds of environments for design.

A new cigarette brand Tekel 2000 was decided to be produced by Turkish State Monopoly at the end of 1980s in Turkey with the reasons of an open economy starting from 1984 and so allowing foreign cigarette brands to be sold in the Turkish market. Tekel 2000 brand would be the first American blended cigarette (a mixture of Virginia and Oriental tobaccos) to compete with the similar tasted cigarettes in the market.

During the manufacturing of these cigarettes and their packages, the ideas about the cigarette length and the tip, and the ideas about the opening mechanism and the form of the package (the recipemes at the micro level) competed in the brains of the manufacturers due to the recipemes the macro level (technology) and the selectemes at the macro level (decisions of the tobacco state monopoly). The stylistic ideas about the package graphics (the recipemes at the micro level) were

also competing in the brains of graphic designers. Figure 6.1 shows the alternative graphic design ideas of Tekel 2000 brand, which competed within the environment of Turkish State Monopoly to be produced for the market.

Figure 6.1 : Graphic design alternatives for Tekel 2000 brand.

These are the extensions of design ideas that were visualized as alternatives. As observed in Figure 6.1, the design ideas that were competing in the brains of graphic designers followed idea patterns as such:

- The idea of colours: Burgundy, gold and white.
- The idea of emphasizing '2000'.
- The idea of visual balance within diagonal, vertical and curvilinear lines.
- The idea of modern graphic style and typeface.
- The idea of stripes.

Since Tekel 2000 was a new brand with a different taste but still a product of the state monopoly, graphic designers might have tried to visualize 'a transmission from

old to new' by differentiating typefaces of nostalgic 'Tekel' and futuristic '2000' to obtain visual balance. The logo of tobacco leaves might have been used not to lose Turkish oriental tobacco consumers since it was still used in the blend. Figure 6.2 shows the selected and produced cigarette package (the selecteme and the recipeme at the micro level) as the 'better' design idea among others. It was put into the market to compete with the similar blended cigarettes and with others while the selection process took place in the brains of purchasers and users this time.

Figure 6.2 : Selected and produced cigarette package for Tekel 2000 brand.

6.4 Evaluation of the Findings

Evaluation of the findings can be summarized as follows:

1) Rather simple designs as cigarettes and cigarette packages and a rather restricted environment as the state monopoly of tobacco in Turkey demonstrated a very complex system that justified the evolutionary perspective for the study of change in designed objects.

2) A synthesis of Darwinian explanations fit the patterns of change demonstrated as happening to the appearance of designed objects studied in the collection of cigarette packages from Turkey. It was observed that the design of cigarettes and cigarette packages changed within an environment of technology, styles, economic policy (involving the decisions of the State Monopoly), rules/legal issues, socio-cultural aspects, other man-made events in Turkey and in the world.

3) The change in design of cigarettes and cigarette packages cannot be regarded as a progressive change; therefore it is a Darwinian change. For example; the production of cigarettes has increased through years which can be accepted as progress; however the pollution they created has increased as well. E-cigarette can

be regarded as progress; however it was prohibited due to chemicals used in its tobacco cartridge.

4) The different types of memes were used in this study, which overcame the problem of complexity of man-made world by providing a common ground for ideas and institutions that are interacting with each other. These different types of memes were identified at the micro and the macro levels, which provided the clearance of ideas belonging to the designer's level and/or the design context's level. It was demonstrated that the recipemes at the micro level (design elements of objects) were directly related to the recipemes at the macro level (technology and style), both of which competed in an environment of the selectemes at the macro level (context variables of objects, economic policy, rules/legal issues, socio-cultural aspects) together with other non-evolutionarily changing environment. Explanemes at the micro and the macro levels provided rationality to the selectemes.

5) It was demonstrated that the variety in design of Turkish cigarettes and cigarette packages decreased through standardization in design, which was due to multiple-causes such as wars (World War I-II and the Independence War), inaccessibility to technological changes in the world, health regulations, fashions of American cigarettes, and changing economic policies; while on the other hand much more variety was observed within package configurations, package graphics, cigarette designs in the history of Turkey. New varieties of designs, specifically in cigarette design and package configuration have appeared recently after the regulations on package graphics as the continuation of the evolutionary process. The design of package graphics has changed due to the styles in the world, health regulations, decisions of the state monopoly and the transmission from an emperor to a republic.

6) The study of context variables of cigarette packages provided the characteristics of Turkish cigarette packages in relation to economic policy, socio-economy, and socio-cultural structure in Turkey. The findings from the context variables of "brand/special edition", "sales", "distribution", "company types", and "export/import" indicated the reflection of Turkish economic policy. The findings from the context variables of "sales", "distribution", "differentiation due to consumers", and "quality" indicated the reflection of Turkish socio-economic structure. The findings from the context variables of ""brand/special edition", "distribution", "sub-brands", "differentiation due to consumers", "taste", "anniversaries/memorials/special days and weeks", "events/institutions", and "provinces" indicated the reflection of Turkish socio-culture.

7) The methodological framework of this thesis and its application provided a basis that could be developed for other design evolution studies.

8) A dating analysis method was developed for the unknown dates of Turkish cigarette packages in the collection that could be used as a basis and be developed for other research on finding the unknown dates of designed objects.

In closing, this thesis has clearly shown the value of the investigations into the design of the collection of Turkish cigarette packages through the use of Darwinian evolution theory aligned to the concept of memes –and their different types- and how this methodology can be reapplied to wider, and crucially, diverse research investigations.

6.5 Future Research

Throughout the research, it was realized that the collection of cigarette packages was a very fruitful resource; the packages were almost representatives of Turkish history and culture, and their study could provide new insights or more evidences for historical studies as well as they have provided (and could provide more) for design evolution and design history studies.

Following this, more detailed investigations are warranted within the collection. Possible avenues could include just focussing on gender issues in Turkey with economic, political, socio-cultural aspects, together with the changing design of women cigarettes and cigarette packages; or focussing on the socio-cultural aspects of consumers (what they wanted) together with the changing design of cigarette packages. More examples can be added to these ones so easily. This is due to the fruitful resource (as mentioned before) as well as to the ‘complexity’ of design phenomenon. A single stem can be chosen and searched in detail, which would still provide multi-causal answers to the researchers’ questions.

Context variables of cigarette packages provided original data that was organized and revealed, which can be studied further in greater detail.

Cognitive study of memes and the role of the designer in a design process can also be investigated as future research with reference to modern neuroscience.

The handicap principle by Zahavi and Zahavi in evolutionary biology can be studied within the design field as future research.

The relationship and comparison between the study of memes and the studies of semiology and semantics in terms of the design context can be investigated as future research.

Finally the comparison of design history and design evolution studies regarding to new methodologies derived from the historical study of science and technology can be also investigated as future research.

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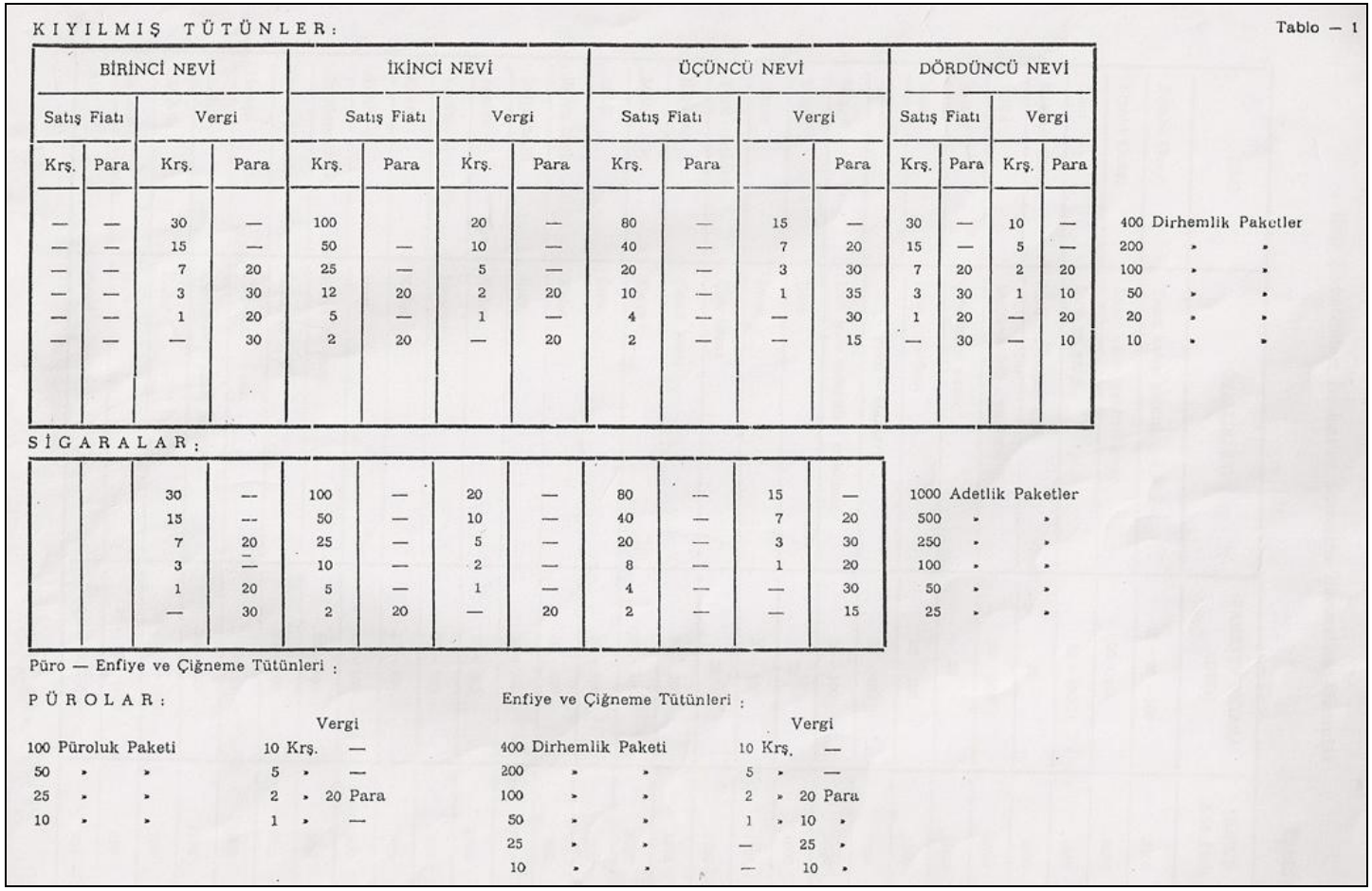
APPENDICES

APPENDIX A: Price List of Tobacco Products from the Monopoly Document
APPENDIX B: List of Tobacco Products from Other References
APPENDIX C: Sales Years of Cigarettes (1950-1973)
APPENDIX D: Periodical List of Cigarette Packages
APPENDIX E: An Article on Banderole
APPENDIX F: The Standards of Turkish Tobacco Products (1965)
APPENDIX G: Physical Structures of Cigarettes (1972)
APPENDIX H: Fixed Prices by Date for Special Edition Cigarettes

APPENDIX A



KIYILMIŞ TÜTÜNLER:

Tablo — 1

BİRİNCİ NEVİ				İKİNCİ NEVİ				ÜÇÜNCÜ NEVİ				DÖRDÜNCÜ NEVİ				
Satış Fiatı		Vergi		Satış Fiatı		Vergi		Satış Fiatı		Vergi		Satış Fiatı		Vergi		
Krş.	Para	Krş.	Para	Krş.	Para	Krş.	Para	Krş.	Para		Para	Krş.	Para	Krş.	Para	
—	—	30	—	100		20	—	80	—	15	—	30	—	10	—	400 Dirhemlik Paketler
—	—	15	—	50	—	10	—	40	—	7	20	15	—	5	—	200 » »
—	—	7	20	25	—	5	—	20	—	3	30	7	20	2	20	100 » »
—	—	3	30	12	20	2	20	10	—	1	35	3	30	1	10	50 » »
—	—	1	20	5	—	1	—	4	—	—	30	1	20	—	20	20 » »
—	—	—	30	2	20	—	20	2	—	—	15	—	30	—	10	10 » »

SİGARALAR:

		30	—	100	—	20	—	80	—	15	—	1000 Adetlik Paketler
		15	—	50	—	10	—	40	—	7	20	500 » »
		7	20	25	—	5	—	20	—	3	30	250 » »
		3	—	10	—	2	—	8	—	1	20	100 » »
		1	20	5	—	1	—	4	—	—	30	50 » »
		—	30	2	20	—	20	2	—	—	15	25 » »

Püro — Enfiye ve Çiğneme Tütünleri :

PÜROLAR:

	Vergi
100 Püroluk Paketi	10 Krş. —
50 » »	5 » —
25 » »	2 » 20 Para
10 » »	1 » —

Enfiye ve Çiğneme Tütünleri :

	Vergi
400 Dirhemlik Paketi	10 Krş. —
200 » »	5 » —
100 » »	2 » 20 Para
50 » »	1 » 10 »
25 » »	— 25 »
10 » »	— 10 »

Figure A.1 : Price List of Tobacco Products by the Regie Company in 1875 (İlter 1989).

Reji Şirketinden İnhisarlar idaresine devredilen Mamulât

Tablo : 2

İSMİ	ÖZELLİKLERİ	PAKETTE SİGARA ADEDİ	KURUŞ Kilo Fiatı
Sipahi Ocağı	Yassı kalın yaldızlı uzun	10 - 20 - 100	2500
Sipahi Ocağı	Yassı kalın yaldızlı kısa	20 - 100	2000
Gazi	İnce ve yassı	20 - 100	1800
Kabine - Salon	İnce - zıvanalı uzun	20	2000
Yaka	Meyanköklü - yaldızlı	20 - 100	2000
Selâm	Çok kalın yassı	20	2000
Yaset	İnce - yaldızlı	20 - 100	1750
Efendi	İnce - yassı - Mantarlı	20 - 100	1250
Nimet	Çok ince zıvanalı - zıvanasız	20 - 100	1000
Semir	İnce	20	1000
Nazır	İnce	20 - 100	1125
Türk - Ankara	Çok kalın	20	1750
Boğaziçi	Kalın yassı	20 - 100	1375
Millî	Kalın	20 - 100	1025
Millî	İnce	20 - 100	900
Bafra Millî	Kalın	20 - 100	850
Bafra Millî	İnce	20 - 100	750
Yenice	Kalın	20 - 100	1050
Yenice	İnce	20 - 100	950
Ahali	Kalın	20 - 100	875
Ahali	İnce	20 - 100	800
Serkldoryan	Kalın ve yassı	20 - 100	800
Bafıa Maden	İnce	20 - 100	750
Hanım	Çok ince - yassı	20	1000
Hanım	Çok ince - yassı mantarlı	20 - 100	1125
En Alâ	Kalın	20 - 100 - 500	750
En Alâ	İnce	20 - 100 - 500	650
Alâ	Kalın	20 - 100 - 500	700

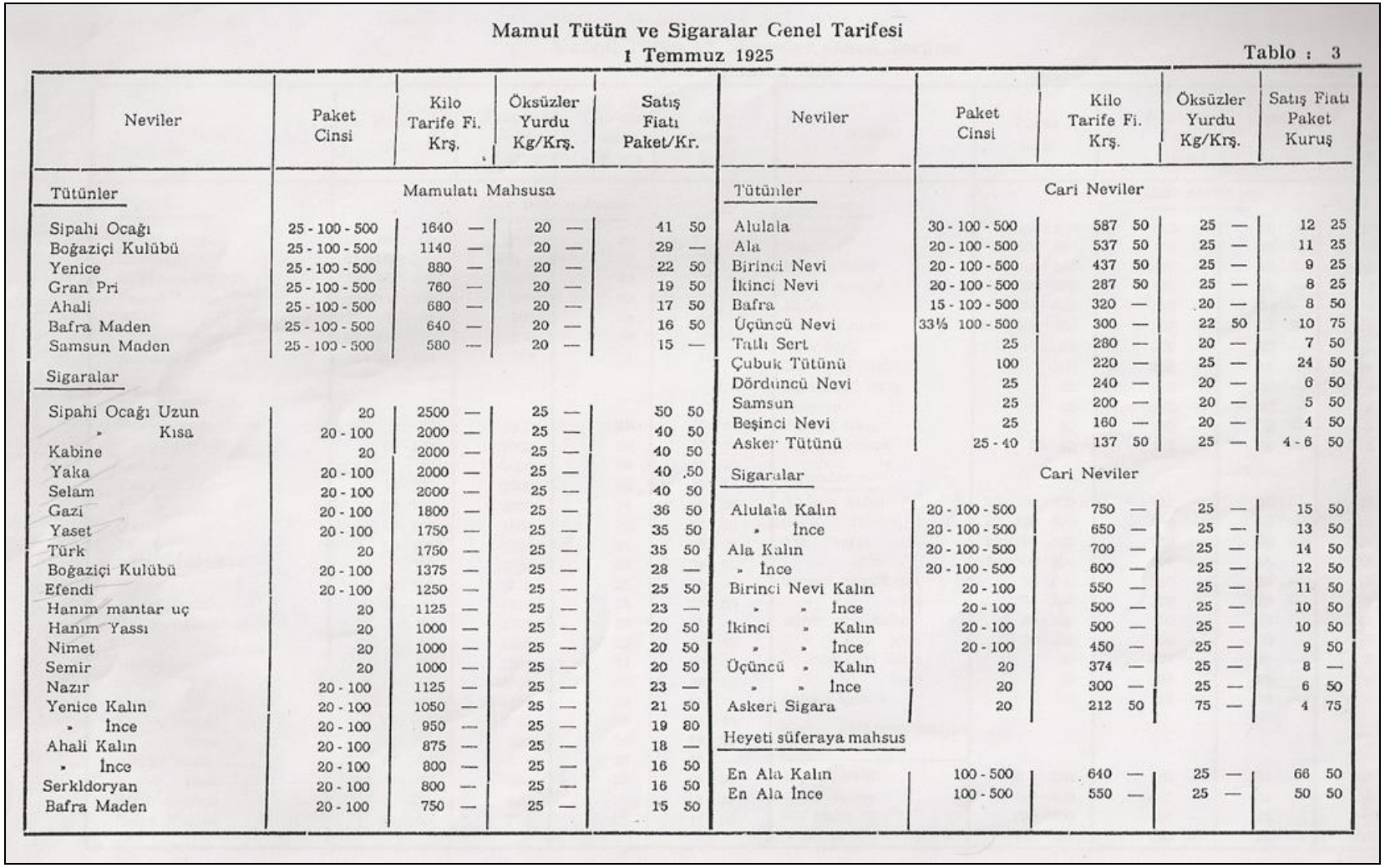
Figure A.2 : Price List of Tobacco Products by the Regie Company that were passed on the State Monopolies –*İnhisarlar* in 1925 (İlter 1989).

Reji Şirketinden İnhisarlar idaresine devredilen Mamulât

Tablo : 2-A

İSMİ	ÖZELLİKLERİ	PAKETTE GRAM	Kilo Fiatı KURUŞ
Alâ	İnce	20 - 100 - 500	600
Birinci	Kalın	20 - 100	550
Birinci	İnce	20 - 100	500
İkinci	Kalın	20 - 100	500
İkinci	İnce	20 - 100	450
Üçüncü	Kalın	20 - 100	375
Üçüncü	İnce	20 - 100	300
Safera (Enalâ)	Kalın	100 - 500	665
Sipahiocoğı	Tütün	25 - 100 - 500	1600
Boğaziçi Kulubü	»	25 - 100 - 500	1100
Yenice	»	25 - 100 - 500	840
Granpri	»	25 - 100 - 500	720
Ahali	»	25 - 100 - 500	640
Samsun Maden	»	25 - 100 - 500	600
Bafra Maden	»	25 - 100 - 500	540
Enalâ	»	25 - 100 - 500	550
Alâ	»	25 - 100 - 500	500
Birinci nevi	»	25 - 100 - 500	400
İkinci nevi	»	25 - 100 - 500	350
Bafra	»	25	280
Üçüncü nevi	»	33⅓ - 100 - 500	255
Tatlı Sert	»	25 - 33⅓	240
Dördüncü nevi	»	25	200
Samsun	»	25	160
Beşincinevi	»	25 - 33⅓	120
Asker	»	25 - 40	100
Pipo	»	100	220

Figure A.2 (Continued) : Price List of Tobacco Products by the Regie Company that were passed on the State Monopolies –*İnhisarlar* in 1925 (İlter 1989).



Mamul Tütün ve Sigaralar Genel Tarifesi

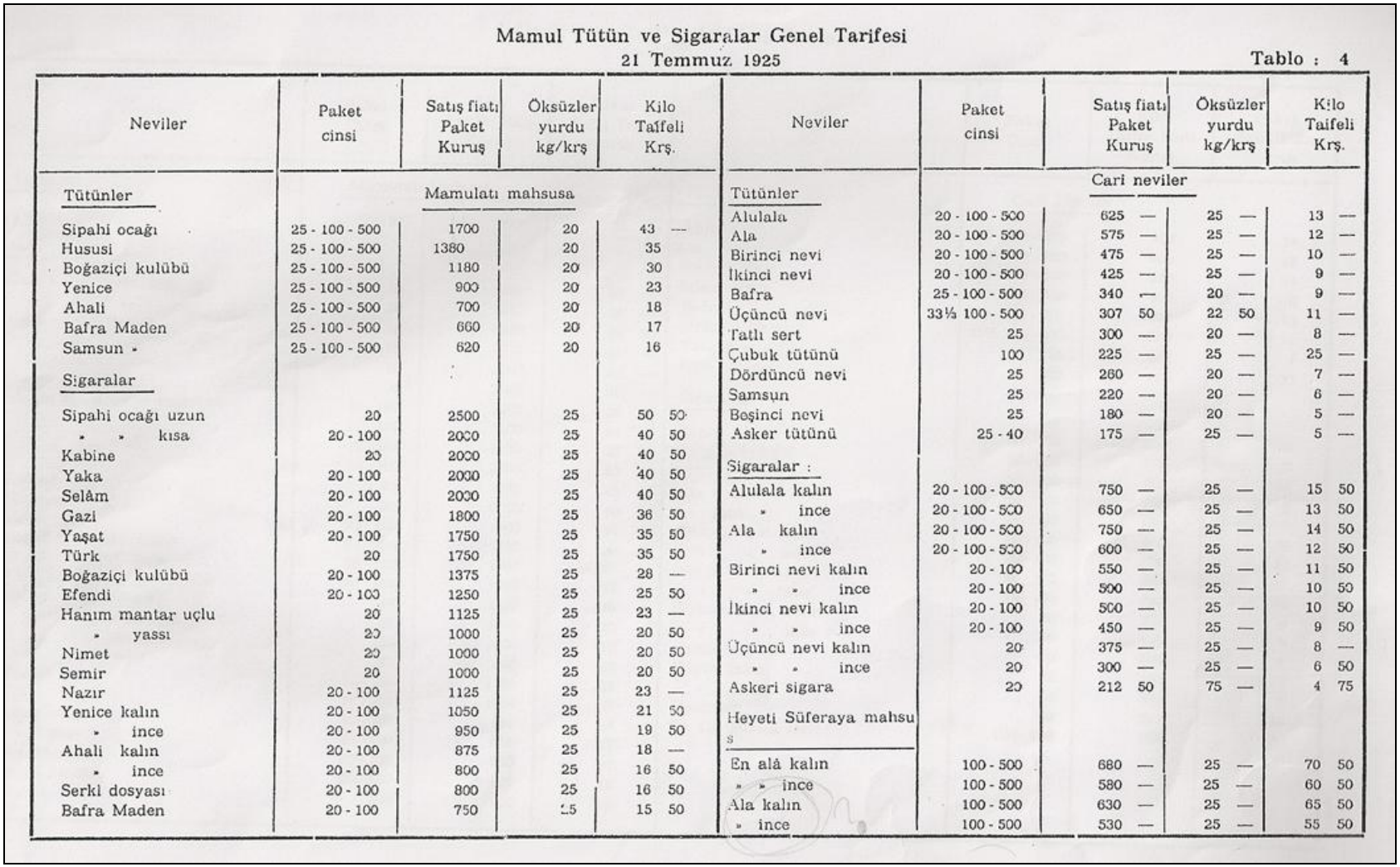
1 Temmuz 1925

Tablo : 3

Neviler	Paket Cinsi	Kilo Tarife Fi. Krş.	Öksüzler Yurdu Kg/Krş.	Satış Fiatı Paket/Kr.
Tütünler	Mamulatı Mahsusa			
Sipahi Ocağı	25 - 100 - 500	1640 —	20 —	41 50
Boğaziçi Kulübü	25 - 100 - 500	1140 —	20 —	29 —
Yenice	25 - 100 - 500	880 —	20 —	22 50
Gran Pri	25 - 100 - 500	760 —	20 —	19 50
Ahali	25 - 100 - 500	680 —	20 —	17 50
Bafra Maden	25 - 100 - 500	640 —	20 —	16 50
Samsun Maden	25 - 100 - 500	580 —	20 —	15 —
Sigaralar				
Sipahi Ocağı Uzun	20	2500 —	25 —	50 50
» Kısa	20 - 100	2000 —	25 —	40 50
Kabine	20	2000 —	25 —	40 50
Yaka	20 - 100	2000 —	25 —	40 50
Selam	20 - 100	2000 —	25 —	40 50
Gazi	20 - 100	1800 —	25 —	36 50
Yaset	20 - 100	1750 —	25 —	35 50
Türk	20	1750 —	25 —	35 50
Boğaziçi Kulübü	20 - 100	1375 —	25 —	28 —
Efendi	20 - 100	1250 —	25 —	25 50
Hanım mantar uç	20	1125 —	25 —	23 —
Hanım Yassı	20	1000 —	25 —	20 50
Nimet	20	1000 —	25 —	20 50
Semir	20	1000 —	25 —	20 50
Nazır	20 - 100	1125 —	25 —	23 —
Yenice Kalın	20 - 100	1050 —	25 —	21 50
» İnce	20 - 100	950 —	25 —	19 80
Ahali Kalın	20 - 100	875 —	25 —	18 —
» İnce	20 - 100	800 —	25 —	16 50
Serkldoryan	20 - 100	800 —	25 —	16 50
Bafra Maden	20 - 100	750 —	25 —	15 50

Neviler	Paket Cinsi	Kilo Tarife Fi. Krş.	Öksüzler Yurdu Kg/Krş.	Satış Fiatı Paket Kuruş
Tütünler	Cari Neviler			
Alulala	30 - 100 - 500	587 50	25 —	12 25
Ala	20 - 100 - 500	537 50	25 —	11 25
Birinci Nevi	20 - 100 - 500	437 50	25 —	9 25
İkinci Nevi	20 - 100 - 500	287 50	25 —	8 25
Bafra	15 - 100 - 500	320 —	20 —	8 50
Üçüncü Nevi	33⅓ 100 - 500	300 —	22 50	10 75
Tatlı Sert	25	280 —	20 —	7 50
Çubuk Tütünü	100	220 —	25 —	24 50
Dördüncü Nevi	25	240 —	20 —	6 50
Samsun	25	200 —	20 —	5 50
Beşinci Nevi	25	160 —	20 —	4 50
Asker Tütünü	25 - 40	137 50	25 —	4 - 6 50
Sigaralar	Cari Neviler			
Alulala Kalın	20 - 100 - 500	750 —	25 —	15 50
» İnce	20 - 100 - 500	650 —	25 —	13 50
Ala Kalın	20 - 100 - 500	700 —	25 —	14 50
» İnce	20 - 100 - 500	600 —	25 —	12 50
Birinci Nevi Kalın	20 - 100	550 —	25 —	11 50
» » İnce	20 - 100	500 —	25 —	10 50
İkinci » Kalın	20 - 100	500 —	25 —	10 50
» » İnce	20 - 100	450 —	25 —	9 50
Üçüncü » Kalın	20	374 —	25 —	8 —
» » İnce	20	300 —	25 —	6 50
Askeri Sigara	20	212 50	75 —	4 75
Heyeti süferaya mahsus				
En Ala Kalın	100 - 500	640 —	25 —	66 50
En Ala İnce	100 - 500	550 —	25 —	50 50

Figure A.3 : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar* between 1925 and 1929 (İlter 1989).



Mamul Tütün ve Sigaralar Genel Tarifesi

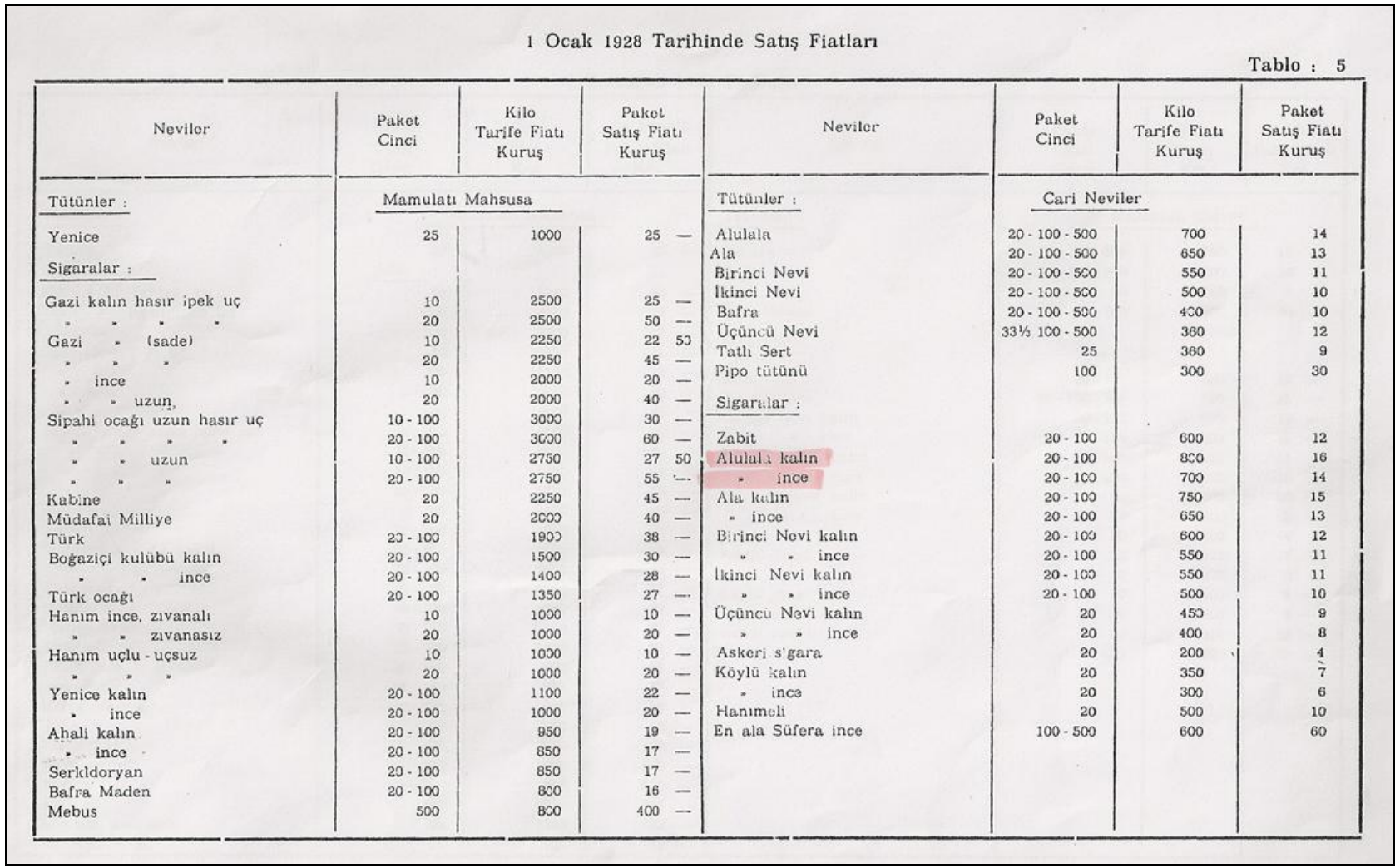
21 Temmuz 1925

Tablo : 4

Neviler	Paket cinsi	Satış fiatı Paket Kuruş	Öksüzler yurdu kg/krş	Kilo Taifeli Krş.
Tütünler		Mamulatı mahsusa		
Sipahi ocağı	25 - 100 - 500	1700	20	43 —
Hususi	25 - 100 - 500	1380	20	35
Boğaziçi kulübü	25 - 100 - 500	1180	20	30
Yenice	25 - 100 - 500	900	20	23
Ahali	25 - 100 - 500	700	20	18
Bafra Maden	25 - 100 - 500	660	20	17
Samsun »	25 - 100 - 500	620	20	16
Sigaralar				
Sipahi ocağı uzun	20	2500	25	50 50
» » kısa	20 - 100	2000	25	40 50
Kabine	20	2000	25	40 50
Yaka	20 - 100	2000	25	40 50
Selâm	20 - 100	2000	25	40 50
Gazi	20 - 100	1800	25	36 50
Yaşat	20 - 100	1750	25	35 50
Türk	20	1750	25	35 50
Boğaziçi kulübü	20 - 100	1375	25	28 —
Efendi	20 - 100	1250	25	25 50
Hanım mantar uçlu	20	1125	25	23 —
» yassı	20	1000	25	20 50
Nimet	20	1000	25	20 50
Semir	20	1000	25	20 50
Nazır	20 - 100	1125	25	23 —
Yenice kalın	20 - 100	1050	25	21 50
» ince	20 - 100	950	25	19 50
Ahali kalın	20 - 100	875	25	18 —
» ince	20 - 100	800	25	16 50
Serki dosyası	20 - 100	800	25	16 50
Bafra Maden	20 - 100	750	25	15 50

Neviler	Paket cinsi	Satış fiatı Paket Kuruş	Öksüzler yurdu kg/krş	Kilo Taifeli Krş.
Tütünler		Cari neviler		
Alulala	20 - 100 - 500	625 —	25 —	13 —
Ala	20 - 100 - 500	575 —	25 —	12 —
Birinci nevi	20 - 100 - 500	475 —	25 —	10 —
İkinci nevi	20 - 100 - 500	425 —	25 —	9 —
Bafra	25 - 100 - 500	340 —	20 —	9 —
Üçüncü nevi	33⅓ 100 - 500	307 50	22 50	11 —
Tatlı sert	25	300 —	20 —	8 —
Çubuk tütünü	100	225 —	25 —	25 —
Dördüncü nevi	25	260 —	20 —	7 —
Samsun	25	220 —	20 —	6 —
Beşinci nevi	25	180 —	20 —	5 —
Asker tütünü	25 - 40	175 —	25 —	5 —
Sigaralar :				
Alulala kalın	20 - 100 - 500	750 —	25 —	15 50
» ince	20 - 100 - 500	650 —	25 —	13 50
Ala kalın	20 - 100 - 500	750 —	25 —	14 50
» ince	20 - 100 - 500	600 —	25 —	12 50
Birinci nevi kalın	20 - 100	550 —	25 —	11 50
» » ince	20 - 100	500 —	25 —	10 50
İkinci nevi kalın	20 - 100	500 —	25 —	10 50
» » ince	20 - 100	450 —	25 —	9 50
Üçüncü nevi kalın	20	375 —	25 —	8 —
» » ince	20	300 —	25 —	6 50
Askeri sigara	20	212 50	75 —	4 75
Heyeti Süferaya mahsus				
En alâ kalın	100 - 500	680 —	25 —	70 50
» » ince	100 - 500	580 —	25 —	60 50
Ala kalın	100 - 500	630 —	25 —	65 50
» ince	100 - 500	530 —	25 —	55 50

Figure A.3 (Continued) : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar* between 1925 and 1929 (İlter 1989).

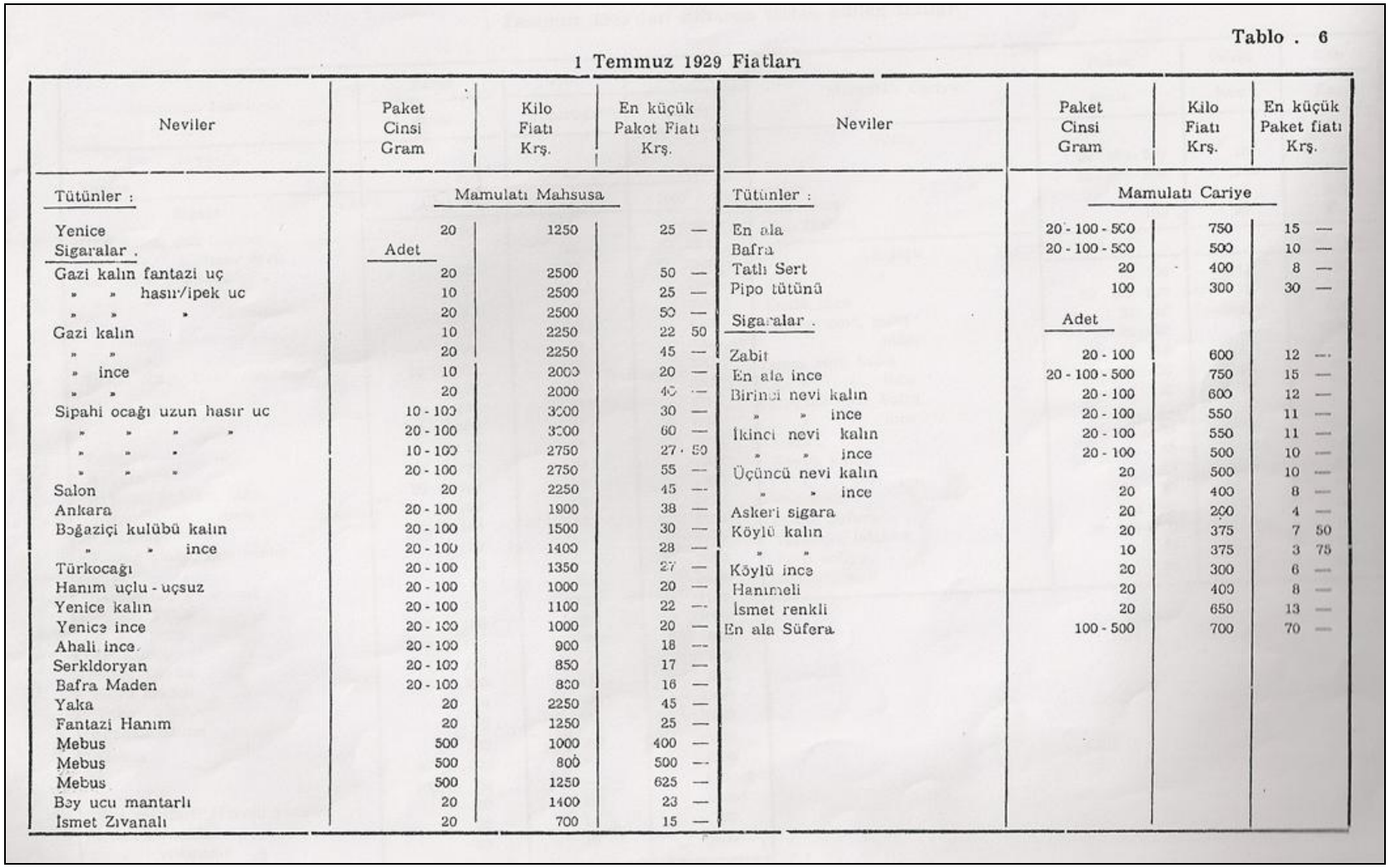


1 Ocak 1928 Tarihinde Satış Fiatları

Tablo : 5

Neviler	Paket Cinci	Kilo Tarife Fiatı Kuruş	Paket Satış Fiatı Kuruş	Neviler	Paket Cinci	Kilo Tarife Fiatı Kuruş	Paket Satış Fiatı Kuruş
Tütünler :	Mamulatı Mahsusa			Tütünler :	Cari Neviler		
Yenice	25	1000	25 —	Alulala	20 - 100 - 500	700	14
Sigaralar :				Ala	20 - 100 - 500	650	13
				Birinci Nevi	20 - 100 - 500	550	11
Gazi kalın hasır ipek uç	10	2500	25 —	İkinci Nevi	20 - 100 - 500	500	10
» » » »	20	2500	50 —	Bafra	20 - 100 - 500	400	10
Gazi » (sade)	10	2250	22 50	Üçüncü Nevi	33⅓ 100 - 500	360	12
» » »	20	2250	45 —	Tatlı Sert	25	360	9
» ince	10	2000	20 —	Pipo tütünü	100	300	30
» » uzun	20	2000	40 —	Sigaralar :			
Sipahi ocağı uzun hasır uç	10 - 100	3000	30 —				
» » » »	20 - 100	3000	60 —	Zabit	20 - 100	600	12
» » uzun	10 - 100	2750	27 50	Alulala kalın	20 - 100	800	16
» » »	20 - 100	2750	55 —	» ince	20 - 100	700	14
Kabine	20	2250	45 —	Ala kalın	20 - 100	750	15
Müdafai Milliye	20	2000	40 —	» ince	20 - 100	650	13
Türk	20 - 100	1900	38 —	Birinci Nevi kalın	20 - 100	600	12
Boğaziçi kulübü kalın	20 - 100	1500	30 —	» » ince	20 - 100	550	11
» » ince	20 - 100	1400	28 —	İkinci Nevi kalın	20 - 100	550	11
Türk ocağı	20 - 100	1350	27 —	» » ince	20 - 100	500	10
Hanım ince, zıvanalı	10	1000	10 —	Üçüncü Nevi kalın	20	450	9
» » zıvanasız	20	1000	20 —	» » ince	20	400	8
Hanım uçlu - uçsuz	10	1000	10 —	Askeri sigara	20	200	4
» » »	20	1000	20 —	Köylü kalın	20	350	7
Yenice kalın	20 - 100	1100	22 —	» ince	20	300	6
» ince	20 - 100	1000	20 —	Hanımeli	20	500	10
Ahali kalın	20 - 100	950	19 —	En ala Süfera ince	100 - 500	600	60
» ince	20 - 100	850	17 —				
Serkidoryan	20 - 100	850	17 —				
Bafra Maden	20 - 100	800	16 —				
Mebus	500	800	400 —				

Figure A.3 (Continued) : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar* between 1925 and 1929 (İlter 1989).



Tablo . 6

1 Temmuz 1929 Fiatları

Neviler	Paket Cinsi Gram	Kilo Fiatı Krş.	En küçük Pakot Fiatı Krş.
Tütünler :	Mamulatı Mahsusa		
Yenice	20	1250	25 —
Sigaralar .	Adet		
Gazi kalın fantazi uç	20	2500	50 —
» » hasır/ipek uc	10	2500	25 —
» » »	20	2500	50 —
Gazi kalın	10	2250	22 50
» »	20	2250	45 —
» ince	10	2000	20 —
» »	20	2000	40 —
Sipahi ocağı uzun hasır uc	10 - 100	3000	30 —
» » » »	20 - 100	3000	60 —
» » »	10 - 100	2750	27 50
» » »	20 - 100	2750	55 —
Salon	20	2250	45 —
Ankara	20 - 100	1900	38 —
Boğaziçi kulübü kalın	20 - 100	1500	30 —
» » ince	20 - 100	1400	28 —
Türkocağı	20 - 100	1350	27 —
Hanım uçlu - uçsuz	20 - 100	1000	20 —
Yenice kalın	20 - 100	1100	22 —
Yenice ince	20 - 100	1000	20 —
Ahali ince	20 - 100	900	18 —
Serkidoryan	20 - 100	850	17 —
Bafra Maden	20 - 100	800	16 —
Yaka	20	2250	45 —
Fantazi Hanım	20	1250	25 —
Mebus	500	1000	400 —
Mebus	500	800	500 —
Mebus	500	1250	625 —
Bey ucu mantarlı	20	1400	23 —
İsmet Zıvanalı	20	700	15 —

Neviler	Paket Cinsi Gram	Kilo Fiatı Krş.	En küçük Paket fiatı Krş.
Tütünler :	Mamulatı Cariye		
En ala	20 - 100 - 500	750	15 —
Bafra	20 - 100 - 500	500	10 —
Tatlı Sert	20	400	8 —
Pipo tütünü	100	300	30 —
Sigaralar .	Adet		
Zabit	20 - 100	600	12 —
En ala ince	20 - 100 - 500	750	15 —
Birinci nevi kalın	20 - 100	600	12 —
» » ince	20 - 100	550	11 —
İkinci nevi kalın	20 - 100	550	11 —
» » ince	20 - 100	500	10 —
Üçüncü nevi kalın	20	500	10 —
» » ince	20	400	8 —
Askeri sigara	20	200	4 —
Köylü kalın	20	375	7 50
» »	10	375	3 75
Köylü ince	20	300	6 —
Hanımeli	20	400	8 —
İsmet renkli	20	650	13 —
En ala Süfera	100 - 500	700	70 —

Figure A.3 (Continued) : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar* between 1925 and 1929 (İlter 1989).

Tablo No. 6 A

1 Temmuz 1929'dan itibaren tatbik edilen fiatlar

Mamulatı Mahsuna	Paket gram	Fiat Kuruş	Kg/fiat Kuruş
Tütün			
Yenice	20	25	1250
Sigara	Adet		1000 Adet
Gazi kalın, ucu fantazi	20	50	2500
» » » hasır ipek	10	25	2500
» » » » »	20	50	2500
» »	10	22.5	2250
» »	20	45	2250
» »ince	10	20	2000
» »	20	10	2000
Sipahi ocağı. Uzun, ucu hasır	10 — 100	30	3000
» »	20 — 100	60	3000
» »	10 — 100	27.5	2750
» »	20 — 100	35	2750
Salon	20	45	2250
Ankara	20 — 100	30	1500
Boğaziçi kulübü, kalın	20 — 100	30	1500
» » ince	20 — 100	28	1400
Türkocağı	20 — 100	27	1350
Turing klübü, ucu yaldız	20	55	2750
» »	100	—	2000
Hanım (uçlu - uçsuz)	20	20	1000
Yenice, kalın	20 — 100	22	1100
» ince	20 — 100	20	1000
Ahali ince	20 — 100	18	900
Serkl doryan	20 — 100	17	850
Bafra maden	20 — 100	16	800
Yaka	20	45	2250
Fantazi hanım	20	25	1250
Mebus	500	—	800
	100 — 500	—	1000
	100 — 500	—	1250
Bay mantarlı (Efendi yerine)	20	28	1400
İsmet zivanalı	20	15	750
» zivanasız	20	13	650

Mamulâtı Cariye	Paket gram	Paket Krş.	Kilo Krş.
Tütün			
Enalâ	20 - 100 - 500	15	750
Bafra	25 - 100 - 500	12.5	500
Tatlı Sert	25	10	400
Pipo tütünü	100	30	800
Sigara	Adet		1000 Adedi
Zabit	20 - 100	12	600
Enalâ, ince	20 - 100 - 500	15	750
Birinci nevi, kalın	20 - 100	12	600
» » ince	20 - 100	11	550
İkinci nevi, kalın	20 - 100	11	550
» » ince	20	10	500
Üçüncü nevi, kalın	20	10	500
» » ince	20	8	400
Askeri	20	4	200
Köylü, kalın	20	7.5	375
» ince	20	6	300
Hanımeli	20	8	400
Enalâ, Süfera	100 - 500	70	700
Tömbeki, İsfahan	25 - 100 - 500	17.5	700
Yerli enfiye	25	10	400
Alâ Birinci	20	13	650

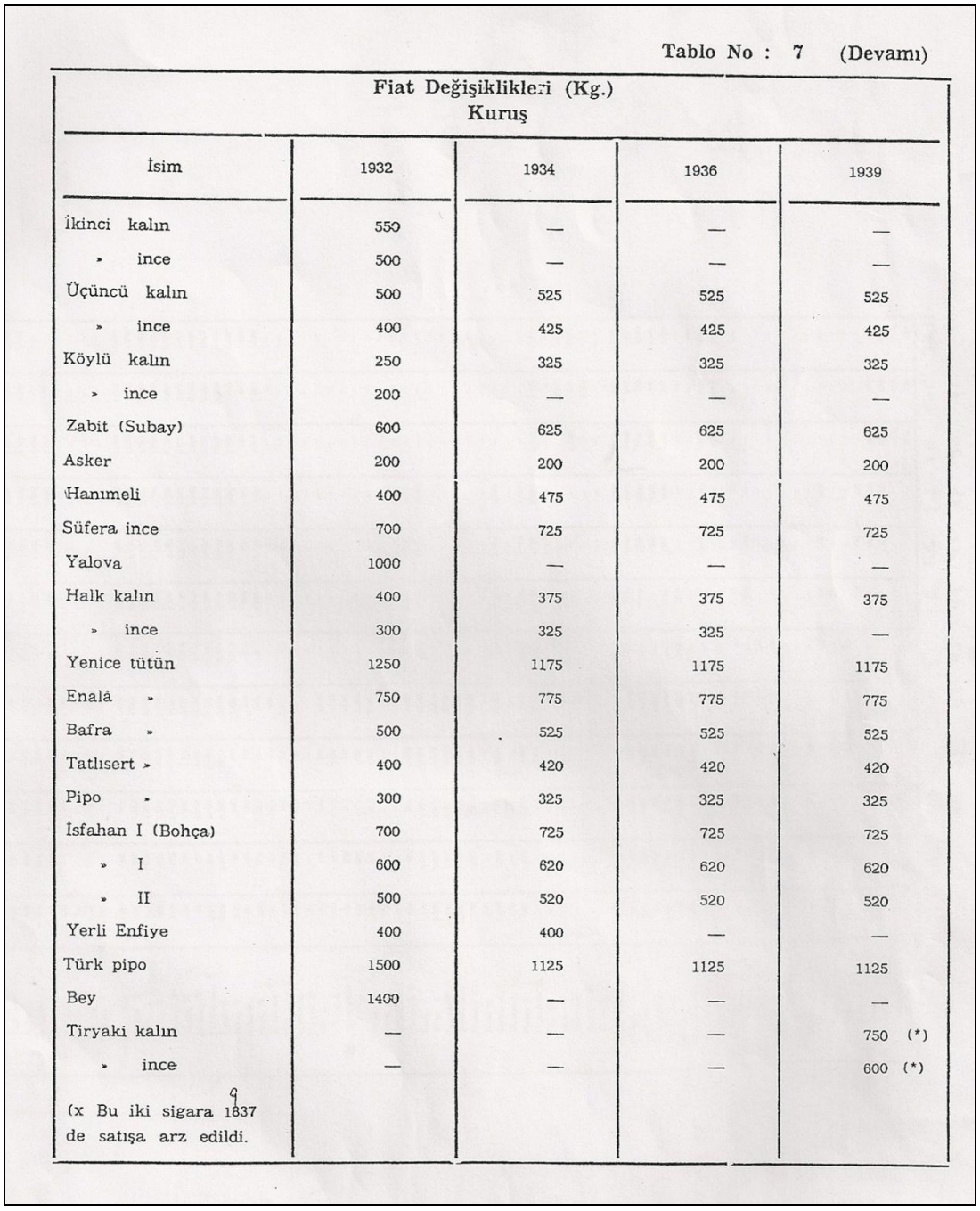
Figure A.3 (Continued) : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar* between 1925 and 1929 (İlter 1989).

Tablo No : 7

Fiat Değişiklikleri (Kg.)
Kuruş

İsim	1932/33	1934	1936	1939
Sipahi ocağı kalın	2750	2300	1750	1750
Gazi ince	2000	1800	1500	1500
» Hasır/ipek	2500	2300	—	—
» fantazi	2500	2050	1500	1500
» Sade	2250	2250	—	—
Kabine/Salon	2250	2050	1750	1750
Yaka	2250	1800	1500	1500
Bey	1400	—	—	—
Türk/Ankara	1900	1550	1350	—
Boğaziçi kalın	1500	1275	1250	1250
Yenice »	1100	1125	1125	1125
» ince	1000	1025	1025	1025
Ahali »	900	—	—	—
Serkidoryan kalın	850	875	875	875
Bafra maden ince	800	825	825	825
Türkocağı kalın	1350	—	—	—
Mebus A	1200	1225	1225	1225
» B	1000	1025	1025	1025
» C	800	825	825	825
Hanım ince	1000	1025	1025	1025
» fantazi	1250	1275	—	—
İsmet Zıvanalı	750	—	—	—
» Resskli	650	675	675	675
Turing kulüb	2750	—	—	—
En ala ince	750	775	775	775
Ala »	650	—	—	—
Birinci kalın	600	625	625	625
» ince	550	575	575	575

Figure A.4 : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar & Tekel* between 1932 and 1989 (İlter 1989).



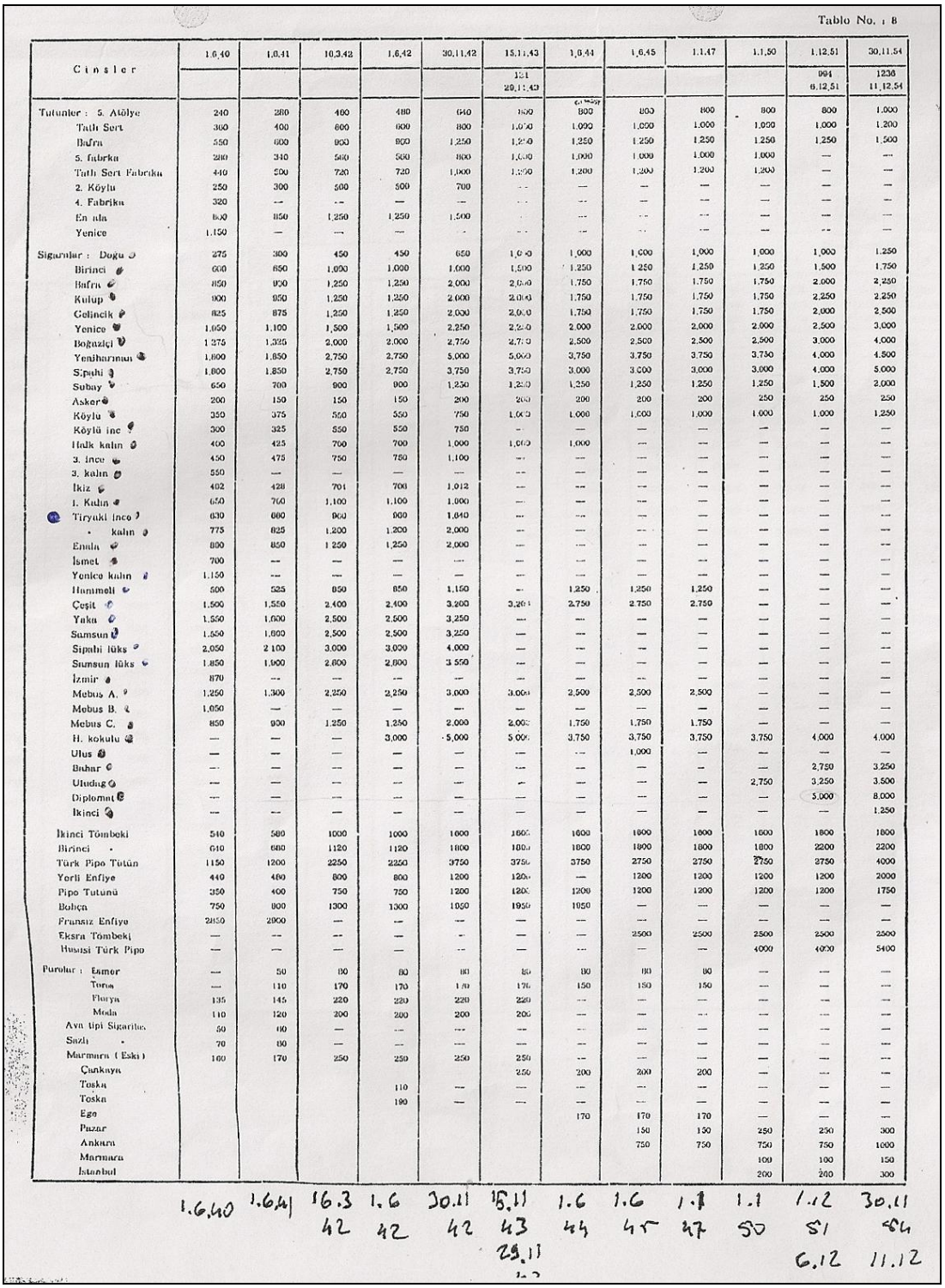
Tablo No : 7 (Devamı)

Fiat Değişiklikleri (Kg.)
Kuruş

İsim	1932	1934	1936	1939
İkinci kalın	550	—	—	—
» ince	500	—	—	—
Üçüncü kalın	500	525	525	525
» ince	400	425	425	425
Köylü kalın	250	325	325	325
» ince	200	—	—	—
Zabit (Subay)	600	625	625	625
Asker	200	200	200	200
Hanımeli	400	475	475	475
Süfera ince	700	725	725	725
Yalova	1000	—	—	—
Halk kalın	400	375	375	375
» ince	300	325	325	—
Yenice tütün	1250	1175	1175	1175
Enalâ »	750	775	775	775
Bafra »	500	525	525	525
Tatlısert »	400	420	420	420
Pipo »	300	325	325	325
İsfahan I (Bohça)	700	725	725	725
» I	600	620	620	620
» II	500	520	520	520
Yerli Enfiye	400	400	—	—
Türk pipo	1500	1125	1125	1125
Bey	1400	—	—	—
Tiryaki kalın	—	—	—	750 (*)
» ince	—	—	—	600 (*)

(x Bu iki sigara 1837 de satışa arz edildi.

Figure A.4 (Continued) : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar & Tekel* between 1932 and 1989 (İlter 1989).



Tablo No. : 8

Cinsler	1.6.40	1.6.41	10.3.42	1.6.42	30.11.42	15.11.43 (121 29.11.43)	1.6.44	1.6.45	1.1.47	1.1.50	1.12.51 (994 6.12.51)	30.11.54 (1236 11.12.54)
Tutunlar : 5. Atölye	240	280	400	480	640	800	800	800	800	800	800	1.000
Tatlı Sert	300	400	600	600	800	1.000	1.000	1.000	1.000	1.000	1.000	1.200
Bafra	550	600	900	900	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.500
5. fabrika	280	340	560	560	800	1.000	1.000	1.000	1.000	1.000	—	—
Tatlı Sert Fabrikası	440	500	720	720	1.000	1.200	1.200	1.200	1.200	1.200	—	—
2. Köylü	250	300	500	500	700	—	—	—	—	—	—	—
4. Fabrika	320	—	—	—	—	—	—	—	—	—	—	—
Emala	850	950	1.250	1.250	1.500	—	—	—	—	—	—	—
Yenice	1.150	—	—	—	—	—	—	—	—	—	—	—
Sigaralar : Doğu	275	300	450	450	650	1.000	1.000	1.000	1.000	1.000	1.000	1.250
Birinci	600	650	1.000	1.000	1.000	1.500	1.250	1.250	1.250	1.250	1.500	1.750
Bafra	850	900	1.250	1.250	2.000	2.000	1.750	1.750	1.750	1.750	2.000	2.250
Kulüp	900	950	1.250	1.250	2.000	2.000	1.750	1.750	1.750	1.750	2.250	2.250
Gelincik	825	875	1.250	1.250	2.000	2.000	1.750	1.750	1.750	1.750	2.000	2.500
Yenice	1.050	1.100	1.500	1.500	2.250	2.250	2.000	2.000	2.000	2.000	2.500	3.000
Boğaziçi	1.375	1.325	2.000	2.000	2.750	2.750	2.500	2.500	2.500	2.500	3.000	4.000
Yeniharman	1.800	1.850	2.750	2.750	5.000	5.000	3.750	3.750	3.750	3.750	4.000	4.500
Sipahi	1.800	1.850	2.750	2.750	3.750	3.750	3.000	3.000	3.000	3.000	4.000	5.000
Subay	650	700	900	900	1.250	1.250	1.250	1.250	1.250	1.250	1.500	2.000
Asker	200	150	150	150	200	200	200	200	200	250	250	250
Köylü	350	375	550	550	750	1.000	1.000	1.000	1.000	1.000	1.000	1.250
Köylü ince	300	325	550	550	750	—	—	—	—	—	—	—
Halk kalın	400	425	700	700	1.000	1.000	1.000	—	—	—	—	—
3. İnce	450	475	750	750	1.100	—	—	—	—	—	—	—
3. kalın	550	—	—	—	—	—	—	—	—	—	—	—
İkiz	402	428	701	700	1.012	—	—	—	—	—	—	—
1. Kalın	650	700	1.100	1.100	1.600	—	—	—	—	—	—	—
Tiryaki ince	630	680	900	900	1.040	—	—	—	—	—	—	—
" kalın	775	825	1.200	1.200	2.000	—	—	—	—	—	—	—
Emala	800	850	1.250	1.250	2.000	—	—	—	—	—	—	—
İsmet	700	—	—	—	—	—	—	—	—	—	—	—
Yenice kalın	1.150	—	—	—	—	—	—	—	—	—	—	—
Hanımeli	500	525	850	850	1.150	—	1.250	1.250	1.250	—	—	—
Çeşit	1.500	1.550	2.400	2.400	3.200	3.200	2.750	2.750	2.750	—	—	—
Yaka	1.550	1.600	2.500	2.500	3.250	—	—	—	—	—	—	—
Samsun	1.550	1.600	2.500	2.500	3.250	—	—	—	—	—	—	—
Sipahi lüks	2.050	2.100	3.000	3.000	4.000	—	—	—	—	—	—	—
Samsun lüks	1.850	1.900	2.800	2.800	3.550	—	—	—	—	—	—	—
İzmir	870	—	—	—	—	—	—	—	—	—	—	—
Mebus A.	1.250	1.300	2.250	2.250	3.000	3.000	2.500	2.500	2.500	—	—	—
Mebus B.	1.050	—	—	—	—	—	—	—	—	—	—	—
Mebus C.	850	900	1.250	1.250	2.000	2.000	1.750	1.750	1.750	—	—	—
H. kokulu	—	—	—	3.000	5.000	5.000	3.750	3.750	3.750	3.750	4.000	4.000
Ulus	—	—	—	—	—	—	—	1.000	—	—	—	—
Buhar	—	—	—	—	—	—	—	—	—	—	2.750	3.250
Uludağ	—	—	—	—	—	—	—	—	—	2.750	3.250	3.500
Diplomat	—	—	—	—	—	—	—	—	—	—	5.000	8.000
İkinci	—	—	—	—	—	—	—	—	—	—	—	1.250
İkinci Tömbeki	540	580	1000	1000	1600	1600	1600	1800	1800	1800	1800	1800
Birinci	640	680	1120	1120	1800	1800	1800	1800	1800	1800	2200	2200
Türk Pipo Tütün	1150	1200	2250	2250	3750	3750	3750	2750	2750	2750	3750	4000
Yerli Enfiye	440	480	800	800	1200	1200	—	1200	1200	1200	1200	2000
Pipo Tutunu	350	400	750	750	1200	1200	1200	1200	1200	1200	1200	1750
Boğça	750	800	1300	1300	1950	1950	1950	—	—	—	—	—
Fransız Enfiye	2850	2900	—	—	—	—	—	—	—	—	—	—
Eksra Tömbeki	—	—	—	—	—	—	—	2500	2500	2500	2500	2500
Hususi Türk Pipo	—	—	—	—	—	—	—	—	—	4000	4000	5400
Puralar : Esmer	—	50	80	80	80	80	80	80	80	—	—	—
Torna	—	110	170	170	170	170	150	150	150	—	—	—
Florya	135	145	220	220	220	220	—	—	—	—	—	—
Moda	110	120	200	200	200	200	—	—	—	—	—	—
Avrupa tipi Sigarilos	50	60	—	—	—	—	—	—	—	—	—	—
Sazlı	70	80	—	—	—	—	—	—	—	—	—	—
Marmara (Eski)	160	170	250	250	250	250	—	—	—	—	—	—
Çankaya						250	200	200	200	—	—	—
Toska				110	—	—	—	—	—	—	—	—
Toska				190	—	—	—	—	—	—	—	—
Ege							170	170	170	—	—	—
Pazar								150	150	250	250	300
Ankara								750	750	750	750	1000
Marmara										100	100	150
İstanbul										200	200	300

1.6.40 1.6.41 16.3.42 1.6.42 30.11.42 15.11.43 1.6.44 1.6.45 1.1.47 1.1.50 1.12.51 30.11.54

Figure A.4 (Continued) : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar & Tekel* between 1932 and 1989 (İlter 1989).

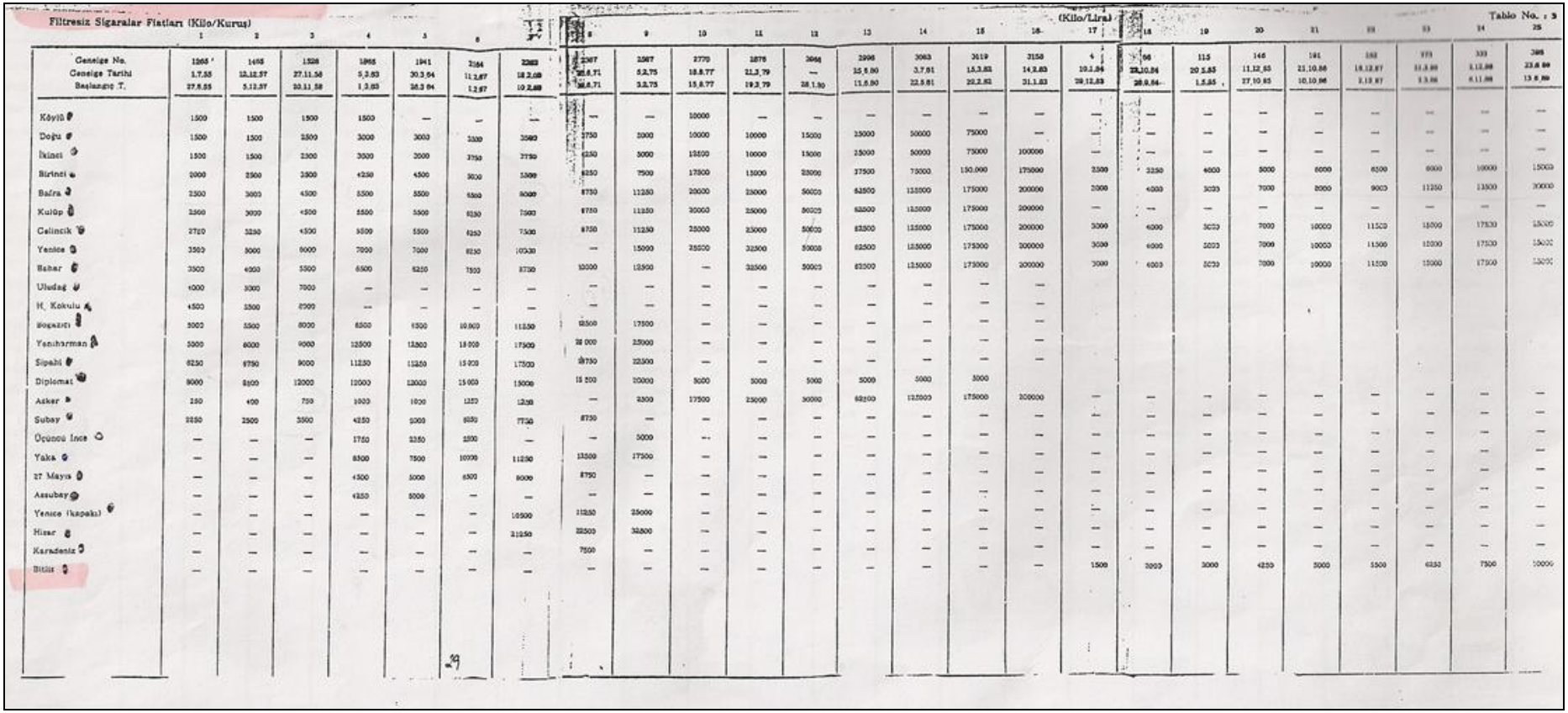
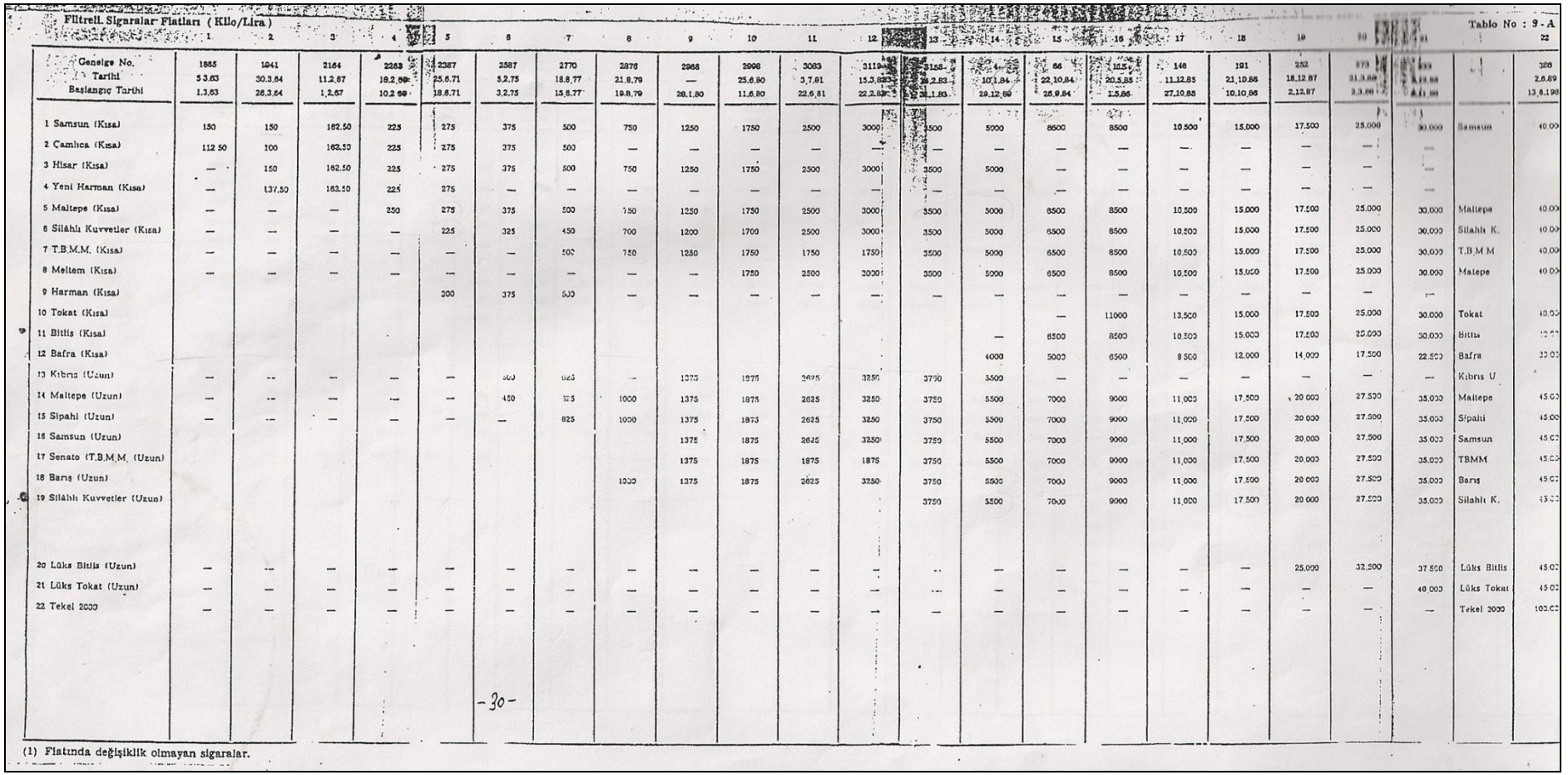


Figure A.4 (Continued) : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar & Tekel* between 1932 and 1989 (İlter 1989).



Filtreli Sigaralar Fiatları (Kilo/Lira)

Tablo No : 9-A

Genelge No. / Tarihi / Başlangıç Tarihi	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	1865 5.3.63 1.3.63	1941 30.3.64 26.3.64	2164 11.2.67 1.2.67	2253 18.2.68 10.2.68	2387 25.6.71 18.6.71	2587 5.2.75 3.2.75	2770 18.8.77 15.8.77	2878 21.8.79 19.8.79	2968 — 20.1.80	2998 25.6.80 11.6.80	3083 3.7.81 22.6.81	3119 15.3.82 22.2.82	3158 19.2.83 28.1.83	107 10.1.84 29.12.83	66 22.10.84 26.9.84	115 20.5.85 1.5.85	146 11.12.85 27.10.85	191 21.10.86 10.10.86	252 18.12.87 2.12.87	373 31.3.89 3.3.89	388 2.6.89 13.6.198
1 Samsun (Kısa)	150	150	162.50	225	275	375	500	750	1250	1750	2500	3000	3500	5000	8500	8500	10.500	15.000	17.500	25.000	30.000	40.00
2 Camlıca (Kısa)	112.50	100	162.50	225	275	375	500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
3 Hisar (Kısa)	—	150	162.50	225	275	375	500	750	1250	1750	2500	3000	3500	5000	—	—	—	—	—	—	—	
4 Yeni Harman (Kısa)	—	137.50	162.50	225	275	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
5 Maltepe (Kısa)	—	—	—	250	275	375	500	750	1250	1750	2500	3000	3500	5000	8500	8500	10.500	15.000	17.500	25.000	30.000	Maltepe 40.00
6 Silâhlı Kuvvetler (Kısa)	—	—	—	—	225	325	450	700	1200	1700	2500	3000	3500	5000	8500	8500	10.500	15.000	17.500	25.000	30.000	Silahlı K. 40.00
7 T.B.M.M. (Kısa)	—	—	—	—	—	—	500	750	1250	1750	1750	1750	3500	5000	8500	8500	10.500	15.000	17.500	25.000	30.000	T.B.M.M 40.00
8 Meltem (Kısa)	—	—	—	—	—	—	—	—	—	1750	2500	3000	3500	5000	8500	8500	10.500	15.000	17.500	25.000	30.000	Maltepe 40.00
9 Harman (Kısa)					300	375	500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10 Tokat (Kısa)															—	11000	13.500	15.000	17.500	25.000	30.000	Tokat 40.00
11 Bitlis (Kısa)														—	8500	8500	10.500	15.000	17.500	25.000	30.000	Bitlis 40.00
12 Bafra (Kısa)														4000	5000	6500	8.500	12.000	14.000	17.500	22.500	Bafra 30.00
13 Kıbrıs (Uzun)	—	—	—	—	—	300	625	—	1375	1875	2625	3250	3750	5500	—	—	—	—	—	—	—	Kıbrıs U.
14 Maltepe (Uzun)	—	—	—	—	—	450	625	1000	1375	1875	2625	3250	3750	5500	7000	9000	11.000	17.500	20.000	27.500	35.000	Maltepe 45.00
15 Sipahi (Uzun)	—	—	—	—	—	—	625	1000	1375	1875	2625	3250	3750	5500	7000	9000	11.000	17.500	20.000	27.500	35.000	Sipahi 45.00
16 Samsun (Uzun)									1375	1875	2625	3250	3750	5500	7000	9000	11.000	17.500	20.000	27.500	35.000	Samsun 45.00
17 Senato (T.B.M.M. (Uzun)									1375	1875	1875	1875	3750	5500	7000	9000	11.000	17.500	20.000	27.500	35.000	TBMM 45.00
18 Barış (Uzun)								1000	1375	1875	2625	3250	3750	5500	7000	9000	11.000	17.500	20.000	27.500	35.000	Barış 45.00
19 Silâhlı Kuvvetler (Uzun)													3750	5500	7000	9000	11.000	17.500	20.000	27.500	35.000	Silahlı K. 45.00
20 Lüks Bitlis (Uzun)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.000	32.500	37.500	Lüks Bitlis 45.00
21 Lüks Tokat (Uzun)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40.000	Lüks Tokat 45.00
22 Tekel 2000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Tekel 2000 100.00

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(1) Fiatında değişiklik olmayan sigaralar.

Figure A.4 (Continued) : Price Lists of Tobacco Products by the State Monopolies –*İnhisarlar & Tekel* between 1932 and 1989 (İlter 1989).

APPENDIX B

Tablo 8.1: 1900'lü Yılların Başında Reji Şirketi Tarafından Üretilen Sigara ve Tütünler

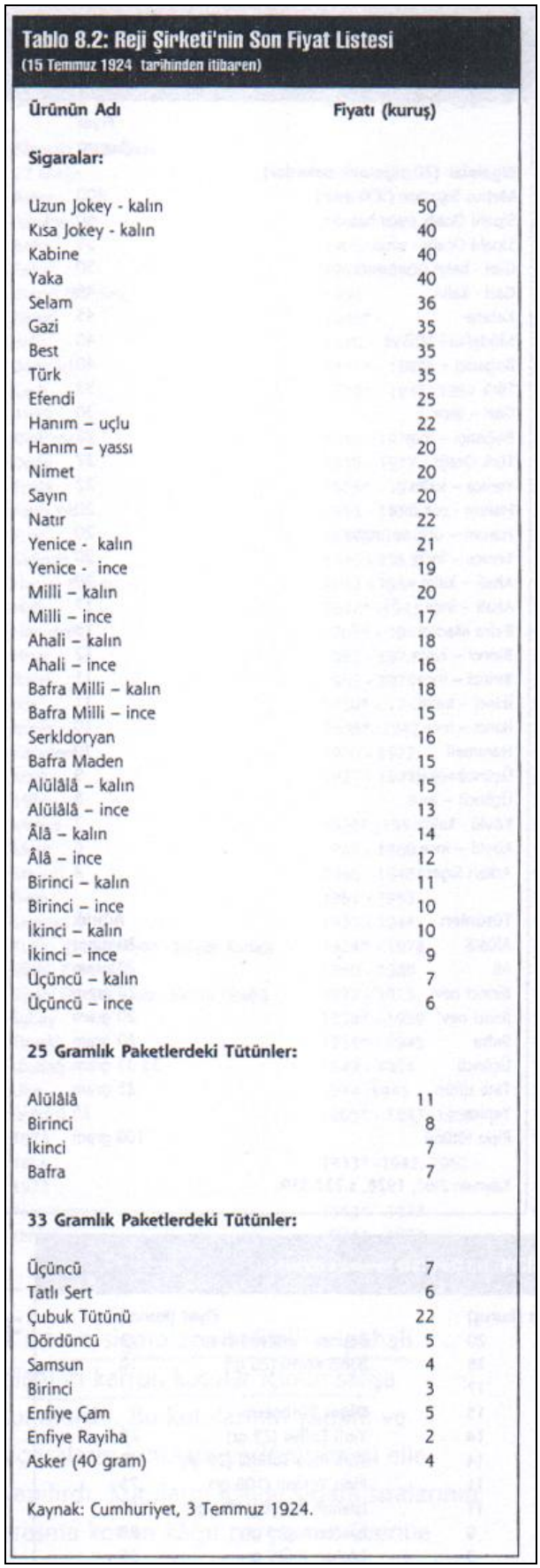
Tütünler:	Paketleme Biçimi (gram)			
Sarmalık tütünler:				
Extra-extra (Alûlâlâ)	500	100	20	
Extra (Âlâ)	500	100	20	
Birinci	500	100	20	
İkinci	500	100	20	
İkinci - saf Bafra	500	100	20	
Üçüncü	500	100	25	
Tatlı Sert	500	200	25	
Dördüncü	25			
Beşinci – Samsun ince kesim	500	100	25	
Beşinci	25	16,33		
Altıncı	25			
Altıncı – Subay	31,25			
Altıncı – Aker	22,5			
Enfiyeler:				
Rapé de Paris	100	50	25	
Carotte	100	40	20	
Rapé d'Allemagne	100	50	25	
Céam	300	250	100	50
20				
Indgène	100	50		
Pipo tütünü:				
Dördüncü Özel	50			
Çiğneme tütünleri:				
Birinci	25			
İkinci	25			
Üçüncü	25			
Maltalı – sarı	50			
Maltalı – siyah	50			
Sigaralar:	**Paketleme Biçimi (adet)**			
Kabine – kalın, uzun uçlu	100	20	10	
Kabine – ince, uzun uçlu	100	20	10	
Sultani – ince, uçlu ve uçsuz	100	20	10	
Salon - ince, orta uçlu	100	20	10	
Extra-extra (Alûlâlâ) – çok kalın, uçlu ve uçsuz	500	100	20	10
Extra-extra (Alûlâlâ) - kalın, uçlu ve uçsuz	500	100	20	10
Extra-extra (Alûlâlâ) - yassı kalın, uçsuz	500	100	20	
Extra-extra (Alûlâlâ) - ince, uçlu ve uçsuz	500	100	20	10
Extra (Âlâ) - çok kalın, uçlu ve uçsuz	500	100	20	10
Extra (Âlâ) - kalın, uçlu ve uçsuz	500	100	20	10
Extra (Âlâ) - yassı kalın, uçsuz	500	100	20	
Extra (Âlâ) - ince, uçlu ve uçsuz	500	100	20	10
Hanım - çok ince, uçlu	500	100	20	10
Birinci – kalın, uçlu ve uçsuz	500	100	20	10
Birinci – yassı kalın, uçsuz	500	100	20	
Birinci - ince, uçlu ve uçsuz	500	100	20	10
İkinci - kalın, uçlu ve uçsuz	500	100	20	
İkinci - yassı kalın, uçsuz	500	100	20	
İkinci Bafra - kalın, uçlu ve uçsuz	500	100	20	
İkinci Bafra - yassı kalın, uçsuz	500	100	20	
İkinci - ince, uçlu ve uçsuz	500	100	20	10
İkinci Bafra - ince, uçlu ve uçsuz	500	100	20	10
Üçüncü – kalın, uçlu ve uçsuz	500	100	20	
Üçüncü – ince, uçlu ve uçsuz	500	100	20	
Tatlı Sert – kalın, uçlu ve uçsuz	500	100	20	
Tatlı Sert – ince, uçlu ve uçsuz	500	100	20	
Dördüncü – kalın, uçlu ve uçsuz	500	100	20	
Dördüncü – ince, uçlu ve uçsuz	500	100	20	
Özel Sigaralar:				
Extra-extra Uso Egypte – uçsuz	500	100	20	
Extra Uso Egypte – uçsuz	500	100	20	
Birinci Uso Egypte – uçsuz	500	100	20	
İkinci Uso Egypte – uçsuz	500	100	20	
Üçüncü Uso Egypte – uçsuz	500	100	20	
Extra-extra Beyrouth - uçlu ve uçsuz	500	100	20	
Extra Beyrouth - uçlu ve uçsuz	500	100	20	
Birinci Beyrouth - uçlu ve uçsuz	500	100	20	
İkinci Beyrouth - uçlu ve uçsuz	500	100	20	
Üçüncü Beyrouth - uçlu ve uçsuz	500	100	20	
Üçüncü Manisa – uçsuz	500	100	20	
Dördüncü Manisa – uçsuz	500	100	20	
Beşinci – ince, uçsuz		24	12	

Elçilik ve Konsolosluk Mensupları İçin Üretilen Tütün ve Sigaralar:

Tütünler: (gram)	Teneke Kutuda Miktar			
			Extra-extra	500
250	100			
Extra	500	250	100	
Superior	500	250	100	
İkinci	500	250	100	
Üçüncü	500	250	100	
Dördüncü	500	250	100	
Sigaralar:				
Extra-extra Kabine – kalın, uçlu	100			
Extra-extra Kabine - ince, uçlu	100			
Extra-extra - kalın, uçlu ve uçsuz	500	250	100	
Extra-extra - ince, uçlu ve uçsuz	500	250	100	
Extra - kalın, uçlu ve uçsuz	500	250	100	
Extra - ince, uçlu ve uçsuz	500	250	100	
Superior – kalın, uçlu ve uçsuz	500	250	100	
Superior – ince, uçlu ve uçsuz	500	250	100	
İkinci - kalın, uçlu ve uçsuz	500	250	100	
İkinci - ince, uçlu ve uçsuz	500	250	100	
Üçüncü – kalın, uçlu ve uçsuz	500	250	100	
Üçüncü – ince, uçlu ve uçsuz	500	250	100	
Dördüncü – kalın, uçlu ve uçsuz	500	250	100	
Dördüncü – ince, uçlu ve uçsuz	500	250	100	
Hanımlar için - çok ince, uçlu	500	250	100	

Kaynak: Young, 1906, s. 203-206.

Figure B.1 : List of Tobacco Products by the Regie Company at the Beginning of the 1900s -1906 (Doğruel and Doğruel 2000).

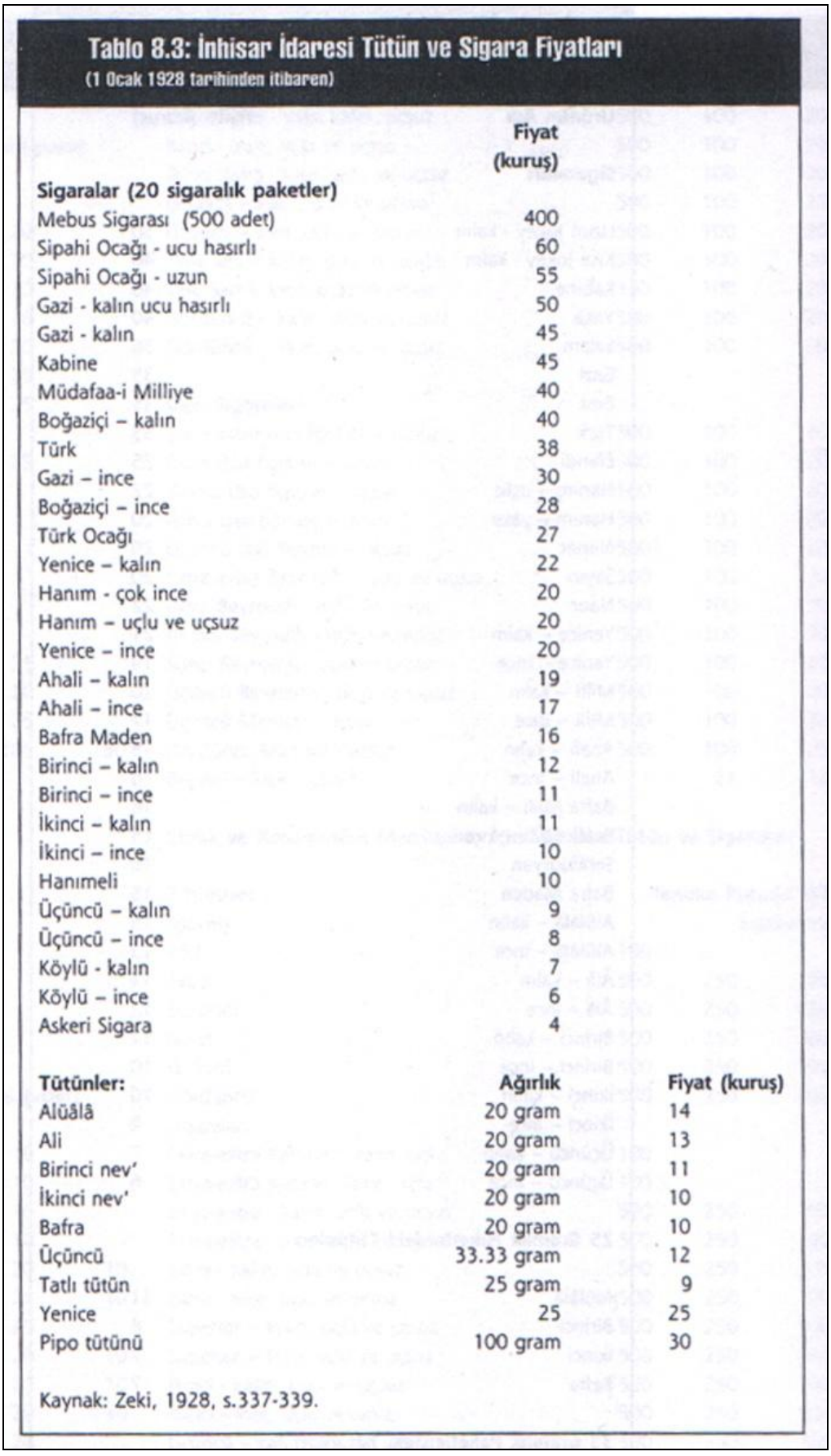


Tablo 8.2: Reji Şirketi'nin Son Fiyat Listesi
(15 Temmuz 1924 tarihinden itibaren)

Ürünün Adı	Fiyatı (kuruş)
Sigaralar:	
Uzun Jokey - kalın	50
Kısa Jokey - kalın	40
Kabine	40
Yaka	40
Selam	36
Gazi	35
Best	35
Türk	35
Efendi	25
Hanım – uçlu	22
Hanım – yassı	20
Nimet	20
Sayın	20
Natır	22
Yenice - kalın	21
Yenice - ince	19
Milli – kalın	20
Milli – ince	17
Ahali – kalın	18
Ahali – ince	16
Bafra Milli – kalın	18
Bafra Milli – ince	15
Serkldoryan	16
Bafra Maden	15
Alülâlâ – kalın	15
Alülâlâ – ince	13
Âlâ – kalın	14
Âlâ – ince	12
Birinci – kalın	11
Birinci – ince	10
İkinci – kalın	10
İkinci – ince	9
Üçüncü – kalın	7
Üçüncü – ince	6
25 Gramlık Paketlerdeki Tütünler:	
Alülâlâ	11
Birinci	8
İkinci	7
Bafra	7
33 Gramlık Paketlerdeki Tütünler:	
Üçüncü	7
Tatlı Sert	6
Çubuk Tütünü	22
Dördüncü	5
Samsun	4
Birinci	3
Enfiye Çam	5
Enfiye Rayiha	2
Asker (40 gram)	4

Kaynak: Cumhuriyet, 3 Temmuz 1924.

Figure B.2 : Last Price List of the Regie Company -1924 (Doğruel and Doğruel 2000).



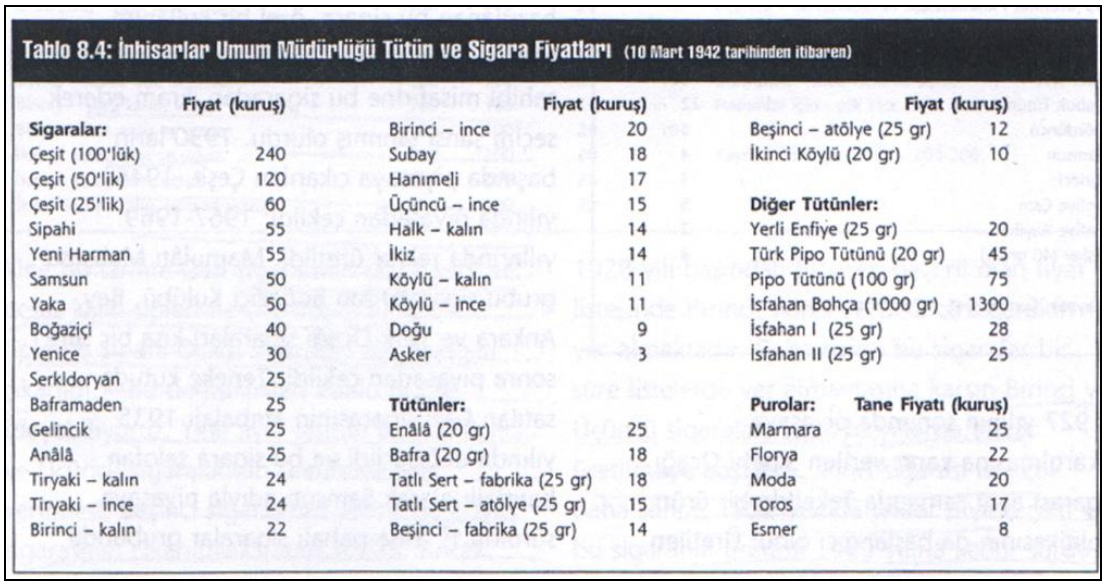
Tablo 8.3: İnhisar İdaresi Tütün ve Sigara Fiyatları
(1 Ocak 1928 tarihinden itibaren)

	Fiyat (kuruş)
Sigaralar (20 sigaralık paketler)	
Mebus Sigarası (500 adet)	400
Sipahi Ocağı - ucu hasırlı	60
Sipahi Ocağı - uzun	55
Gazi - kalın ucu hasırlı	50
Gazi - kalın	45
Kabine	45
Müdafaa-i Milliye	40
Boğaziçi – kalın	40
Türk	38
Gazi – ince	30
Boğaziçi – ince	28
Türk Ocağı	27
Yenice – kalın	22
Hanım - çok ince	20
Hanım – uçlu ve uçsuz	20
Yenice – ince	20
Ahali – kalın	19
Ahali – ince	17
Bafra Maden	16
Birinci – kalın	12
Birinci – ince	11
İkinci – kalın	11
İkinci – ince	10
Hanımeli	10
Üçüncü – kalın	9
Üçüncü – ince	8
Köylü - kalın	7
Köylü – ince	6
Askeri Sigara	4

Tütünler:	**Ağırlık**	**Fiyat (kuruş)**
Alüâlâ	20 gram	14
Ali	20 gram	13
Birinci nev'	20 gram	11
İkinci nev'	20 gram	10
Bafra	20 gram	10
Üçüncü	33.33 gram	12
Tatlı tütün	25 gram	9
Yenice	25	25
Pipo tütünü	100 gram	30

Kaynak: Zeki, 1928, s.337-339.

Figure B.3 : Price List of Tobacco and Cigarettes by the State Monopolies – *İnhisarlar*-1928 (Doğruel and Doğruel 2000).



Tablo 8.4: İnhisarlar Umum Müdürlüğü Tütün ve Sigara Fiyatları (10 Mart 1942 tarihinden itibaren)

	Fiyat (kuruş)
Sigaralar:	
Çeşit (100'lük)	240
Çeşit (50'lik)	120
Çeşit (25'lik)	60
Sipahi	55
Yeni Harman	55
Samsun	50
Yaka	50
Boğaziçi	40
Yenice	30
Serkldoryan	25
Baframaden	25
Gelincik	25
Anâlâ	25
Tiryaki – kalın	24
Tiryaki – ince	24
Birinci – kalın	22

	Fiyat (kuruş)
Birinci – ince	20
Subay	18
Hanımeli	17
Üçüncü – ince	15
Halk – kalın	14
İkiz	14
Köylü – kalın	11
Köylü – ince	11
Doğu	9
Asker	3
Tütünler:	
Enâlâ (20 gr)	25
Bafra (20 gr)	18
Tatlı Sert – fabrika (25 gr)	18
Tatlı Sert – atölye (25 gr)	15
Beşinci – fabrika (25 gr)	14

	Fiyat (kuruş)
Beşinci – atölye (25 gr)	12
İkinci Köylü (20 gr)	10
Diğer Tütünler:	
Yerli Enfiye (25 gr)	20
Türk Pipo Tütünü (20 gr)	45
Pipo Tütünü (100 gr)	75
İsfahan Bohça (1000 gr)	1300
İsfahan I (25 gr)	28
İsfahan II (25 gr)	25
Purolar:	**Tane Fiyatı (kuruş)**
Marmara	25
Florya	22
Moda	20
Toros	17
Esmer	8

Figure B.4 : Price List of Tobacco and Cigarettes by the State Monopolies – *İnhisarlar* -1943 (Doğruel and Doğruel 2000).

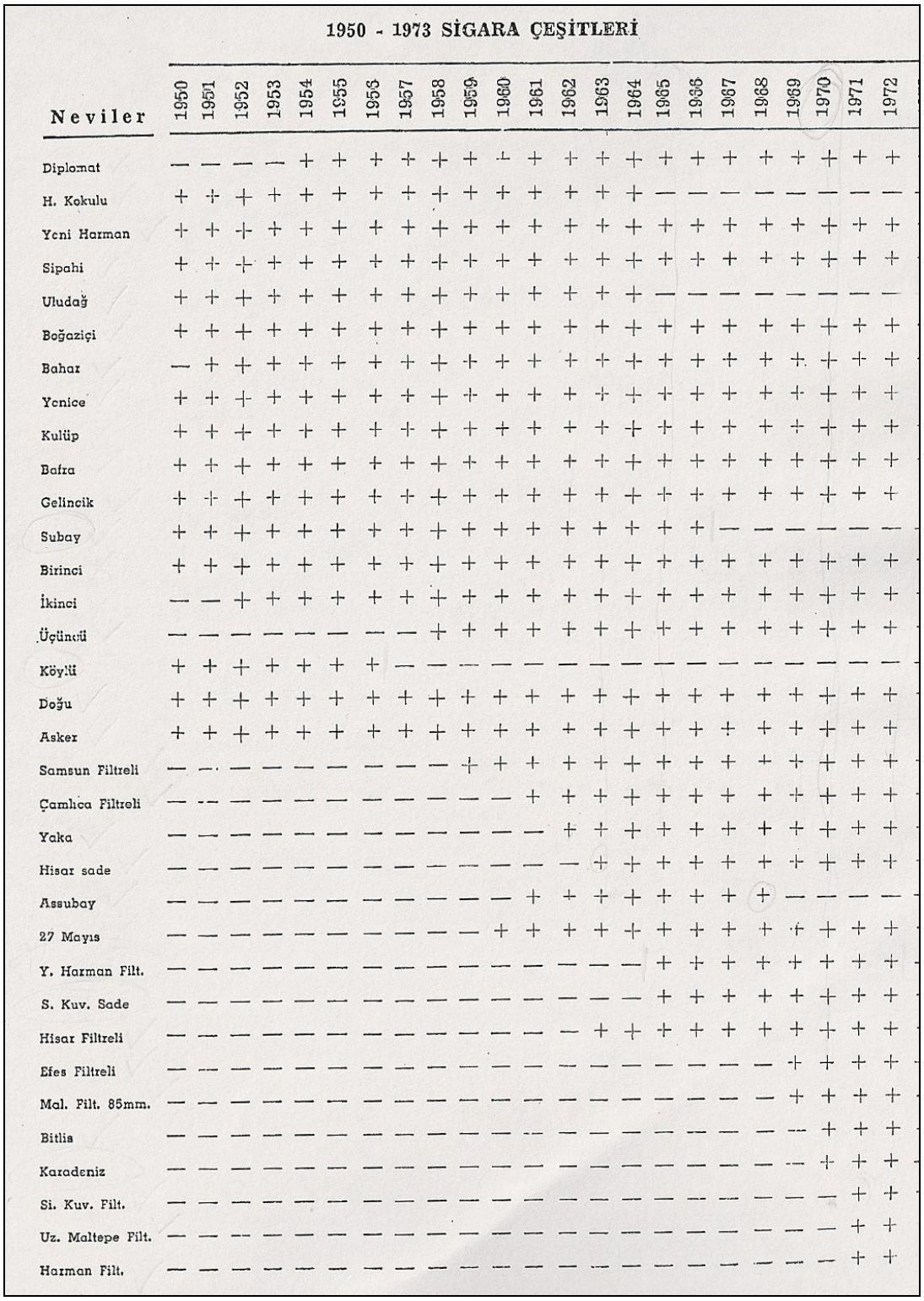
Tablo 8.5: Tekel Ürünü Sigaraların Satışta Olduğu Yıllar

(Sipariş ve kısa süreli hatıra amaçlı özel üretimler hariç)

Sigaranın Adı	Satışta Olduğu Yıllar	Sigaranın Adı	Satışta Olduğu Yıllar
Filtresiz Sigaralar:		**Filtreli Sigaralar:**	
27 Mayıs	1960 -1973	100. Yıl	1981 - 1983
Asker	1928* - 1980	75.Yıl – 100 mm	1998 - 1998
Assubay	1961 - 1968	Bafra	1983 -
Bafra	1905* -	Ballıca – 100 mm	1997 -
Bahar	1951 - 1986	Ballıca	1996 -
Birinci (85 mm)	1994 -	Barış	1978 - 1983
Birinci	1905* -	Barış – 100 mm	1982 -1988
Bitlis	1970 -	Bitlis	1985 - 1993
Boğaziçi	1933* - 1973	Bursa	1992 - 1993
Çeşit 1969	1930* - 1945; 1967 -	Cumhuriyet Senatosu	1978 - 1980
		Çamlıca	1961 - 1977
Diplomat	1946 - 1973	Efes	1969 - 1972
Doğu	1939 - 1977	Harman	1971 - 1973
Enâlâ	1905* - 1945	Hisar	1969 - 1981
Fetih Yılı	1953 - 1956;	İzmir	1990 -1991
Fuar	1959 -1969	Kıbrıs	1974 -1978
Gelincik	1940 - 1983	Lüks Bitlis	1987 - 1992
Hususi Kokulu	1943 - 1964	Lüks Tokat	1988 - 1995
Halk	1942* -1943	Maltepe	1969 -
Hanımeli	1905* - 1951	Maltepe – 100 mm	1971 -
Hisar	1963 - 1973	Meclis	1998 -
İkinci	1952 - 1979	Meclis – 100 mm	1995 -
İkiz	1930* - 1943	Meltem – 100 mm *	1994 -
İsmet	1938* -1942	Meltem	1979 - 1993
Karadeniz	1970 - 1972	Samsun	1959 -
Köylü 1956	1927 - 1943; 1946 -	Samsun – 100 mm	1979 -
		Silahlı Kuvvetler - 100 mm	1982 -
Mebus	1928* -1951	Silahlı Kuvvetler	1971 -1994
Mesir	1964 - 1969	Sipahi - 100 mm	1983 - 1992
Missuri	1946 - 1948	Sipahi	1978 - 1982
Nato	1961 - 1963	TBMM	1977 - 1980
Samsun	1935 - 1944	Tekel 2000 – 100 mm	1988 -
Kulüp (Serkldoryan - Büyük Kulüp)	1924* - 1978	Tekel 2000	1995 -
Silahlı Kuvvetler	1960 - 1980	Tekel 2000 Light – 100 mm	1994 -
Sipahi (Jockey Club - Sipahi Ocağı)	1927 - 1973	Tekel 2000 Light	1998 -
Subay	1938* - 1959	Tekel 2001	1996 -
Tiryaki	1938* - 1945	Tekel 2001 – 100 mm	1995 -
Uludağ	1949 - 1964	Tokat	1984 – 1995
Ulus	1944 -1945	Truva	1992 – 1993
Üçüncü 1973	1905* - 1943; 1959 -	Yeni Harman	1964 – 1972
		Yeni Harman – 100 mm	1991 -
Yaka 1973	1933* -1942; 1962 -		
Yeni Harman	1942* - 1977	*) Dokümanlara dayanarak belirlenen en eski tarih.	
Yenice	1924* - 1997	Kaynak: Tekel dokümanlarından derlenmiştir.	

Figure B.5 : Sales Years of Cigarettes including the Regie Company and the State Monopolies –*İnhisarlar & Tekel* (Doğruel and Doğruel 2000).

APPENDIX C



1950 - 1973 SİGARA ÇEŞİTLERİ

Neviler	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Diplomat	—	—	—	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
H. Kokulu	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	—	—	—	—	—	—	—	—
Yeni Harman	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sipahi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Uludağ	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	—	—	—	—	—	—	—	—
Boğaziçi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Bahar	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Yenice	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Kulüp	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Bafra	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gelincik	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Subay	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	—	—	—	—	—	—
Birinci	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
İkinci	—	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Üçüncü	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Köylü	+	+	+	+	+	+	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Doğu	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Asker	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Samsun Filtreli	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Çamlıca Filtreli	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+	+	+
Yaka	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+	+
Hisar sade	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+
Assubay	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	—	—	—	—
27 Mayıs	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+	+	+	+
Y. Harman Filt.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+
S. Kuv. Sade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+
Hisar Filtreli	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+
Efes Filtreli	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+
Mal. Filt. 85mm.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+
Bitlis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+
Karadeniz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+
Si. Kuv. Filt.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+
Uz. Maltepe Filt.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+
Harman Filt.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+

Figure C.1 : Sales Years of Cigarettes by the State Monopolies –*Tekel* between 1950 and 1973 (Saltan et al 1973).

APPENDIX D

Cigarette Brands	Cigarette and Packaging Specifications	Periods	Notes
27 Mayıs	Plain. Length: 68 mm.	1960-1974	
Ahali	Thin-oval. Packaging capacity: 20-100.	1924-1933	There can be before 1924, but there is not in 1906.
	Thick-oval. Packaging capacity: 20-100.	1924-1929	
Extra or Alâ	Thin. Tipped and/or plain. Packaging capacity: 10-20-100-500, after 1928 only 20-100 packs were left.	1906-1933	Its name changed to Alâ in 1925.
	Thick, very thick, thick-oval. Tipped and/or plain. Packaging capacity: 10-20-100-500, after 1928 only 20-100 packs were left.	1906-1928	
	Thin. Tipped and/or plain. Packaging capacity: 100-250-500	1906-1925	Its name changed to Alâ in 1925. For ambassadors.
	Thin. Tipped and/or plain. Packaging capacity: 100-250-500	1906-1925	
Extra-extra or Alülâlâ (pre-En Alâ)	Thin. Tipped and/or plain. Packaging capacity: 10-20-100-500.	1906-1928	Its name changed to Alülâlâ in 1925, then to En Alâ in 1928.
	Thick, very thick, thick-oval. Tipped and/or plain. Packaging capacity: 10-20-100-500.	1906-1928	
Ankara (post-Türk)	Oval. Length: 68 mm. Packaging capacity: 20-100.	1929-1936	Its name changed from Türk in 1929.
Asker	Filtered. Length: 100 mm.	2000-2001	This data is from the collection.
	Plain. Length: 68 mm. Packaging capacity: 20.	1925-1983	
Assubay or Astsubay	Plain. Length: 68 mm.	1961-1968	
Bafra Maden	Thin-oval. Plain. Packaging capacity: 20-100.	1924-1957 (1906-1957)	There can be before 1924. İkinci Bafra brand is in 1906. 1957 date is from the collection.
Bafra Milli or Milli	Thin. Packaging capacity: 20-100.	1924-1925 (1906-1925)	There can be before 1924. İkinci Bafra brand is in 1906.
	Thick. Packaging capacity: 20-100.	1924-1925 (1906-1925)	
Bafra	Filtered. Length: 85 mm.	1983-1989	
	Special packaging with motifs. Packaging capacity: 20-50 in 1971 and 1975.	1971-1980	
	Plain. Length: 68 mm.	1940-1995 (1906-1995)	Bafra is the continuity of Bafra Milli and Bafra Maden brands.
Bahar	Filtered. Length: 100 mm.	2004-	Still in the market. 2004 date is from the collection.
	Long edge flip-top packaging. Plain. Length: 68 mm.	1967-1975	
	Thin. Tipped and/or plain. Length: 68 mm.	1951-1989	
Ballıca	Flip-top packaging. Filtered. Length: 85 mm.	1996-2002	
	Soft packaging. Filtered. Length: 100 mm.	1995-2003	
Barış	Filtered. Length: 85 mm.	1978-1983	
	Filtered. Length: 100 mm.	1982-1989	

Table D.1 : Periodical List of Cigarette Packages in the Turkish Market.

Cigarette Brands	Cigarette and Packaging Specifications	Periods	Notes
Bayan	Thin. With and without end. Length: 68 mm.	1936-1938	
Beşinci Sigara (pre-Köylü)	Thin. Plain.	1925-1926 (1906-1926)	As special production in 1906 list. Beşinci Sigara was replaced with Köylü brand in 1926-1927.
Bey (post-Efendi)	With cork tip. Packaging capacity: 20.	1929-1933	Its name changed from Efendi in 1928.
Birinci or Birinci Nev'i	Packaging capacity: 25-50-100-250-500-1000.	1875-1923	
	Thin. Tipped and/or plain. Packaging capacity: 20-100.	1924-1942	
	Thick, thick-oval. Tipped and/or plain. Packaging capacity: 20-100.	1924-1942	
Birinci	Plain. Length: 68 mm.	1940-1998 (1875-1998)	Birinci is the continuity of other Birinci or Birinci Nevi. 1998 date is from the collection.
	Plain. Length: 85 mm.	1994-1995	
Bitlis Lüks	Soft packaging. Filtered. Length: 100 mm. & Flip-top packaging. Filtered. Length: 85 mm.	1987-1992	
Bitlis (post-Doğu)	Filtered. Length: 85 mm.	1984-1993	
	Plain. Length: 68 mm.	1970-1988	There is confusion between the tables and texts. Text: Bitlis replaced Doğu brand in 1971; table: in 1984.
Boğaziçi or Boğaziçi Kulübü	Thin. Packaging capacity: 20-100.	1928-1929	
	Thick, thick-oval. Plain. Packaging capacity: 20-100. Also 10 packs appear in the market in 1930.	1925-1976	There can be before 1924, but there is not in 1906.
Boğaziçi	Special packaging with motifs. Packaging capacity: 50 in 1975.	1975-1980	
Bozkurt	Oval. Plain. Length: 68 mm.	1936-1938	
Bursa	Soft packaging. Filtered. Length: 85 mm.	1991-1993	Produced for export (Azerbaijan).
Cercle d'Orient or Serkldoryan or Büyükkulüp (pre-Kulüp)	Thick-oval. Plain. Length: 68 mm. Packaging capacity: 20-100.	1924-1942	There can be before 1924, but there is not in 1906. Its name changed to Büyükkulüp in 1928, then to Kulüp before 1950 (probably in 1940).
CercleduBosphore	Oval. Plain. Length: 68 mm.	1976	
Çamlıca	Plain. Length: 68 mm.	1951-1954	
	Mentholated. Filtered. Length: 85 mm.	1961-1980	
Çeşit	Special packaging. Includes luxury cigarettes. Packaging capacity in first period: 25-50-100. Packaging capacity in second period: 84, 120, 167. Second period can be packaging with motifs.	1930-1947, 1967-1980	There are two periods for this brand.
Diplomat	Oval. Plain. Length: 80 mm.	1946-1982	

Table D.1 (Continued) : Periodical List of Cigarette Packages in the Turkish Market.

Cigarette Brands	Cigarette and Packaging Specifications	Periods	Notes
Doğu (pre-Bitlis)	Plain. Length: 68 mm.	1939-1982	There is confusion between the tables and texts. Text: Bitlis replaced Doğu brand in 1971; table: in 1984.
Efendi (pre-Bey)	Thin-oval. With cork tip. Packaging capacity: 20-100.	1924-1928	Its name changed to Bey in 1929. There can be before 1925, but there is not in 1906.
Efes	Filtered. Length: 85 mm.	1971-1972	Later it was produced with TETA for export.
Enalâ Süfera-Enalâ Safera	Thin. Tipped and/or plain. Packaging capacity: 100-250-500.	1906-1939	Extra and Alâ brands for ambassadors were considered as well.
	Thick. Tipped and/or plain. Packaging capacity: 100-250-500.	1906-1925	
En Alâ (post-Alülâlâ)	Thin-oval. Plain. Packaging capacity: 20-100-500.	1928-1939	Its name changed from Alülâlâ in 1928.
	Thick-oval. Plain. Packaging capacity: 20-100-500.	1928	
	NA	1940-1945	Probably brand continued without thick-thin specialization until 1945. (Thick-thin specialization could be seen until 1942 in some brands)
Gazi	Thick. With cane or silk tip. Packaging capacity: 10-20.	1928-1935	
	Thick. Plain. Packaging capacity: 10-20.	1928-1934	
	Thin-oval. Packaging capacity: 20-100.	1924-1939	
Gazi Fantezi	Thick. With fancy tip (different colours). Packaging capacity: 20.	1928-1939	
Gelincik	Thin-oval. Tipped and/or plain. Length: 68 mm.	1940-1989	
Halk	Thin. Plain. Length: 68 mm.	1932-1936	
	Thick. Plain. Length: 68 mm.	1932-1944	
Hanım Fantezi	With fancy tip (different colours). Packaging capacity: 20.	1928-1934	
Hanım or Pour Dammes	Very thin, thin-oval. With mouthpiece. Tipped and/or plain. With cork tip. Packaging capacity: 10-20-100. There were 4 types, which later decreased to one in 1929.	1906-1939	
Hanımeli	Plain. Length: 68 mm. Packaging capacity: 20.	1926-1951	
	Flip-top packaging. Filtered. Lengths: 85-100 mm.	1993	This data is from the collection.
Harman Luxe	Flip-top packaging. Filtered. Length: 85 mm.		Produced for export. This data is from the collection.
Harman (post-Yeni Harman)	Soft packaging. Filtered. Length: 85 mm.	1971-1977	Its name changed from Yeni Harman in 1971.
Hisar	Filtered. Length: 85 mm.	1963-1984	
	Plain. Length: 85 mm.	1963-1980	
Hususi Kokulu	Mentholated. Plain. Length: 68 mm.	1942-1964	

Table D.1 (Continued) : Periodical List of Cigarette Packages in the Turkish Market.

Cigarette Brands	Cigarette and Packaging Specifications	Periods	Notes
İkinci or İkinci Nev'i	Packaging capacity: 25-50-100-250-500-1000.	1875-1923	There are two periods for this brand. First period is until 1932.
	Thin. Packaging capacity: 20-100. Only 20 packs after 1929.	1924-1932	
	Thick, thick-oval. Tipped and/or plain. Packaging capacity: 20-100.	1924-1932	
İkinci	Plain. Length: 68 mm.	1952-1984	There are two periods for this brand. Second period is between 1952 and 1984. İkinci is the continuity of other İkinci or İkinci Nevi.
İkiz	Sold in pairs of packs with 20 cigarettes capacity.	1930-1943	
İsmet	Thin. Coloured cigarette paper. Tipped and/or plain. Length: 68 mm. Packaging capacity: 20.	1928-1942	
İzmir	Filtered. Length: 85 mm.	1990-1991	
	Oval. Plain. Length: 68 mm.	1940	
Kabine (pre-Salon)	Thin and thick variations. With long mouthpiece. Packaging capacity: 10-20-100.	1906-1928	Its name changed to Salon in 1929.
Karadeniz	Plain. Length: 68 mm. Packaging capacity: 20.	1970-1974	
Kıbrıs	Filtered. Length: 100 mm.	1974-1984	
Köylü (post-Beşinci Sigara)	Thin. Plain. Length: 68 mm. Packaging capacity: 20.	1928-1942	Beşinci Sigara was replaced with Köylü in 1926-1927.
	Thick. Plain. Length: 68 mm. Packaging capacity: 20. In 1929, 10 packs were produced for short time.	1927-1963, 1977	
Kulüp (post-Cercle d'Orient or Serkldoryan or Büyükkulüp)	Oval. Plain. Length: 68 mm.	1940-1983	Its name changed from Büyükkulüp (it was Cercle d'Orient or Serkldoryan before then) before 1950 (probably in 1940).
Maltepe	Soft packaging. Filtered. Length: 100 mm.	1971-	Still in the market.
	Soft packaging. Filtered. Length: 85 mm.	1969-	Still in the market.
	Flip-top packaging. Filtered: 85 mm.	2006-	Still in the market. This data is from the collection.
Maltepe Gold	Filtered. Length: 100 mm.	NA-2010	Still in the market.
Maltepe International	Filtered. Length: 100 mm.	1971-	This data is from the collection.
Meb'us	Oval. Plain. Length: 68 mm. Packaging capacity: 500. In 1929, it was classified as A, B, C with different prices and 100-500 packs.	1928-1951	
Meltem	Filtered. Length: 100 mm.	1994-	Still in the market.
	Filtered. Length: 85 mm.	1979-1993	

Table D.1 (Continued) : Periodical List of Cigarette Packages in the Turkish Market.

Cigarette Brands	Cigarette and Packaging Specifications	Periods	Notes
Memur sigarası	NA	1928-1929	Cigarettes sold to government officials with discount. 500 cigarettes per month.
Milli Müdafa-Müdafai Milliye	Thick-oval. With gilt tip. Length: 68 mm. Packaging capacity: 20.	1926-1929	
Nimet	Thin. Packaging: 20-100.	1924-1932	There can be before 1924, but there is not in 1906. Drawback to factories was announced in 1932.
	Very thin. With and without mouthpiece. Packaging capacity: 20-100. Shortly after 1925, there were only 20 packs.	1924-1932	
Polis	NA	1986	It was announced to appear in the market in 1986.
Salon (post-Kabine)	With long mouthpiece. Length: 160 mm. Packaging capacity: 20.	1929-1939	Its name changed from Kabine in 1929.
Samsun	Oval. Tipped and/or plain. Length: 68 mm.	1935-1944 (1923-1944)	Packaging of Gazi cigarettes was changed from tin to paper box, and named as Samsun in 1935. Samsun was a tobacco brand in 1900s. However, there is one tin cigarette box, on which Samsun is written in Ottoman language. It is considered to be produced between 1923 and 1928.
	Soft packaging. Filtered. Length: 85 mm.	1959-	Still in the market.
	Soft packaging. Filtered. Length: 100 mm.	1979-	Still in the market.
	Flip-top packaging. Filtered. Length: 85 mm.	1997-	Still in the market. 1997 date is from the collection.
Samsun Lüks	NA	1940-1942	
Samsun 216	Flip-top packaging. Filtered. Length: 85 mm.	2002-	Still in the market. 2002 date is from the collection.
	Soft packaging. Filtered. Length: 85 mm.	Before 1974-	Still in the market. Information of 'before 1974' is from the collection.
Samsun Lights	Soft packaging. Filtered. Length: 100 mm.	1991	1991 date is from the collection.
Samsun Gold	Flip-top packaging. Filtered. Length: 100 mm.	NA	This data is from the collection.
Samsun International	Flip-top packaging. Filtered. Length: 85 mm.	1997-1998	This data is from the collection.
Seid	Flip-top packaging. Filtered. Length: 85 mm.	1991-1993	Produced for export (Azerbaijan).
Selam	Very thick-oval. Packaging capacity: 20. Then 100 packs appeared in 1925.	1924-1932	There can be before 1924, but there is not in 1906. Drawback to factories was announced in 1932.
	Thin. Packaging capacity: 20.	1924-1932	
Silâhlı Kuvvetler	Plain. Length: 68 mm. Packaging capacity: 20.	1960-1980	Sold with 9% discount to soldiers.
	Filtered. Length: 85 mm.	1971-1994	
	Filtered. Length: 100 mm.	1982-1989	

Figure D.1 (Continued) : Periodical List of Cigarette Packages in the Turkish Market.

Cigarette Brands	Cigarette and Packaging Specifications	Periods	Notes
Sipahi Ocağı or Jockey Club or Jockey (Pre-Sipahi Jockey Club)	Short. Thick-oval. With gilt. Packaging capacity: 20-100.	1924-1928	There can be before 1924, but there is not in 1906. Its name changed to Sipahi Ocağı from Jockey Club (in short Jockey), later its name became Sipahi Jockey Club in 1940.
	Long. Thick-oval. With gilt. Packaging capacity: 10-20-100. In 1925 only 20 packs. In 1928, two types with cane tip.	1924-1939	
Sipahi Jockey Club (post-Sipahi Ocağı or Jockey Club or Jockey)	Oval. Tipped and/or plain. Length: 80 mm.	1940-1980	Its name changed from Sipahi Ocağı and Jockey Club (in short Jockey) in 1940.
Sipahi (post-Sipahi Jockey Club)	Filtered. Length: 85 mm.	1977-1982	1977 date is from the collection.
	Filtered. Length: 100 mm.	1983-1992, 2006	2006 date is from the collection.
	Flip-top packaging. Filtered. Length: 85 mm.	2006	2006 date is from the collection.
Sipahi Lüks	NA	1940-1942	
Superdeluxe Jockey Club	Filtered. Length: 85 mm.	1976	Produced for export. 1976 date is from the collection.
Subay or S or Sb (post-Zabit)	Plain. Length: 68 mm.	1932-1971	Its name changed from Zabit in 1930s. Between 1932 and 1939, both names were used in the lists.
Subay	Filtered. Length: 85 mm.	NA	
Sultani	Thin. Tipped and/or plain. Packaging capacity: 10-20-100.	1906-(1923)	There can be in 1900s. It was demolished before 1924, not in the list.
TBMM	Oval. Length: 68 mm.		This data is from the collection.
TBMM or Senato	Filtered. Length: 100 mm.	1980-1989	
	Filtered. Length: 85 mm.	1976-1989	
Tekel 2000	Soft packaging. Length: 100 mm. Filter length: 27 mm. First blended cigarette in the market.	1988-	Still in the market.
	Flip-top packaging. Filtered. Length: 85 mm.	1993-	Still in the market. 1993 date is from the collection.
	Soft packaging. Filtered. Length: 85 mm.	1995-NA	Not in the market in 2010.
Tekel 2000 Light	Flip-top packaging. Filtered. Length: 85 mm.	1998-	Still in the market.
	Soft packaging. Filtered. Length: 100 mm.	1994-NA	Not in the market in 2010.
Tekel 2001	Soft packaging. Filtered. Length: 100 mm.	1995-	Still in the market.
	Soft packaging. Filtered. Length: 85 mm.	1996-	Still in the market.
	Flip-top packaging. Filtered. Length: 85 mm.	1996-	Still in the market. Dates between 1996 and 2000 are from the collection.

Table D.1 (Continued) : Periodical List of Cigarette Packages in the Turkish Market.

Cigarette Brands	Cigarette and Packaging Specifications	Periods	Notes
Tekel 2001 Light	Flip-top packaging. Filtered. Length: 85 mm.	NA-2010	Still in the market.
	Flip-top packaging. Filtered. Length: 100 mm.	NA-2010	Still in the market.
Tiryaki	Thin. Plain. Length: 68 mm.	1937-1945	There is no information if there were thin-thick specialization between 1942 and 1945.
	Thick. Plain. Length: 68 mm.	1937-1945	
Tokat	Soft packaging. Filtered. Length: 85 mm.	1984-1995	
Tokat Lüks	Soft packaging. Filtered. Length: 100 mm. & Flip-top packaging. Filtered. Length: 85 mm.	1988-1995	
Topkapı	NA		Produced for export.
Truva	NA	1992-1993	Produced for export.
Turing Kulübü	With gilt tip in 20 packs and plain in 100 packs in 1929.	1929-1933	
Turkish Special	NA		Produced for export. This data is from the collection.
Türk (pre-Ankara)	Very thick. Packaging capacity: 20-100.	1924-1928	There can be before 1924, but there is not in 1906. Its name changed to Ankara in 1929.
Türkocağı-Türk Ocakları	Thick-oval. Length: 68 mm. Packaging capacity: 20-100.	1926-1933	
Uludağ	Mentholated. Oval. Length: 68 mm.	1949-1964	
Ulus	NA	1944-1945	
Üçüncü or Üçünvü Nev'i	Packaging capacity: 25-50-100-250-500-1000.	1875-1923	There are two periods for this brand. First period is until 1943.
	Thin. Packaging capacity: 20-100 in 1925. Same year only 20 packs were left.	1924-1943	
	Thick. Packaging capacity: 20-100 in 1925. Same year only 20 packs were left.	1924-1940	
Üçüncü	Thick. Plain. Length: 68 mm.	1958-1976	There are two periods for this brand. Second period is between 1958 and 1976. Üçüncü is the continuity of other Üçüncü or Üçüncü Nevi.
Yaka	With liquorice. Black cigarette paper. Oval. With gilt. Length: 68 mm. Packaging capacity: 20-100. There were only 20 packs in 1929.	1924-1942, 1962-1973	There are two periods for this brand. There can be before 1924, but there is not in 1906.
Yalova	Medium oval. Plain and with gilt tip. Length: 68 mm. Packaging capacity: 10. With less nicotine.	1931-1938	Dates between 1933 and 1938 are from the collection.
Yaset	Thin. With gilt. Packaging capacity: 20-100.	1925-1928	Produced for export. There can be before 1924, but there is not in 1906.

Table D.1 (Continued) : Periodical List of Cigarette Packages in the Turkish Market.

Cigarette Brands	Cigarette and Packaging Specifications	Periods	Notes
Yeni Harman (co- and pre-Harman)	Oval. Plain. Length: 68 mm. (Sliding packaging, there is no information if it had been this pack all those years)	1940-1980	
	Filtered. Length: 85 mm.	1964-1971	Its name changed to Harman in 1971.
	Filtered. Length: 100 mm.	1991-2010	Dates between 1996 are 2010 are from the collection. Withdrew from the market in 2010.
Yenice	Thin. Length: 68 mm. Packaging capacity: 20-100.	1924-1939	There can be before 1924, but there is not in 1906.
	Thick. Oval. Length: 68 mm. Packaging capacity: 20-100. 10 packs appeared in 1930 as well.	1924-1940	
	Plain. Length: 68 mm.	1940-1997	Thin-thick specialization was not mentioned since 1940s. Dates between 1990 and 1997 are from the collection.
	Long edge flip-top packaging. Plain.	1967-1975	Dates between 1971and1975 are from the collection.
	Special packaging with motifs. Packaging capacity: 20-50 in 1971 and 1975.	1969-1980	
Yenidjé	Oval. Plain. Length: 68 mm.	1976	Produced for export. 1976 date is from the collection.
Zabit	Oval. Plain. Length: 68 mm. Packaging capacity: 20-100.	1926-1932	Its name changed to Subay (S, Sb) in 1930s. Between 1932 and 1939, both names were used in the lists.

Table D.1 (Continued) : Periodical List of Cigarette Packages in the Turkish Market.

APPENDIX E

Toplumsal Tarih.
Sayı: 15 Pages: 40-41
Mart 1995

UFAK VE RENKLİ KÂĞIT PARÇACIKLARI

Sağlımız üzerinde yaptığı olumsuz etkileri bilsek de, bu etkilerin arttığını her geçen gün hissetsek de, arada sırada "şu kadar yılda şu kadar liramı duman edip savurmuşum" diyerek sızlansak da, kendisinden ayrılmanın en zor olduğu dostumuz yine de "sigara"dır.

Özellikle benim için sigaranın önemi çok büyüktür. Çeyrek asırı geçkin bir süredir yerlisi ile, yabancısı ile bu nesnenin koleksiyonunu yapmaktayım, hem de çok yönlü olarak. Ancak "sigara" benim için bir belge, "ekonomik ve toplumsal" bir malzeme olarak görünmektedir. Elbet arada sırada, tek tük yakıp tüttürdüğüm de olur.

Eski bir evrak, bir günce, bir resim ya da fotoğraf, bir alet kendi dönemi hakkında ekonomik ve toplumsal açıdan ipuçları vermektedir ya da verebilir. Bu nedenle günlük yaşantımızda farkında olmadan kullandığımız, tükettiğimiz ve sonradan attığımız bir sürü ufak tefek nesne aslında yaşadığımız ortamın bir üretimi olarak gerektiğinde ve ileride dönemimizin bir tanığı olarak kullanılabilir.

Bu açıdan bakıldığında bu yazımda, sigara paketlerinin kapatılmasında kullanılan ve hiçbir zaman ilgi ya da dikkatimizi çekmeyen bandrollerin düzenli ve sistematik bir şekilde toplanması durumunda ne gibi ekonomik ve toplumsal olguları aydınlattığını ya da aydınlatmaya yardımcı olduklarını anlatmaya çalışacağım.

56 adet bandrol aslında, şu an için, koleksiyonu oluşturan altıyüz civarındaki bandroller toplamından seçilmiştir. Renk, desen ve fiyat farklılıkları açısından önemlileri burada yer alarak 70 kuruştan (n.3) 4.500.000 kuruşa yani 45.000 liraya (n.52) kadar fiyat serüveni, çeşitli dönemlerde ne tür düşüncelerle hazırlandıkları, özellikle son yılların "sigara" politikası hakkında bilgi vermektedirler.

+n.1 ile n.5 arası 1960 öncesi bandrollerdir. Her marka sigara için ayrı renk-ayrı desende hazırlanmışlardır.

+n.6 "Subay" sigarası için (60 öncesi yıllarda ayrıca "Astsubay" sigarası vardı) ve n.7 ise "Silahlı Kuvvetler" sigarası için (60 sonrasında "Türk Hava Kuvvetleri" ve "Astsubay" sigaraları kaldırıldı) hazırlanmış bandrollerdir.

+n.8 ise 27 Mayıs 1960 devriminden sonra tüm sigaralarda kullanıldı. Çok kısa bir süre (65'e kadar) piyasada bulunan filtresiz "27 Mayıs" sigarasının bandrolü n.8'in renkli bir türü idi.

+n.9, n.10 ise 1965-1970 yılları arasında, n.11 de 1971'de çıkan ilk 100 mm'lik sigara "Maltepe" için, n.12 ise 1971'e kadar kullanılmıştır.

+n.13'den n.16'ya kadar olanlar ise 1973 yılına değin değişik renk ve 3 farklı desende kullanılan çini desenli bandrollerdir.

+n.17 ile n.19 arası, 1973 yılından itibaren Cumhuriyet'imizin 50. yılı onuruna kullanılmıştır. n.20 de Almanya'da üretilen Efes, Maltepe, Topkapı, Hisar gibi sigaralar için, TEKEL'in de ortak olduğu firma tarafından hazırlanmış bandroldür.

+n.21 ve n.24 arası, 1975 ile 1980 yılları döneminde tüm piyasa ve özel günler, fuarlar, festivaller için yapılmış sigaralarda kullanılmıştır.

+n.25 ile n.32 arası tarihlendirilmesi en kolay olan bandrollerdir. 12 Eylül 1980'den sonra sigara bandrolleri gibi çok önemli bir "media"nın, iletişim aracının daha önceki yıllarda olduğu gibi israf edilmesine son verilmiş ve ekonomik ve toplumsal mesajlar bu bandroller vasıtasıyla iletilmek istenmiştir. n.25 ile n.32 arası renk-boyut-mesaj farklılıkları ile en zengin bölümü oluşturmaktadır. n.28'deki turistik mesaj, n.30'daki basına mesaj, n.31'deki uygar uluslara mesaj, n.32'deki ekonomik mesaj dışında burada yer almayan daha 22 değişik türü vardır; trafik kazalarına önlem, sayımlar gibi konulara da rastlanmıştır. Ancak sanayiden pek söz edilmemiş olması sanırım bir rastlantı ya da unutkanlıktır.

+Aynı 12 Eylül 1980-1982 döneminde ayrıca konulu bandroller de kullanılmıştır. Özel gün ve nedenler için çıkarılan sigara paketleri bu dönemde kendileri ile ilgili bandrollerle kapatılmışlardır. n.33'deki "İslam Ülkeleri Toplantısı" gibi.

+1983 yılından günümüze kadar ufak değişikliklerle kullanılan bandrollerin ilk örnekleri n.37 (her zaman 216 Samsun diye anılan İsviçre yapımı sigara) ve n.38 (ihraç için yapılan Maltepe) dir.

+n.39, n.40 ve renk-fiyat farklılıkları ile önemli bir grup 80'li yılların ortalarında tüm sigaralarda (piyasa ve özel gün) kullanılmıştır.

+n.41 ile n.44 arası, fiyatların ortada, daha büyük olarak yazıldığı, 1987-1993 arası yerli piyasa sigaraları için kullanılan bandrollerden örneklerdir. Filtreli 85 mm'lik sigaralar 280 TL'den başlayıp 4800 TL'ye kadar bu bandrollerle satıldı.

+ Yabancı sigara markaları 1984 yılından itibaren ithal edilir olunca n.45, n.46 ve n.47 kullanılmaya başlandı. "TEKEL tarafından ithal edilmiştir".

+ 1984 yılından itibaren yabancı markaların yanı sıra, TEKEL üretimi olan ve ancak yurtdışında satılan bazı markalar "yabancı sigara" gibi farklı bir badrolle (215 Samsun 85 mm, Samsun Gold ve Light, Hanımeli, Best) satılmaya başlandı; n.48, n.49 ve benzerleri bu gaye ile kullanıldı.

+ Yurdumuzda sigaraya zam geldiği zaman eldeki stoklar (TEKEL ya da satıcı tarafından) yeni fiyattan satılır. Ancak kısa bir süre eldeki stoklar, yerlisi ile, ithal yabancısı ile bandrol üzerindeki yazılı fiyattan satıldı. Daha sonra yine kısa bir süre, zam sonrasında yerli markalar bandrol fiyatından, yabancı markalar yeni fiyattan satılır oldu; no.50 bu dönemlerin (1992) bir örneğidir. En sonunda bu karışıklığa bir son vermek için yine eski sisteme dönüldü ve sigaralar (ve diğer TEKEL ürünleri) zamdan sonra, eldeki saklanmış stoklar da dahil olmak üzere, yeni fiyattan satılmaya başlandı. Giderek karışıklıkların, tartışmaların önüne geçmek ve satıcıları stoklarını sakladıklarından dolayı suçlayamamak için bandrolde fiyat belirtilmesi kuralı sona erdirildi. n. 51 TEKEL tarafından ithal edilmiştir. Bazı yabancı markalar ithalât yerine kendi ürettikleri sigaralarda n.52'deki bandrolü kullanmaktadırlar: "TEKEL için imal edilmiştir"

+ n.53, TEKEL işletmelerinde çalışan personele toplu sözleşme gereği parasız verilen sigaraların bandrolüdür.

+ n.54, fiyat yazılması sona erdikten sonra yerli sigaralarda kullanılan en yaygın bandrol, n.55 yine aynı türde bazı sigaralarda bulunan bandroldür.

+ Ve n.56 TEKEL'in en son bandrolüdür. Tüm yerli sigaralarda kullanılacak, yabancı markalar için kullanılanlara benzetilen yeni bandrol.

. Böylece 56 adımda, 56 bandrol ile 1960-1995 arasında bir gezinti yaptık. 70 kuruş ile 4.500.000 kuruş arasında sigara fiyatlarını az çok izledik; "TEKEL tarafından imal edilmiş" sigaralardan başladık, "TEKEL tarafından ithal edilmiş" sigaraları gördük, "TEKEL için imal edilmiş" sigaralara kadar geldik. Gezimiz sürecek, başka yazılarda sigaraları başka açılardan tanıyacağız, sigaraların ekonomik ve toplumsal tanıklığını izlemeye devam edeceğiz. ■

Figure E.1 : An Article on Banderole –tax stickers for cigarettes (Varış 1995).

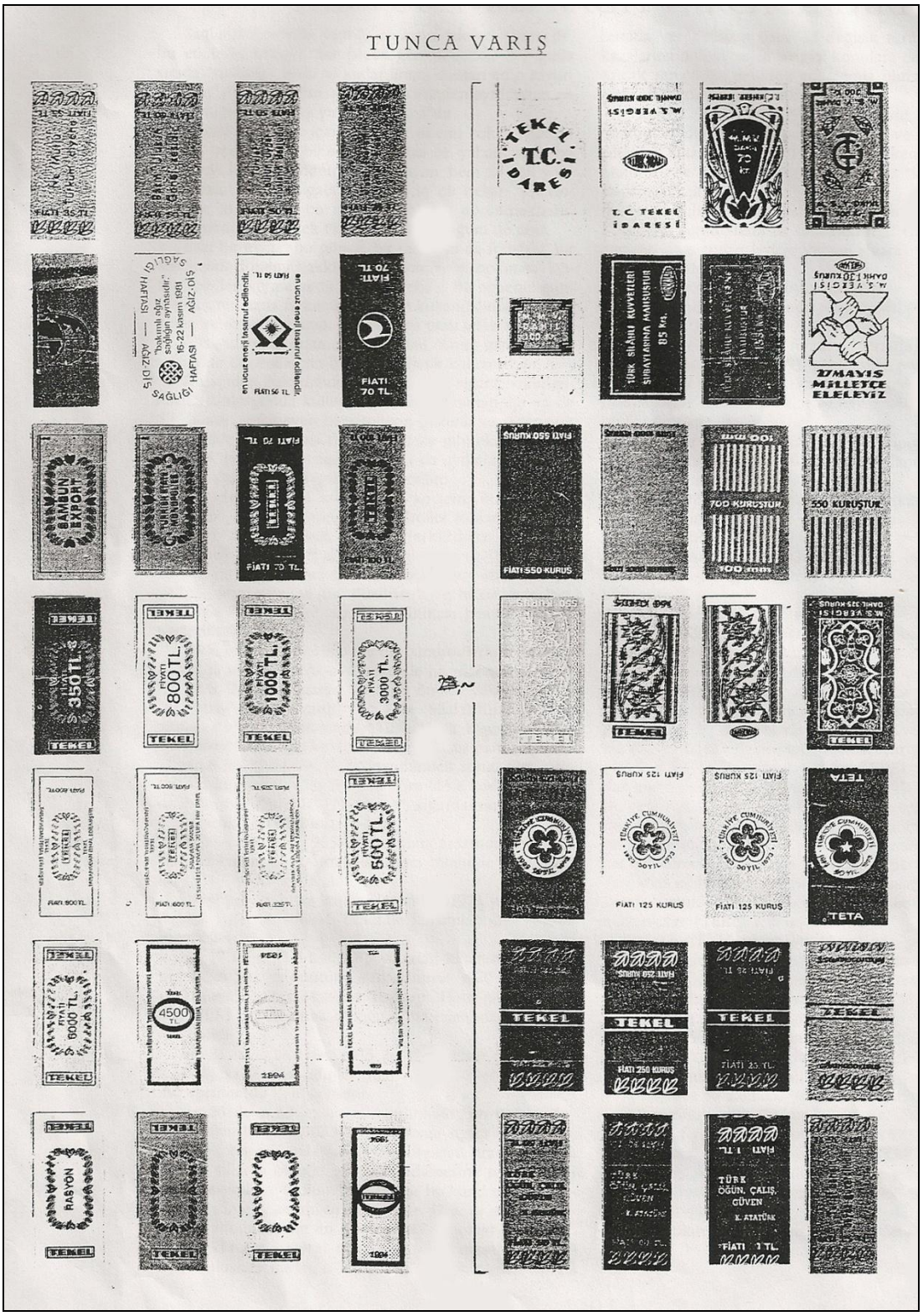


Figure E.1 (Continued) : An Article on Banderole –tax stickers for cigarettes (Varış 1995).

APPENDIX F

TABLE VII

The Standards of Turkish Tobacco Products

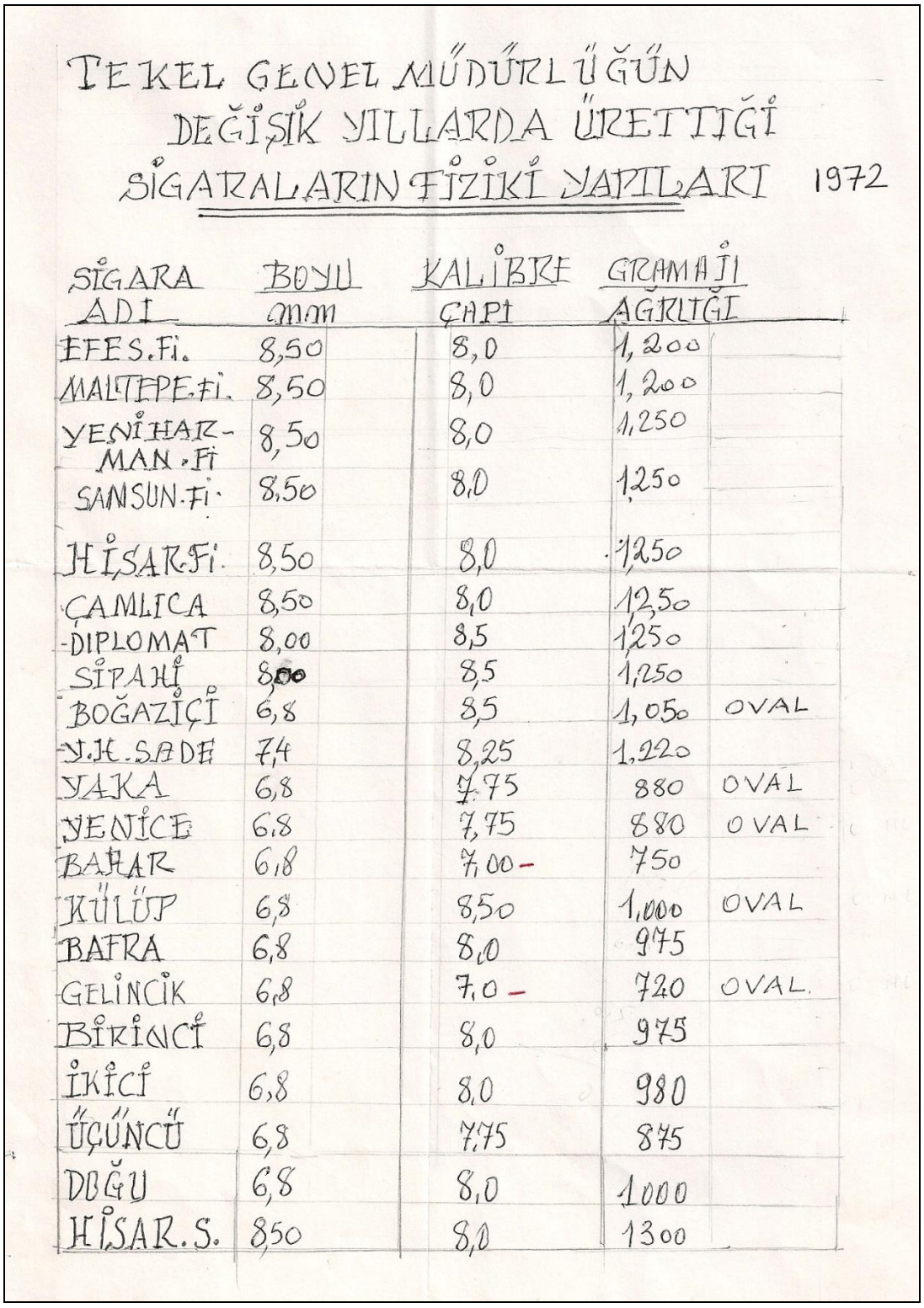
Product	Weight (*) Gr.	Moisture %	Nicotine %
Samsun	1 460—1 540	11.0—12.0	1.50—1.80
Çamlıca	1 465—1 550	11.0—12.5	1.20—1.50
Hisar filtreli	1 465—1 550	11.0—12.5	1.30—1.60
Hisar sade	1 470—1 560	11.0—12.5	1.30—1.60
Yeni harman	1 240—1 320	11.0—12.0	1.60—1.90
Diplomat	1 200—1 280	11.0—12.0	0.80—1.10
Sipahi ocağı	1 200—1 280	11.0—12.0	0.60—0.90
Boğaziçi	1 000—1 050	11.0—12.0	0.70—0.90
Yaka	860— 920	11.0—12.0	1.00—1.20
Yenice	860— 920	11.0—12.0	1.00—1.20
Bahar	720— 750	11.0—12.0	1.00—1.20
Kulüp	970—1 040	11.0—12.0	1.35—1.60
Bafra	950—1 000	11.0—12.0	1.35—1.60
Gelincik	700— 730	11.0—12.0	1.35—1.60
Silâhlı kuvvetler	940—1 000	11.0—12.0	1.10—1.40
27 Mayıs	940—1 000	11.0—12.0	1.35—1.65
Birinci	950—1 010	11.0—12.0	1.35—1.65
İkinci	970—1 010	11.0—12.0	1.10—1.50
Üçüncü	865— 920	11.0—12.0	1.00—1.40
Asker	865— 920	11.0—12.0	1.00—1.40
Doğu	980—1 040	11.0—12.0	1.30—1.70

Continued on page 91

(*) Weights per 1000 cigarettes

Figure F.1 : The Standards of Turkish Tobacco Products (The Turkish State Monopolies 1965).

APPENDIX G



TEKEL GENEL MÜDÜRLÜĞÜN
DEĞİŞİK YILLARDA ÜRETTİĞİ
SİGARALARIN FİZİKİ YAPILARI 1972

SİGARA ADI	BOYU mm	KALİBRE ÇAPI	GRAMAJI AĞIRLIĞI	
EFES.Fi.	8,50	8,0	1,200	
MALTEPE.Fi.	8,50	8,0	1,200	
YENİHARMAN.Fi	8,50	8,0	1,250	
SAMSUN.Fi.	8,50	8,0	1,250	
HİSAR.Fi.	8,50	8,0	1,250	
ÇAMLICA	8,50	8,0	1,250	
-DIPLOMAT	8,00	8,5	1,250	
SİPAHİ	8,00	8,5	1,250	
BOĞAZİÇİ	6,8	8,5	1,050	OVAL
Y.H.SADE	7,4	8,25	1,220	
YAKA	6,8	7,75	880	OVAL
YENİCE	6,8	7,75	880	OVAL
BAHAR	6,8	7,00	750	
KÜLÜP	6,8	8,50	1,000	OVAL
BAFRA	6,8	8,0	975	
GELİNCİK	6,8	7,0	720	OVAL
BİRİNCİ	6,8	8,0	975	
İKİCİ	6,8	8,0	980	
ÜÇÜNCÜ	6,8	7,75	875	
DOĞU	6,8	8,0	1000	
HİSAR.S.	8,50	8,0	1300	

Figure G.1 : Physical Structures of Cigarettes Produced in Different Years by the State Monopolies – *Tekel* (Oğuztaş 1972) (from left to right: name of the cigarette, the length, the calibre, the weight).

APPENDIX H

DATES	PRICES									
	C.L. 68 mm				C.L. 85 mm			C.L. 100 mm		
	P.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.
	Tin	Soft	Slide out	Flat-wise	Soft	Flip-top	Flat-wise	Soft	Flip-top	Flat-wise
1993	-	-	-	-	3600 TL	NA	NA	4800 TL	NA	NA
1992	-	-	-	-	NA	NA	NA	4000 TL	NA	NA
1991	-	-	-	-	2000 TL	NA	NA	3000 TL	NA	NA
1990	-	-	-	-	NA	NA	NA	1600 TL	NA	NA
1989	-	-	-	-	800 TL	NA	NA	900 TL	NA	NA
1988	-	-	-	-	500 TL	NA	NA	550 TL	NA	NA
1987	-	-	-	-	300 TL	400 TL		NA	NA	NA
1986	-	-	-	-	210 TL	NA	NA	NA	NA	NA
1985	-	-	-	-	170 TL	NA	NA	NA	NA	NA
1984	NA	60 TL	NA	NA	100 TL	NA	NA	110 TL	NA	NA
1983	NA	40 TL	NA	NA	70 TL	NA	NA	75 TL	NA	NA
1982	NA	35 TL	NA	NA	60 TL	NA	NA	65 TL	NA	NA
1981	NA	25 TL	NA	NA	35 TL, 50 TL	NA	NA	52,5 TL	NA	NA
1980	NA	1250 Kr	NA	NA	2500 Kr, 3500 Kr	NA	NA	3750 Kr	NA	NA
1979	NA	500 Kr	NA	NA	1000 Kr, 1500 Kr	NA	NA	NA	NA	NA
1978	NA	350 Kr	NA	NA	750 Kr, 1000 Kr, 10 TL	NA	NA	NA	NA	NA
1977	NA	225 Kr	NA	NA	750 Kr, 1000 Kr	NA	NA	NA	NA	NA
1976	NA	225 Kr	NA	NA	750 Kr	NA	NA	NA	NA	NA
1975	NA	225 Kr	NA	300 Kr	550 Kr, 750 Kr	NA	NA	NA	NA	NA
1974	NA	175 Kr	NA	225 Kr	550 Kr	NA	NA	NA	NA	NA
1973	NA	175 Kr	NA	225 Kr	550 Kr	NA	NA	NA	NA	800 Kr
1972	NA	175 Kr	NA	225 Kr	550 Kr	NA	NA	NA	NA	NA
1971	NA	160 Kr	NA	175 Kr, 200 Kr	550 Kr	NA	NA	NA	NA	NA
1970	NA	160 Kr	NA	175 Kr, 200 Kr	NA	NA	NA	600 Kr	NA	NA
1969	NA	160 Kr	NA	175 Kr, 200 Kr	600 Kr	NA	NA	-	-	-
1968	NA	130 Kr	NA	150 Kr, 175 Kr	325 Kr	NA	NA	-	-	-

Table H.1 : Fixed Prices by Date for Special Edition Cigarettes due to their Cigarette Length (C.L.), Package Material (P.M.) and Package Opening Mechanism (P.O.M.).

DATES	PRICES									
	C.L. 68 mm				C.L. 85 mm			C.L. 100 mm		
	P.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.	P.O.M.
	Tin	Soft	Slide out	Flat-wise	Soft	Flip-top	Flat-wise	Soft	Flip-top	Flat-wise
1967	NA	130 Kr	NA	150 Kr, 175 Kr	325 Kr	NA	NA	-	-	-
1966	NA	110 Kr	NA	140 Kr	NA	NA	NA	-	-	-
1965	NA	110 Kr	NA	140 Kr	NA	NA	NA	-	-	-
1964	NA	110 Kr	NA	140 Kr	NA	NA	NA	-	-	-
1963	NA	110 Kr	NA	NA	NA	NA	NA	-	-	-
1962	NA	90 Kr	NA	NA	NA	NA	NA	-	-	-
1961	NA	90 Kr	NA	NA	NA	NA	NA	-	-	-
1960	NA	90 Kr	NA	NA	NA	NA	NA	-	-	-
1959	NA	90 Kr	NA	NA	180 Kr	NA	NA	-	-	-
1958	NA	60 Kr	NA	NA	NA	NA	NA	-	-	-
1957	NA	50 Kr	NA	NA	NA	NA	NA	-	-	-
1956	NA	50 Kr	100 Kr	NA	NA	NA	NA	-	-	-
1955	NA	50 Kr	100 Kr	NA	NA	NA	NA	-	-	-
1954	NA	40 Kr	80 Kr	50 Kr, 55 Kr	NA	NA	NA	-	-	-
1953	NA	40 Kr	NA	NA	NA	NA	100 Kr	-	-	-
1952	NA	40 Kr	NA	NA	NA	NA	NA	-	-	-
1951	NA	35 Kr	NA	35 Kr	NA	NA	NA	-	-	-
1950	NA	NA	NA	NA	NA	NA	NA	-	-	-
1949	NA	35 Kr	NA	35 Kr	NA	NA	NA	-	-	-
1948	NA	NA	NA	NA	NA	NA	NA	-	-	-
1947	NA	NA	NA	NA	NA	NA	NA	-	-	-
1946	NA	NA	NA	NA	NA	NA	NA	-	-	-
1945	NA	NA	NA	NA	NA	NA	NA	-	-	-
1944	NA	NA	NA	NA	NA	NA	NA	-	-	-
1943	NA	NA	NA	40 Kr	NA	NA	NA	-	-	-
1942	NA	NA	NA	NA	NA	NA	NA	-	-	-
1941	NA	NA	NA	NA	NA	NA	NA	-	-	-
1940	NA	NA	NA	NA	NA	NA	NA	-	-	-
1939	NA	NA	NA	NA	NA	NA	NA	-	-	-
1938	NA	NA	NA	NA	NA	NA	NA	-	-	-
1937	NA	NA	NA	NA	NA	NA	NA	-	-	-
1936	NA	NA	NA	NA	NA	NA	NA	-	-	-
1935	NA	NA	NA	NA	NA	NA	NA	-	-	-
1934	NA	NA	NA	NA	NA	NA	NA	-	-	-
1933	NA	NA	NA	15 Kr	NA	NA	NA	-	-	-

Table H.1 (Continued) : Fixed Prices by Date for Special Edition Cigarettes due to their Cigarette Length (C.L.), Package Material (P.M.) and Package Opening Mechanism (P.O.M.).

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