

İSTANBUL TECHNICAL UNIVERSITY ★ INSTITUTE OF SOCIAL SCIENCES

**CONTEMPORARY INSTRUMENTAL TECHNIQUES
APPLIED TO TURKISH MUSIC INSTRUMENTS
KEMENÇE, UD, KANUN, NEY**

**PhD Thesis by
Onur TRKMEN**

Department : Music

Programme : Doctorate in Music

SEPTEMBER 2009

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**ÇAĞDAŞ ÇALGI TEKNİKLERİNİN
KEMENÇE, UD, KANUN VE NEYE UYARLANMASI**

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FOREWORD

This doctorate thesis, titled “Contemporary Instrumental Techniques Applied to Turkish Music Instruments: *Kemençe, Ud, Kanun, Ney*” was prepared at the I.T.U. Social Sciences Institute, Dr. Erol Üçer Center for Advanced Studies in Music (MIAM).

Using Turkish Music instruments can create new esthetical dimensions in contemporary music. In order to generate an access to this idea, studies on the characteristics and the possibilities of these instruments are necessary. This work is an attempt in this direction.

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CONTEMPORARY INSTRUMENTAL TECHNIQUES APPLIED TO TURKISH MUSIC INSTRUMENTS: *KEMENÇE, UD, KANUN, NEY*

SUMMARY

This dissertation is a research on the application of standardized contemporary instrumental techniques to certain Turkish music instruments - *kemençe, ud, kanun, ney* - in addition to the proposition of the notation of particular techniques that are unique to those instruments.

The main purpose of this study is to contribute to the formation of the common terminology that will enrich the communication between contemporary music composers and traditional Turkish music composers and performers. This communication will strengthen composers' relation with the tradition in order to create access to unique artistic formations. In order to establish this communication, possibilities and characteristics of these four instruments are analyzed; according to the results of this research new notation methods are proposed.

Meşk, a system that does not use any written material to transmit the musical works, remained as the only method in the tradition of Turkish Music education. Western notation has been adapted to Turkish Music only at the beginning of the twentieth century but especially by the establishment of the State Conservatory in 1976. Since the tradition focuses on the revelation of the single melodic line, the idiomatic principles of Turkish music instruments are not systemized even by the conservatory. Therefore, this thesis is not a research on the characteristics of the tradition rather is a research based on a practice study. Observations and experiences that are accomplished as a result of this process are enrolled in this dissertation as a proposition of a prototype of the idiomatic studies on Turkish music instruments.

In the appendix section there are musical pieces that present exemplifications of the inferences of this research. These pieces are presented under the collective title "*hat*" that contains every possible combination of these four instruments in an ensemble setting: four solos, six duos, four trios and two quartets.

ÇAĞDAŞ ÇALGI TEKNİKLERİNİN KEMENÇE, UD, KANUN VE NEYE UYARLANMASI

ÖZET

Bu tezin konusu günümüzde müzikte evrensel olarak kabul görmüş çalgı tekniklerinin Türk müziğinin önde gelen dört çalgısına - kemençe, ud, kanun, ney - uyarlanabilirliklerinin araştırılması ve söz konusu çalgılara özgü tekniklerin nota yazımları konusunda öneriler sunulmasıdır.

Çalışmanın temel amacı çağdaş müzik alanında eserler veren besteciler ile Türk Sanat Müziği geleneğinden gelen müzisyenlerin iletişimlerini güçlendirecek ortak terminolojinin oluşmasına katkıda bulunmaktır. Bu amaca ulaşmak için geleneksel Türk Sanat Müziği çalgılarının karakteristik özellikleri ve olanaklarının sınırları, icracıların görüşleri de göz önünde bulundurularak, araştırılmıştır. Belirlenen özelliklerin ve uygulamada kullanılacak tekniklerin hem Batı Sanat Müziği bestecileri hem de Türk Sanat Müziği icracı ve bestecileri tarafından kabul görecektir şekilde notaya aktarılmasına öneriler getirilmiştir. Böylelikle bu çalgıların özellikleri kullanarak çağdaş müziğe yeni ses dünyaları, yeni estetik açımlar kazandırmak yolunda bir adım atılmıştır.

Türk Müziğinin geleneksel eğitim sisteminde yirminci yüzyıla değin ağırlıklı olarak meşk yöntemi kullanılmıştır. Bu yöntemde eserler nota yazımı kullanılmadan öğrenciye veya icracıya aktarılır. Yirminci yüzyılın ilk yıllarından itibaren çeşitli kurumlarda ve 1976'da kurulan Devlet Konservatuarında batı müziğinin nota sistemi Türk Müziğine uyarlanmıştır. Ancak Türk müziği icrasında temel amaç çalgıcıların tek bir melodik çizgiyi ortak ve doğru bir *entonasyon* ve ritmik kavrayışla aktarması olduğundan, her bir çalgıya özgü niteliklerin yazılı *literatüre* aktarılması kavramı gelişmemiştir. Bu sebepten ötürü bu tez bir gelenek üzerine yapılan bir araştırma değil, belirli icracılarla birlikte yaşanan bir süreç sonucunda elde edilen deneyimlerin ve gözlemlerin aktarılmasıdır. Bu aktarım, çalgılara özgü tekniklerin ve bu tekniklerin notaya aktarılma biçimlerinin Türk müziği eğitim ve icrasında kullanılmasına yönelik öneriler olarak görülebilir.

Ek bölümde (*appendix*) ise yapılan araştırmalar sonucunda elde edilen verilerin kullanıldığı müzik eserleri bulunmaktadır. Bu eserler üzerinde çalışma yapılan dört çalgının bir arada bulunabileceği tüm olasılıkları yansıtır. Bu çerçevede “hat” ismi altında toplanan bu eserler dört solo, altı ikili (*duet*), dört üçlü (*trio*) ve iki dördülden (*quartet*) oluşmaktadır.

1. INTRODUCTION

This dissertation is a research on the characteristics of *kemençe*, *ud*, *kanun* and *ney* in addition to the application of standardized contemporary instrumental techniques to those instruments. In the appendix section there are musical pieces that present exemplifications of the inferences of this research.

1.1 Explanations on the Basic Terms of the Dissertation Title

The two terms, “Turkish Music Instruments” and the “Contemporary Instrumental Techniques”, that take place in the title of this dissertation requires explanation as they can particularly incline to be perceived from different perspectives.

In this research, the term “Turkish Music Instruments” refers to musical instruments used in the courts of Ottoman Empire and later developments on these instruments eventuated at the conservatories of Turkey. Here, the courtly music of the Ottoman Empire is acknowledged as the culmination of the acquirements by the Islamic philosophers, musicologists and composers such as al-Farabi (Avennasar), Ibn Sina (Avicenna), Safiyüddin Urmevi, Abdülkadir Meragi. This culmination also concerns the evolution of instruments used during the above-mentioned renaissance, basically a period starting from the tenth century Abbasid governance, from the early folk-music instrument forms through the instruments of imperial courts such as Abbasid, Seljuk, Mamluk, etc. finally to the courts of Ottoman Empire.

The later developments at the conservatories of Turkish Republic carry on this Ottoman musical heritage. Nevertheless, since the Ottoman music was an amalgamation of distinct cultural conventions, the conservatory progress stated the “stylistic differences” between the Turkish approach and the Iranian, Arabian, Egyptian, Syrian or other Middle Eastern approaches.

The term “Turkish Music”, certainly do not denote any ethnic implication in this dissertation. The instruments that are analyzed are not ethnic Turkish instruments; rather they evolved through affiliations of many different cultures in thousands of

years. The preference of using a more particular term like “Turkish music” rather than a more generalized term depends on the political and cultural conditions of our time. At the end of the First World War, the collapse of the Ottoman Empire gave way to the foundation of many independent countries. As a result the evolution of these instruments continued in the isolated environments.

Depending on the conditions and evolutions explained above, the “Turkish Music” instruments in this dissertation are non-folkloric, courtly instruments that belong to the “Turkish School” established by the achievements of the conservatories in Turkey. As a natural result, the vertebrae of the sources that are to be used in this research are the former lecturers of these conservatories.

What is meant by “Contemporary Instrumental Techniques” should be discussed in two different perspectives. First, it should be noted that these techniques are used by composers whose output is, considered to be outside of the contemporary popular genres, generally named as “serious concert music” or “art music”. The second issue is, even though some composers might not accept this categorization for some technical and philosophical reasons, these works are in the wake of Western Music composition tradition.

Nevertheless, composers’ disagreement to this labeling points us to the breaking point of the Western tradition in the early twentieth century. These revolutionary ideas flourished in that period enabled the emanation of the modernist/avant-garde, and postmodernist movements in the later decades. Besides the establishment of these philosophical practices, another fundamental consideration of this breaking point is the “timbral process” that occurred as a basic compositional tool.

This occurring can be pursued as an evolution from Debussy and Mahler’s orchestral innovations to Schoenberg’s “*Klangfarbenmelodie*”, then to Varese’s “Sound masses”, then to Ligeti’s “Microcanons”, then to Scelsi’s “Yoga of Sound” then to the French and Romanian branches of “Spectral Music”. Even though many different approaches exist in this evolution, one basic perception remains the same: Instrumentation is no longer a mere adaptation of harmonic or contrapuntal expressions. Composers seek for new applications that extend the abilities of instruments in order to create sonic explorations. As a result, instrumentation became a boundless research area for musicians.

In this work the “application of contemporary instrumental techniques” means to investigate the capabilities and the characteristics of these particular instruments in order to create access to updated musical approaches. However, as it is comprehended during the investigations of this dissertation, Turkish music performers are not accustomed to apply most of the conventional written musical indications in their performances. In their academic studies and professional performances, reading music is only associated with pitch and rhythmic determination. As a result of this condition in order to create access to updated musical approaches not only the novel extended techniques but also the basic conventional musical indications are analyzed and discussed in this research.

1.2 The Objective of the Thesis

The purpose of this study can be explained by the six different considerations below.

- 1- To contribute to the formation of the common terminology that will enrich the communication between the contemporary music composers and the Traditional Turkish Music composers and the performers. This communication will strengthen composers’ relation with the tradition in order to create access to unique artistic formations.
- 2- To determine the characteristics and the possibilities of the Turkish Music instruments.
- 3- To create a source that will provide comprehension of these determinations by the composers and musicologists
- 4- To determine the appropriate notation system for the application of the contemporary techniques to the Turkish Music instruments that will be approved by both the contemporary music composers and the traditional Turkish Music performers.
- 5- To propose timbral and textural novelties in contemporary art music by using the characteristics of Turkish Music instruments.

1.3 The Methods of the Research

The main methodology of this dissertation can mainly be considered as a practice study. The research and the analyses are conducted according to the reactions of the Turkish music performers; in this case the conservatory instructors, to the musical examples that demonstrate the application of contemporary techniques to their instruments. In this research I've worked with Nermin Kaygusuz, Ayşegül Kostak , Ali Tüfekçi from Istanbul Technical University Turkish Music State Conservatory and Mete Aslan from Haliç University Turkish Music Conservatory throughout the whole research process. The steps that will be followed in this process will be as below:

- 1- The determination of the western correspondent of the Turkish music instruments cited in the main title. Basically, string techniques are applicable to *kemençe*, flute and other woodwind techniques to *ney*, harp techniques to *kanun* and guitar techniques to *ud*.
- 2- The study of the techniques of the correspondent instruments and the adaptation to Turkish music instruments.
- 3- Composing etudes that demonstrate this adaptation.
- 4- Oral explanation of the etudes to the performers. This explanation includes the details of both the techniques and the notation.
- 5- Consideration of the other techniques offered by the performers. This means the techniques that are not present in the western literature yet applicable to “contemporary” perspective.
- 6- The correction, edition, elimination and addition of etudes according to performers’ comments.
- 7- Verification of the notation and the terminology.
- 8- Recordings of the etudes
- 9- Written review of the results
- 10- Composing solo pieces reflecting the results of the above study. Through these solo works the performers’ perception on the project is developed.
- 11- Composing other combinations - duos, trios, quartets- to experiment the different instrumental and timbral integrations.

12- Recording these pieces

Method of this research, as explained above, is a prototype application of uncustomary contemporary instrumental techniques to Turkish music instruments rather than a study of traditional performance characteristics. The reason for this situation can be comprehended due to the conventions explained in the following sections.

1.4 Explanations on the Conventions of the Turkish music Performers

Western notation system started to be used in Turkish music education system only after the beginning of the twentieth century. During the first two decades of twentieth century at institutions like *Dariüşşafaka*, *Dar-ül Feyz-i Musiki Cemiyeti*, *Dariüelhan* the western notation system were used along with the traditional “*meşk*” system (Behar 1992: 73-75). Until this period, composers and music teachers used *meşk* in order to transmit the musical works. In this system no notation is used. The students, or the musicians, learn the pieces through the performance of the teacher, or the composer, depending on the *makam* and *usul* (the rhythmic mode) structure of the work.

Even though the western music notation is used as a fundamental method at the Turkish music conservatories today, the traces of the *meşk* tradition are still present. Notation is mostly used for only the pitch and the rhythmic determinations. Other parameters -dynamics, articulations, timbral, rhythmic considerations -of musical performance are almost never indicated in music. Even if the players are accustomed to perform such expressions; they are not used to interpret them from notation.

As few exceptions to this situation, some indications are standardized by conservatory lecturers like the legato slurs in *kemençe* notation by Cüneyd Orhon and the indication of unplucked notes under slur in *ud* playing by Mutlu Torun and the *fiske* notation for *kanun* created by Ruhi Ayangil. However, notation of such techniques is very rarely used even though the techniques are frequently used.

During the research process of this dissertation, the performers are asked to interpret all etudes from notation due to the objective mentioned above: “To contribute to the formation of the common terminology that will enrich the communication between the contemporary music composers and the Traditional Turkish Music composers

and the performers. This communication will strengthen composers' relation with the tradition in order to create access to unique artistic formations".

1.5 Explanations on Some Characteristics of the Instruments

The instruments that belong to the Turkish courtly or sacred music tradition, including this dissertation's subject: *ney*, *kanun*, *kemençe* and *ud*, are quiet instruments. Their sound can never get as loud or as powerful as western orchestral instruments. Composers should acknowledge this characteristic; consequently not expect powerful *fortissimos* from these instruments (neither as soloist nor as an ensemble). There are three possible reasons for this situation:

- 1- Not until the twentieth century these instruments have rarely been used in public concerts. The performances have mostly occurred in courtly or religious chamber situations (Behar 1992: 120).
- 2- The manners of Turkish music cannot be considered separately from the traditions of Islamic philosophy and arts. These traditions can be generalized by their search for "absolute beauty which is impossible to be captured. If it is captured, this transcendent entity discontinues being a subject of art. Absoluteness is not expressive" (Ayvazoğlu 1989: 89). In this perspective, extremely contrasting dynamic changes that depict the physiological expression of the individual are not employed.
- 3- Related to these philosophical considerations, as the individual expression has not centralized, the virtuosity in performance did not evolve. The focus in performance is to achieve the accurate intonation- due to the *makam* changes- and rhythmic interpretation-due to the rhythmic mode- in order to bring out the main melodic line precisely (Behar 1992: 87).

1.6 Lack of Idiomatic Thinking in Turkish Music

1.6.1 Usage of Turkish Instruments in Tradition

As mentioned above, in Turkish music tradition the most important goal for a performer is to reveal the single melodic line. During a performance individual characteristics of different instruments are only realized through discrete ornamental approaches in the heterophonic texture. Other than that, in this musical approach idiomatic thinking does not take place. In the performance of the single melodic line different instruments do not have separate functions. Yet all instruments are searching for the same common accuracy of intonation and rhythmic interpretation while the individual characteristics melt into a unified timbre.

1.6.2 Usage of Turkish Instruments in Contemporary Works

In Contemporary art music Turkish instruments are only used in ensembles that include Turkish Music instruments along with western instruments. There are two main categories in this approach:

- 1- To present the Turkish instrument as a soloist accompanied by a western orchestra, as in Ferit Alnar's *Kanun* Concerto
- 2- To include Turkish instruments in a western chamber ensemble as in Hasan Uçarsu's "Eski İstanbul'un arka sokaklarında" for *kanun*, cello, clarinet, harp and percussion

In the examples of both categories Turkish music instruments are treated idiomatically. However, this idiomatic writing is limited and usually inclines to a hierarchical juxtaposition of western and Turkish music instruments in an ensemble rather than integration. This hierarchy depends on the difference of the historical evolution of instruments. Western Music instruments have about a 350 year old literature of idiomatic writing while the Turkish music instruments do not have any idiomatic tradition. This difference automatically creates a hierarchy in the composer's perception. Apart from this perception, because of the lack of idiomatic literature and the lack of systematic instrumental studies, composers have clearly a more established perspective for western instruments. Their knowledge and vision of Turkish music instruments depend on assumptions or personal expressions. In this case the Turkish instruments function either as an extension that alters or amplifies

the western instruments or as a soloist that only provides a distinct color against the established, even the experimental suggestions established, accessories of the western orchestra.

1.7 The Propositions for the Establishment of Idiomatic Literature

- 1- The “Report of the Research” section of this dissertation- including etudes, recordings of the performances of the etudes and the written explanations on the experiences and observations – is a proposition of a systematic instrumental study.
- 2- The musical works presented in the appendix is a collection of short pieces under the common “*Hat*” title. The 16 hat pieces present every possible combination that the four instruments subject to this thesis can produce: four solo, six duo, four trio and two quartets.

These pieces are timbral etudes to demonstrate the characteristics of these four instruments in different combinations beside the sonic integrations with each other.

I would like to emphasize that the “*hat*” collection include pieces that employ only Turkish music instruments. This concept gives way to a unique establishment of idiomatic thinking for these instruments for two reasons

- 1- Both the composer’s and the performers’ perception is detached from the western hierarchy
- 2- The backbone of pieces are structured around *makam* music, a musical environment that the player’s are familiar with, so that musicians concentrate the following novel situations:
 - a- Interpreting musical expression from notation
 - b- Playing in an ensemble setting that they perform separate parts from each other

1.8 Explanations on the Turkish Music Terminology

During the compositional process of the etudes, which are mentioned above in the “Methods of the Research Section”, it had been essential to consider certain indications of the Turkish music terminology. These indications can be classified into two groups: Microtonal indications and transposition.

1.8.1 Microtonal indications

Microtonality is a relative term that can only be used in reference to a certain tuning system. Turkish Music tuning system contains microtonal pitches in reference to equal temperament. The notation system which includes these microtonal indications is created by Hüseyin Saadettin Arel and Suphi Ezgi during 1940’s and standardized after the establishment of the Turkish Music State Conservatory in 1976.

In Turkish music system the microtonal indications are determined by nine equal divisions of a major second. Each of these equal divisions is called as a “*koma*”. As in equal temperament system the size of a major second (a whole tone) is 200 cents, each of these *komas* are approximately $(200/9= 22.2)$ 22 cents.

In this system, the flat \flat and the sharp \sharp signs of the conventional Western notation system are being used. However despite the Western music system, these signs correspond to different pitch sizes in the Turkish music system. In Western music notation flat and sharp are in equal size that divides the major second interval into two equal semitones. In the Turkish music system, flat is larger than the sharp. The flat sign determines five *komas* where the sharp determines four:

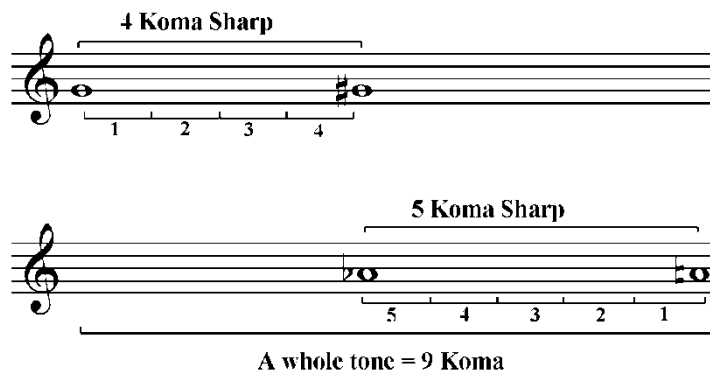


Figure 1.1: Placement of sharp and flat in Turkish Music system

When composers are writing for Turkish music instruments in a non-traditional context, they should explain with a composer’s note whether their flat \flat and the

sharp \sharp signs determine the western pitch indication or the Turkish music system indication. In the Turkish music notation system a four *koma* flat is denoted with a \flat symbol.

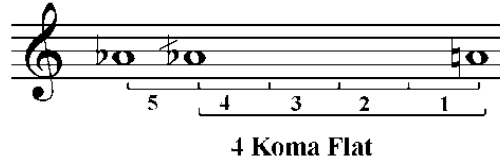


Figure 1.2: 4 *Koma* flat in Turkish Music system

Eight *koma* flat is indicated with a \flat symbol.

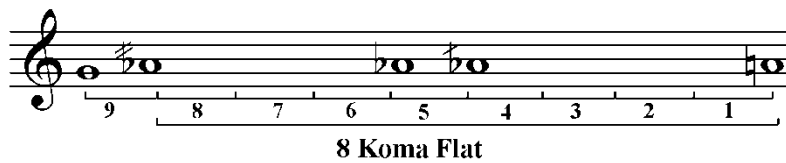


Figure 1.3: 8 *Koma* flat in Turkish Music system

One *koma* flat is denoted with a \flat symbol.

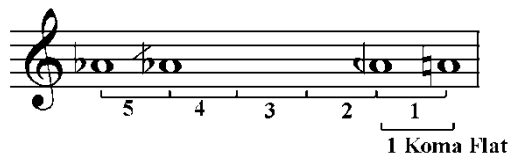


Figure 1.4: 1 *Koma* flat in Turkish Music system

The same symbol is used by many twentieth century western composers in order to indicate the 1/4 of a whole tone (in other words the quarter tone flat) (Read 1990: 17). A quarter tone ($200/4=50$ cents) is very different than a Turkish music *koma* ($200/9= 22.2$ cents). In order to avoid any confusion, composers should explain this symbol's correspondence in their music with a composer's note when they are composing for Turkish music instruments.

A very similar confusion can occur in the indication of the one *koma* and eight *koma* sharp symbols. To indicate the one *koma* sharp, Turkish Music system uses the \sharp symbol, which is used as the quarter tone sharp in the western music notation system (Read 1990: 17).

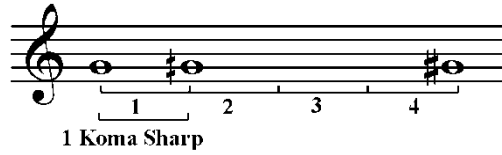


Figure 1.5: 1 *Koma* sharp in Turkish Music system

In order to indicate eight *koma* sharp the \sharp symbol is used. The same symbol is used in the western music notation system for a $3/4$ of a whole tone (Read 1990: 18).

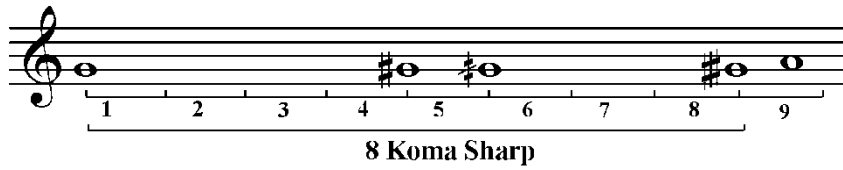


Figure 1.6: 8 *Koma* sharp in Turkish Music system

In Turkish music sytem the \sharp symbol is used to determine the 5 *koma* sharp.

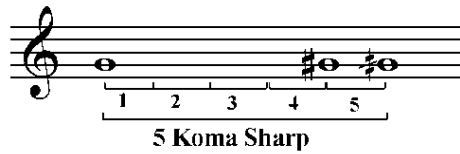


Figure 1.7: 5 *Koma* sharp in Turkish Music system

The placements of these symbols in a whole tone are demonstrated below:

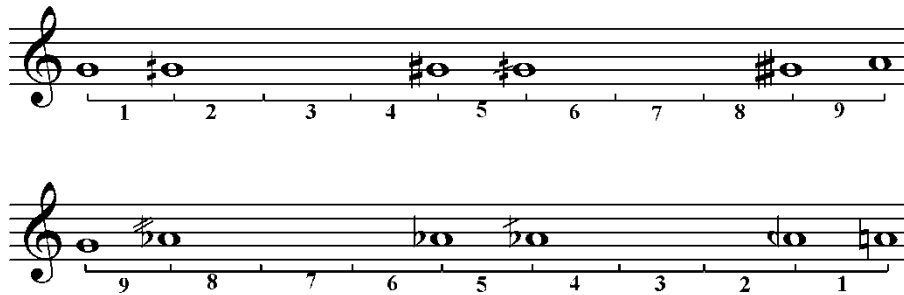






Figure 1.8: Correspondences of sharps and flats in Turkish music system

All the microtonal indications above are considered as part of the conventional Turkish music notation. It would be useful to study the correspondences of the same notes in the modern western notation. In the western music system these pitch indications do not have exact equivalents. However, by using approximation the appropriate representatives can be proposed. As mentioned above, a Turkish *koma* is









the $\frac{1}{9}$ of a whole tone which is $200/9 = 22.2$ cents. In the western system, as the quarter tone divisions are more commonly used, the below symbols can be used to denote the $\frac{1}{8}$ of a tone (in other terms the half of a quarter tone):

Table 1.1: Possible indications for $\frac{1}{8}$ of a tone in contemporary western music

	1/8 of a tone higher
	1/8 of a tone higher
	1/8 of a tone lower
	1/8 of a tone lower

The $\frac{1}{8}$ of a whole tone is $200/8 = 25$ cents. The three cents difference, as is unrecognizable by human perception, between the $\frac{1}{9}$ and $\frac{1}{8}$ of a tone can be approximated. Therefore these symbols can be used as equivalents of the Turkish symbols as shown in the below table:

Table 1.2: Correspondences of Turkish music symbols

Conventional Turkish Music Symbol	Equivalent in western notation
	
	
	
	

When analyzing this table one might get confused as the sharp symbol (#) is used to denote a pitch that is about 22 cents lower than the conventional western indication. Certainly, such situations should be clarified by the composer by written explanations.

At this point we should categorize the different situations that the Turkish music instruments could possibly be used, in order to determine which microtonal indications are convenient according to those categories. Turkish instruments are usually used in two different categories:

- 1- Together with western instruments: In this category composers use Turkish instruments within western ensembles. In this situation three different approach for microtonal notation can be followed
 - a- To use conventional Turkish Music symbols for all the instruments
 - b- To use western equivalents of the Turkish system for all the instruments
 - c- To use conventional Turkish Music symbols for the Turkish music instruments and western equivalents of the Turkish system for the western instruments.

In all this three different approaches it is necessary to explain the meanings of all these symbols in detail in the composer's notes.

- 2- To use an ensemble that includes only Turkish Music instruments: All the etudes and the musical works that are included in this dissertation belong to this category.

Other than the traditional Turkish Music performances, composing music for an ensemble of only Turkish music instruments are very rare yet this work can be seen as a prototype. Since the performers of these instruments are accustomed to reading conventional Turkish Music symbols, in this work only these symbols are used in notation.

1.8.2 Transposition

The overall Turkish music notation is transposed according to the western system. It is transposed up a perfect fourth. *Rast makam* is the fundamental *makam* in the Turkish music theory. *Rast* as a musical note - the *finalis* (*durak*) of *rast makam* - corresponds to D4 in western music notation. In Turkish music system it is notated as G4 in Turkish music notation system.

Most Turkish music performers, who have received the conservatory training, can read music written in western transposition. Nevertheless, this is not a standardized convention. Composers should always ask the performers that they are working with if they need the Turkish transposition. In this work Turkish transposition has never been used. All the musical material in this thesis is notated in western notation.

2. REPORT OF THE RESEARCH

In this section the results of the investigations will be explained for each instrument individually in the order of *kemençe*, *ud*, *kanun* and *ney*. These instruments are the fundamental instruments of the Turkish classical music in the contemporary performance. Each represents a different branch of Turkish instruments since *kemençe* is a bowed string, *ud* is a plucked string lute, *kanun* is a plucked string zither and the *ney* is a woodwind. The explanations are presented along with audio examples. Each individual report starts with the description of the historical background and constitutional attributes of the instrument.

2.1 *Kemençe*

2.1.1 Historical Background

Kemençe is a bowed string instrument. The etymology of the word is Persian that means a small bow or a small instrument played with a bow (URL-1). Since the meaning of the word has a much generalized meaning, it inclines to confusion about the historical background of this instrument. According to the writings of the 10th century Arab historian El-Mesudi, the bowed version of the earliest ancient string instruments were called “*lira*” in the Byzantian world and “*rebab*” in the Islamic world which are described as almost the same instrument (URL-1). However today, what is called *kemençe* in Turkey is actually the “*lira*” rather than *rebab*. This difference is evident since *rebab* is a spike-fiddle, and the attributes contemporary Turkish *kemençe* corresponds to the attributes of *lira* as described by Curt Sachs:

Pear-shape with a shallow, slightly bulging body, without a distinct neck, ending in a disk or box with three rear pegs. This instrument is still known as *kamanga rumi* or Byzantian fiddle in the near east and as *lira* in Balkans (mainly in Greece, Bulgaria, Serbia, Bosnia)” (Sachs 1940: 275).

During the 16th century, spike-fiddle instruments – *kemançe* (*rebab*) or *keman* - were the only bowed instruments that were used in the Ottoman Courts (Feldman 1996: 111-113). Starting from the mid-18th century, European viola d’amore occurs along with these traditional spike-fiddles (Feldman, 1996: 129). *Kemençe* started to be a part of the ensembles in the Ottoman Courts only after 1850 (URL-2). In the early 20th century, it became the major bowed string instrument of Turkish classical music.

2.1.2 Constitutional Attributes

There are mainly two different kinds of *kemençe* in Turkey. One is a folk instrument that is mostly found in the Black Sea region of the country. This instrument has a narrow (7-10 cm width) and long (about 60 cm, length) shape with three strings. The other type is called as the “classical *kemençe*” or the “*armudi kemençe*” because of its shape that resembles a pear (as the Turkish word *armut* means pear).

The authentic classical *kemençe* has three strings. After the establishment of the Turkish Music State Conservatory in 1976, two faculty members of this institution, Cafer Açın and Cüneyd Orhon searched for constitutional changes for *kemençe* in order to solve the inconveniences of the classical *kemençe*. As a result of their researches, they came up with three important changes in the structure of *kemençe*:

- 1-They added a fingerboard to the instrument
- 2- They equalized the string lengths
- 3- They added a new string, in the higher register, to the instrument as the fourth string

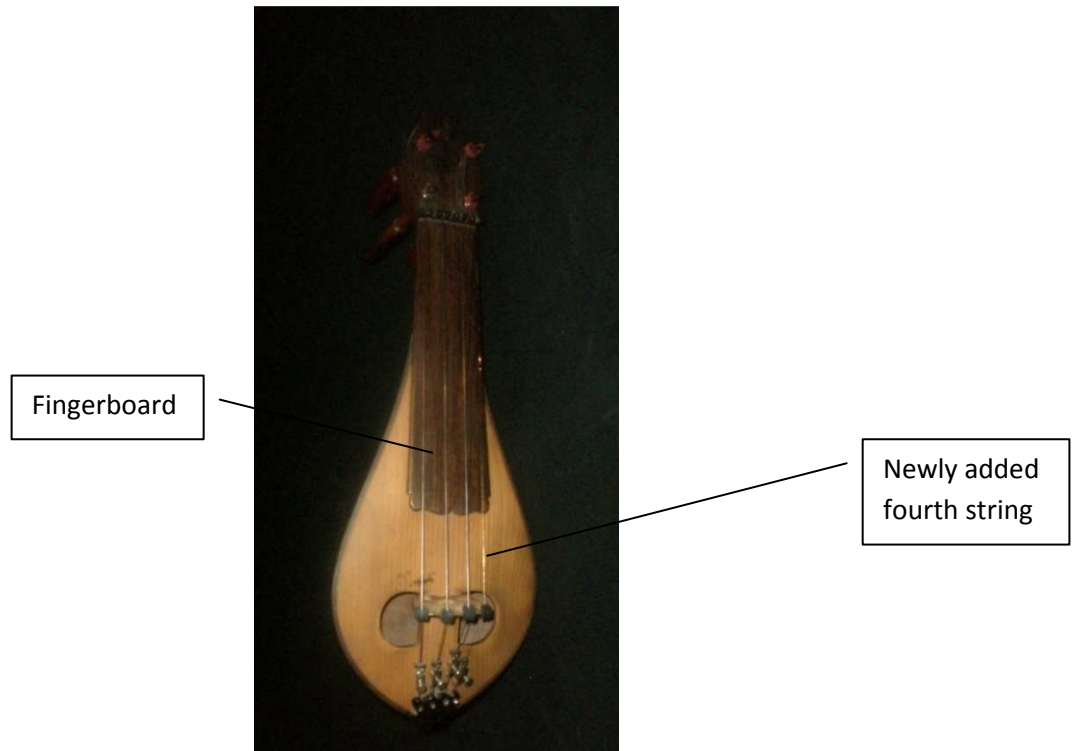


Figure 2.1: Main differences between three and four string *kemençe*

Even though important changes take place, some fundamental attributes are preserved

- 1- The pitches are determined by the touch of the fingernails, except the thumb that is used to hold the instrument, of the left hand



Figure 2.2: Touch of the fingernails to the string

- 2- The bow is manipulated by the right hand



Figure 2.3: *Kemançe* Bow

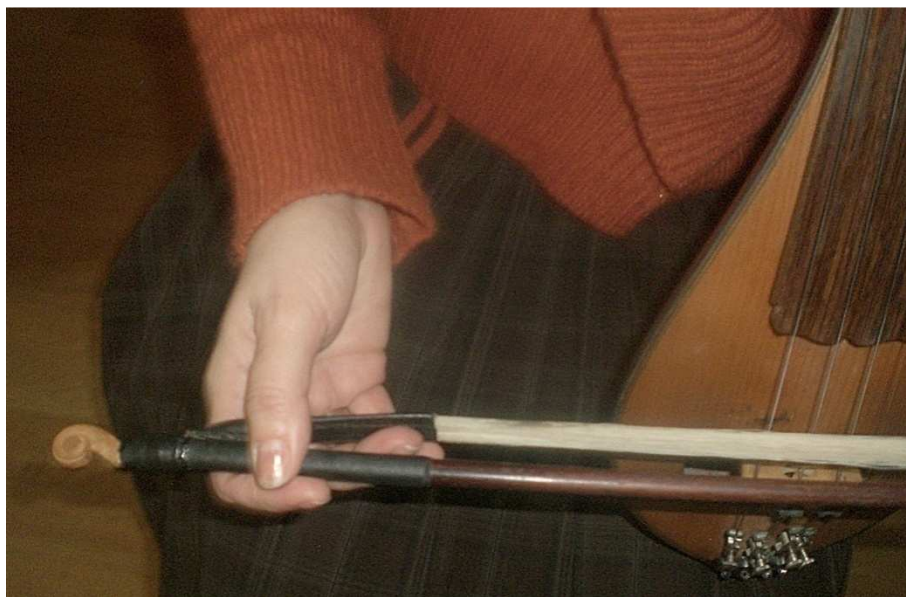


Figure 2.4: Bow manipulated by the right hand

- 3- The instrument is placed on the performer's upper leg. The tuning pegs lean on the performer's chest.



Figure 2.5: Performer playing *kemençe*

In 1976, the four string *kemençe* education is accepted by the conservatory's administration board as the part of the curriculum (Kaygusuz 2005) and still is today. Since, the techniques that are analyzed are more accessible to the four string *kemençe* rather than the traditional three stringed version, this dissertation focuses on four string *kemençe*.

Kemençe has 40-41 cm length and maximum width of 14-15 cm. It has four main sections: body, neck, fingerboard and tuning pegs.

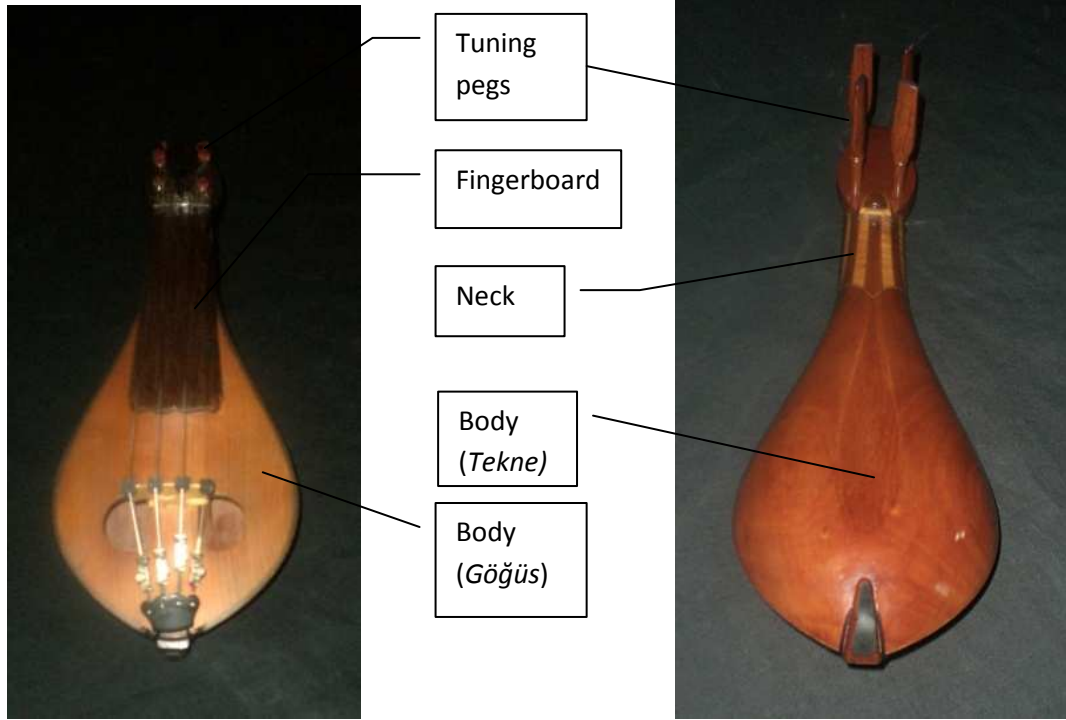


Figure 2.6: Main sections of *kemençe*

The front part of the body is called the *göğüs* (that means chest in Turkish) and the back part is called the *tekne* (that means trough in Turkish). *Göğüs* functions as a sound board. There are two equal sized sound holes on the two opposite edges of the bridge. The string holder is placed at the lower end of the body. The fingerboard is placed at the frontal side of the neck and continues along through the *göğüs*.

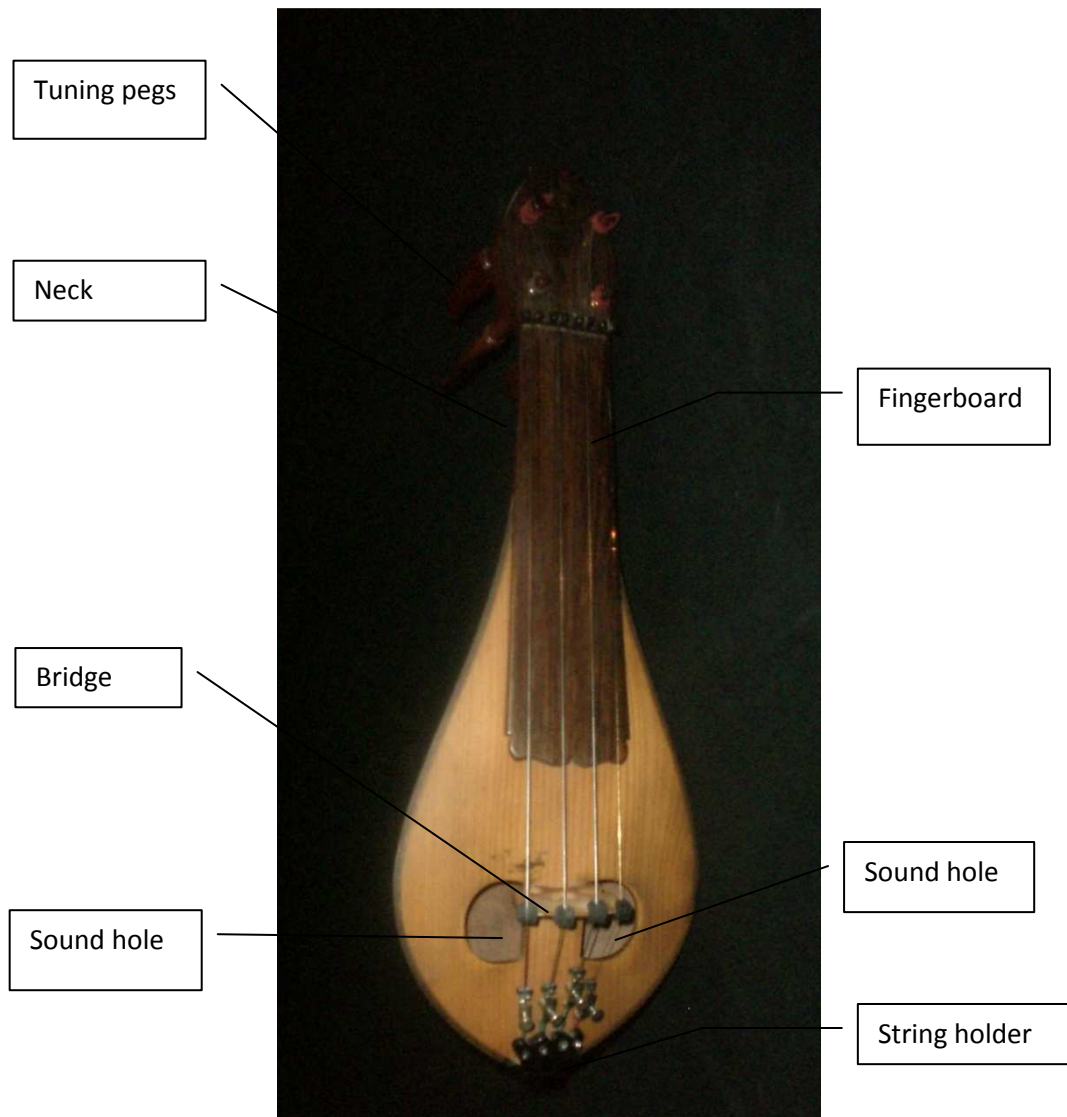


Figure 2.7: The front part of the *kemençe* body

Each string is tuned with its individual pegs:

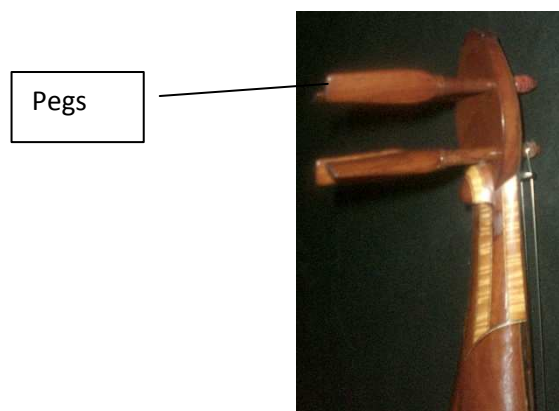


Figure 2.8: Tuning pegs of *kemençe*

The fine tuners are placed between the bridge and the string holder



Figure 2.9: Fine Tuning of *kemençe*

A standard *kemençe* bow has about 55-60 cm length.

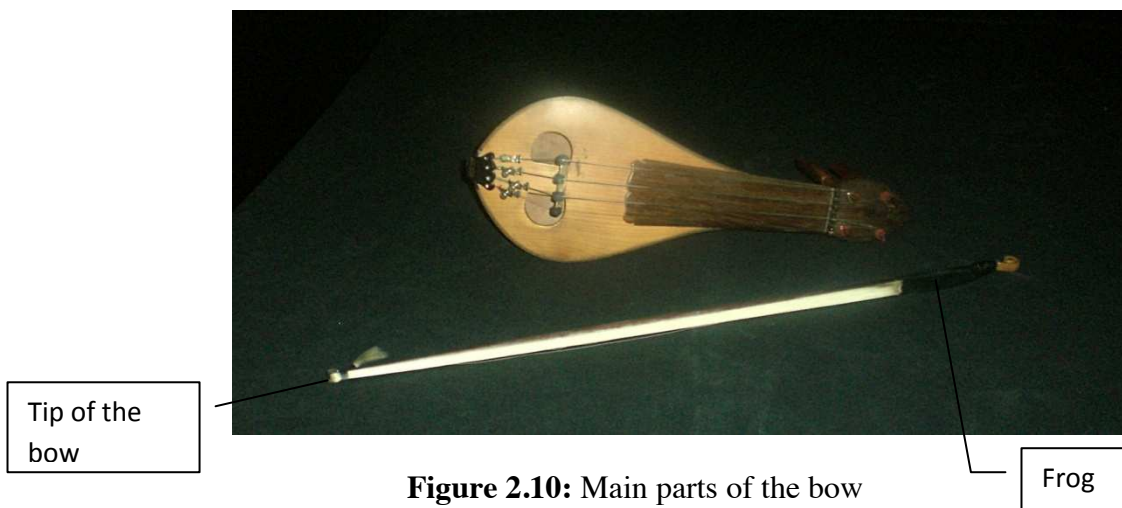


Figure 2.10: Main parts of the bow

At the tip of the bow there is a metal piece which prevents the hair from being dispersed.



Figure 2.11: Metal piece at the tip of the kemençe

2.1.3 The Sound Range and Its Registers

The open strings of *kemençe* are:

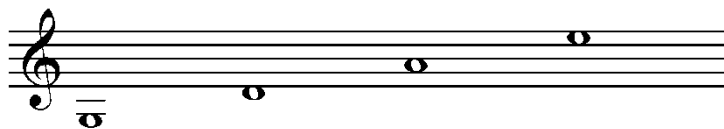


Figure 2.12: Open strings of *kemençe*

As it will be explained in more detail below, the range of each string is an octave and approximately a fifth. The first octave of each string can be seen as a practical range. Above this first octave the positions get harder to play. This difficulty is not emanated from the technical difficulty of these positions, as shown in the below picture, but it is because of the performer's unfamiliarity with such registers.

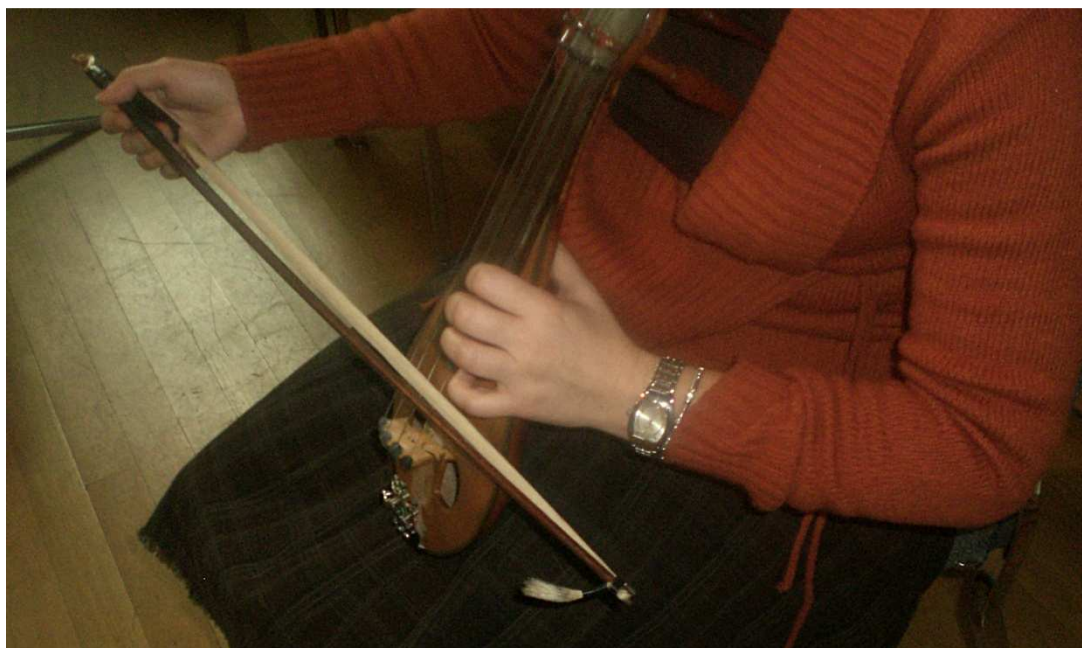


Figure 2.13: Higher Positions

Especially the notes above the octave and a perfect fourth can be seen as an extreme range. Under these considerations the overall *kemençe* sound range is:

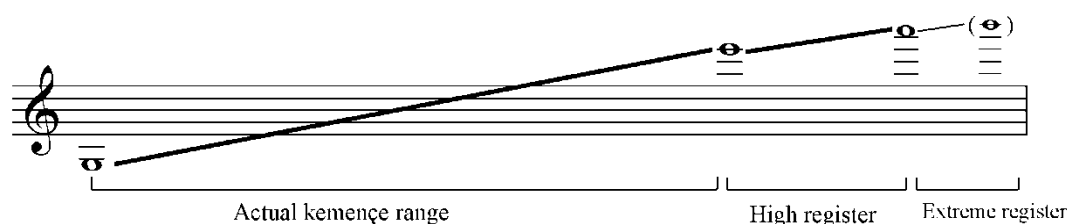


Figure 2.14: Overall *kemençe* sound range

The figure below shows us the cumulative sound range of all four strings. As the highest string is the E string (open string E5), the high and extreme registers of this string is also considered as the high and extreme register of the overall *kemençe* range. This range can be divided into three registers: Actual *kemençe* range (from G3 to E6), high register (from E6 to A6) and the extreme register (from A6 to B6). A *kemençe* player can actually play all the notes from G3 to B6. The reason that the notes in the high register and extreme register are not included in the actual *kemençe* range is about the characteristics of the sound range of an individual string besides the difficulties of the higher positions. Each four strings of *kemençe* have a sound range of an octave plus a perfect fourth, hardly a perfect fifth:

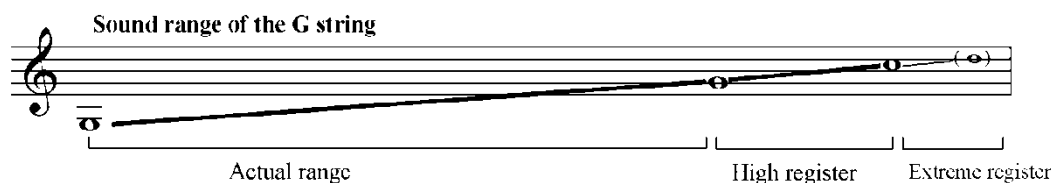


Figure 2.15: Sound Range of the G string

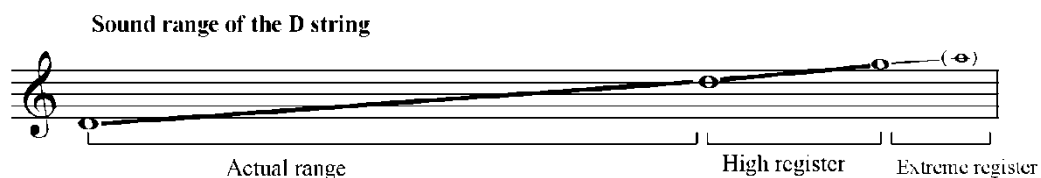


Figure 2.16: Sound Range of the D string

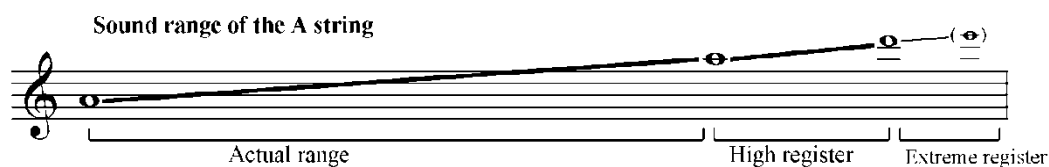


Figure 2.17: Sound Range of the A string

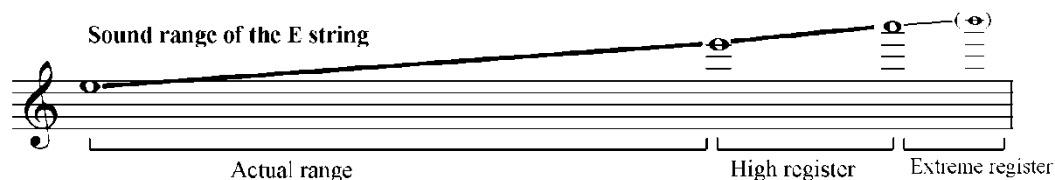


Figure 2.18: Sound Range of the E string

The actual registers of each string are the registers that the players can perform all types of dynamics (the details will be explained in the “Dynamic Range” section), have absolute control on the intonation, agility and articulation. In the high register, all kinds of dynamics are still available however, because of the difficulty of the playing position the control on the intonation, agility and articulation becomes less absolute. In the extreme register not only to control the intonation, agility and articulation becomes extremely difficult but also to perform the strong dynamics (especially *fortes*) are unavailable.

The notes of the high and extreme register of the G, D and A strings can be played in the actual range of other strings but the high and extreme registers of the E string can

only be played on the E string. This makes the register from E6 to A6 to be categorized as the “High Register” and A6 to B6 as the “Extreme Register” of the overall *kemençe* sound range.

2.1.4 Finger Positions

There are eight positions in each string. The first six positions are placed in the “Actual Range”, the seventh takes place in the “Higher Register” and the last eighth position is in the “Extreme Range” of each string. Every position is determined by the placement of the four fingers – forefinger, middle finger, ring finger and the pinky – on the string in order to play the natural notes in succession. In order to play the sharps or flats, or any other microtonal indications, the related finger to the related note moves back or forward on the string. For example in order to play Bb3 the middle finger in the first position of the G string moves back from its original position. Likewise, in order to play C#5, the ring finger in the fourth position of the D string moves forward from its original position. Below is given all the positions of all strings:

Table 2.1: Finger Positions

	G String				D String				A String				E String			
	fore finger	middle finger	ring finger	pinky	fore finger	middle finger	ring finger	pinky	fore finger	middle finger	ring finger	pinky	fore finger	middle finger	ring finger	pinky
I. Position																
II. Position																
III. Position																
IV. Position																
V. Position																
VI. Position																
VII. Position																
VIII. Position																

2.1.5 Dynamic Range

Kemençe has a homogenous dynamic range in the “Actual *Kemençe* Range” and the “High Register” of its overall sound range. Both soft (*niente*, *pianissimo*, *piano*, *mezzopiano*) and strong dynamics (*mezzoforte*, *forte*) are equally available at these registers (as it is mentioned in the “Sound Range and Its Registers” section and will be explained in the “Individual Strings Section” in the extreme register, the stronger dynamics are not available). However compared to the western orchestral instruments, the overall dynamic range of *kemençe* is limited at the strong dynamics side. A *fortissimo* of western orchestral instruments, (such as violin, cello) is not available on *kemençe*. Strongest dynamic that *kemençe* produces corresponds to *mezzoforte* or barely *forte* of a violin or any other western instrument. Nevertheless, this situation is current for all Turkish music instruments; *kemençe* can even be considered as one of the quietest instrument among the Turkish music instruments. At this point when writing for *kemençe*, composers’ should decide between the following different approaches:

- 1- To consider western orchestral instruments’ dynamic range as a universal standard thus eliminate all dynamics that are stronger than *forte* in *kemençe* writing. This choice obviously turns into an obligation for ensembles that combines *kemençe* with western instruments.
- 2- To use *fortissimo* and other stronger dynamics for *kemençe* in order to increase the intensity level in performance. This approach might require a composer’s note to explain that these *fortissimos* are not going to be as loud as one would expect from a western instrument but they are used in notation in order to achieve greater intensity in performance.
- 3- To avoid the western standard and create a relative dynamic indication system according to the *kemençe*’s capacity.

Another very important issue that the composers should consider is the relation between the *forte* playing on *kemençe* and intonation. As the performer increases the dynamic level, intonation tends to get sharper. The reason for this problem goes beyond the player’s control of the pitch on the fingerboard. In Turkey *kemençe* strings are not being produced and performers use violin or cello strings instead. Since these violin and cello strings are not designed according to *kemençe*’s body

constitution, a crescendo that intends to reach, or go beyond *forte* even on an open string would cause a deformation of intonation.

In Figure 2.19, a crescendo from a *pianissimo* to *forte* and a decrescendo to *niente*, is demonstrated. Here, the *forte* is performed as the strongest dynamic that can be played on *kemençe*.

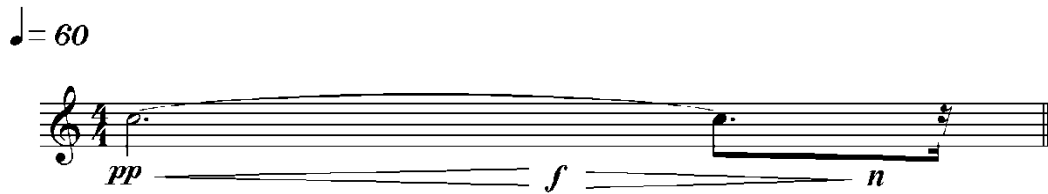


Figure 2.19: Dynamic range of *kemençe* (CD 1, track 1)

In figure 2.20 displays the non-vibrato version of the previous example. In this case, that the performer avoids vibrato, the *forte* is even more vitiated.

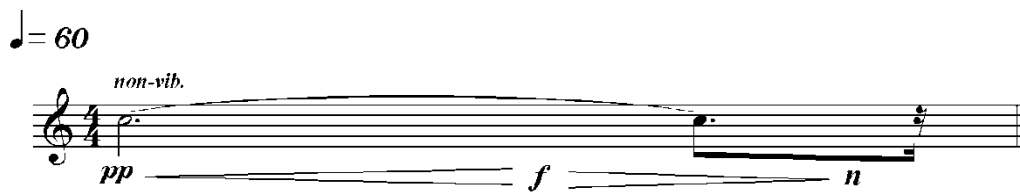


Figure 2.20: Dynamic range of *kemençe* under non-vibrato (CD 1, track 2)

In this relatively limited dynamic range, all different type of accents is available. Accents on *kemençe* will be examined in more detail in the “Articulations” section. At this point, we can analyze sudden dynamic changes. In figure 2.21a *fortepiano* performed on *kemençe* is exemplified.

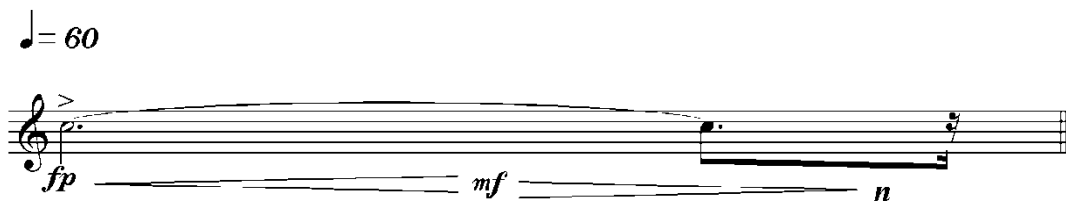


Figure 2.21: Sudden dynamic changes (CD 1, track 3)

Figure 2.22 displays even more sudden changes between contrasting dynamics from *sforzando* to an immediate *piano subito* then followed by a *crescendo* to *forte* and *decrescendo* to *niente*.

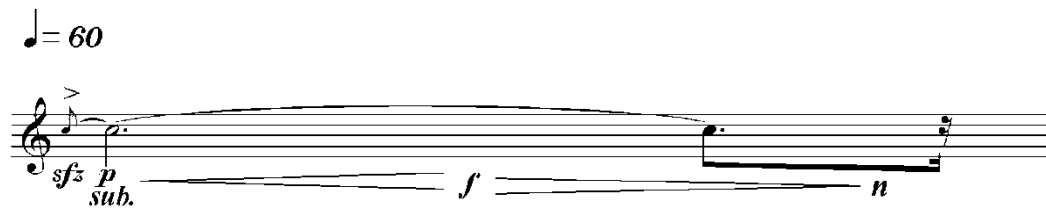


Figure 2.22: Sudden changes of extremely contrasting dynamics (CD 1, track 4)

Performers are able to control these kinds of sudden changes in many different situations. In Figure 2.23, sudden dynamic changes in a tremolo passage are demonstrated:

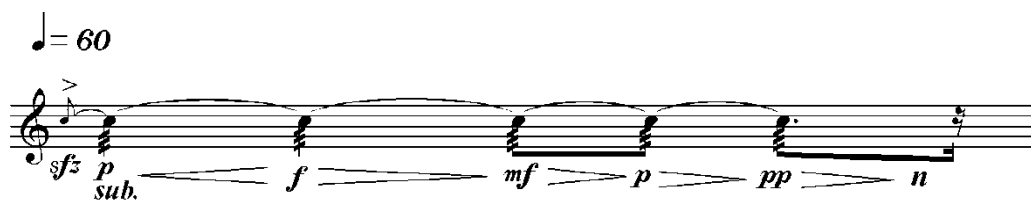


Figure 2.23: Dynamic changes along with tremolo (CD 1, track 5)

2.1.6 Characteristics of Individual Strings

The following examples from 6 to 14 display the attributes of individual strings. In order to examine these characteristics, first a given passage is played on only one string. Then the same passage is played by using adjacent strings. As a different type of exercise (for example figure 2.26 and 2.27), another passage is played on both consecutive strings in order to show the difference of the *piano* and *forte* dynamics on these different strings. In the first type of exercise where the performer is playing the passage on only one string, one would automatically use the High and Extreme Registers where his/ her control on the intonation, articulation and agility gets weaker.

♩ = 65



Figure 2.24: Different registers of the G string (CD 1, track 6)

In example shown in figure 2.25 the same passage is performed by using other strings:

♩ = 65



Figure 2.25: Timbre difference between the G string and upper strings
(CD 1, track 7)

As it is heard in the above examples, the notes played in the Higher and Extreme Register of a string, rather than the same note played in the Actual Range of a higher string, sounds darker and more intense. This is evident in the difference of the third and fourth measures of the examples shown in figure 2.24 and 2.25. In figure 2.24 since the whole passage is played on the G string, the notes of the fourth measure correspond to the High Register of that string, thus they sound darker and more intense, besides the performer's control on intonation gets weaker. In figure 2.25 those same notes played in the Actual Range of the D string then they sound brighter. In example shown in figure 2.26 the notes that are placed in the Higher Register of the G string is played first in *forte* and then in *piano* dynamic.

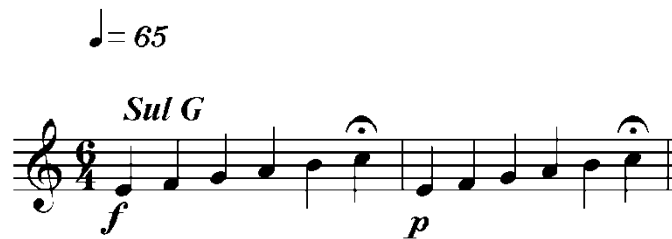


Figure 2.26: Different dynamics in the higher register of the G string (CD 1, track 8)

As it is stated above, stronger dynamics lose their effect for the notes that are higher than the octave of the open string. Especially for the highest note of figure 2.26 (which is C5, a note that belongs to the Extreme register of the G string), it becomes hard for the player to continue to perform the *forte* dynamic. In the figure 2.27 same notes are played on the D string thus, they sound brighter and dynamics are more effective and easier to control.



Figure 2.27: Timbre of different dynamics on G and D strings (CD 1, track 9)

Following examples apply the same type of exercises to higher strings. In figure 2.28, a passage is played only on D string:



Figure 2.28: Different registers of the D string (CD 1, track 10)

And in figure 2.29, same passage is played by also using the adjacent strings:



Figure 2.29: Timbre difference between the D string and upper strings
(CD 1, track 11)

Similar to the differences between examples shown in figures 2.24 and 2.25, the passage shown in figure 2.29 the sound is brighter in the higher notes and dynamic changes are easier to control. One other important point to consider is about the length of the slurs. For especially the High and Extreme Registers, composers should use shorter slurs; otherwise the performers' control on intonation and dynamics gets more difficult. For example rather than the short slurs of the fourth measure of figure 2.28, a long slur like the one shown below could be problematic in that register of the D string.



Figure 2.30: Long slurs in the higher register

In figure 2.31 a passage is performed only on A string, then in figure 2.32 the same passage is performed by using A and E strings. The differences are close to the differences between figures 2.28 and 2.29.

The example shown in the following figure is performed on both A and E strings. This example demonstrates the highest notes of the E string therefore the highest notes of the overall *kemençe* sound range.



Figure 2.35: Different registers of the E string (CD 1, track 16)

- 1- For the sections of the passage that are placed in the High Register of the E string, only short slurs are used in order to make the performance more practical and fluent.
- 2- While the last notes of measure 3 are played, the intensity level increases since those notes belong to the High Register of the E string.
- 3- In the fourth measure while A6 (a note that belongs to the Extreme Register of the E string) is played, the performer cannot continue to perform the same dynamic level, it gets weaker. The dynamic level is only regained gradually as the line descends towards lower notes in the fifth measure.

2.1.7 Agility

Kemençe players, especially for passages that are placed in the Actual Range, are accustomed to play fast passages:

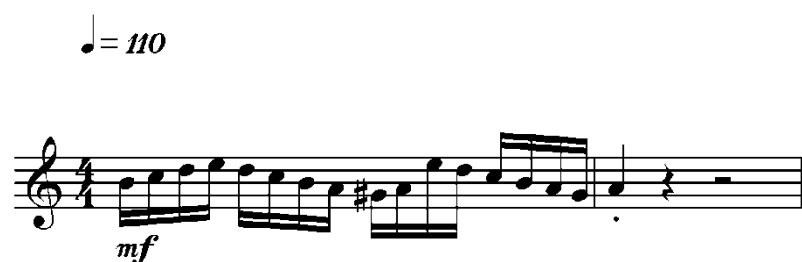


Figure 2.36: A passage that demonstrates the agility of the *kemençe* player
(CD 1, track 17)

Even fast passages with successive leaps:



Figure 2.37: A fast passages with successive leaps (CD 1, track 18)

However, to play fast passages in the higher positions of a string can be harder. For example if the example shown in figure 2.36 was played an octave higher:



Figure 2.38: A fast passages with successive leaps in the higher register

The perfect fifth leap between A5 and E6 would be extremely difficult to play.

2.1.8 Basics of Bowing

2.1.8.1 *Legato* playing and Slurs with Different Lengths

Slurs for *kemençe* are used exactly in the same way as they are used in the western notation for string instruments; whenever a new slur occurs in notation, the performer changes the bowing direction. As it is already mentioned in the “Individual Strings” section, in the Higher and Extreme Registers of an individual string range, shorter slurs are more practical to *kemençe* players. Passages that are in the “Actual Ranges” all kinds of slurs are available:



Figure 2.39: *Legato* passage under irregular slurs (CD 1, track 19)

♩ = 90



Figure 2.40: *Legato* passage under irregular slurs (CD 1, track 20)

However, composers should still be careful about writing very long slurs for *kemençe* as only the softer dynamics are available in this case:

♩ = 90



Figure 2.41: *Legato* passage under very long slurs (CD 1, track 21)

In order to maintain *mezzoforte*, slurs that are used in the following example are more reasonable:

♩ = 90



Figure 2.42: *Legato* passage under long slurs (CD 1, track 22)

The effect of shorter slurs can be heard in the examples shown in figures 2.43 and 2.44.

♩ = 90



Figure 2.43: *Legato* passage under short slurs (CD 1, track 23)



Figure 2.44: *Legato* passage under very short slurs (CD 1, track 24)

Eventually, the following figure demonstrates the *détache* playing that all the notes are played in separate bowing:



Figure 2.45: *Détache* (CD 1, track 25)

At this point, composers should realize the *kemençe* performance practice that if no slurs are used in notation, the passage will be performed as *détache*.

In order to perform a *détache* passage in *piano* dynamic more effectively, the tip of the bow can be used.

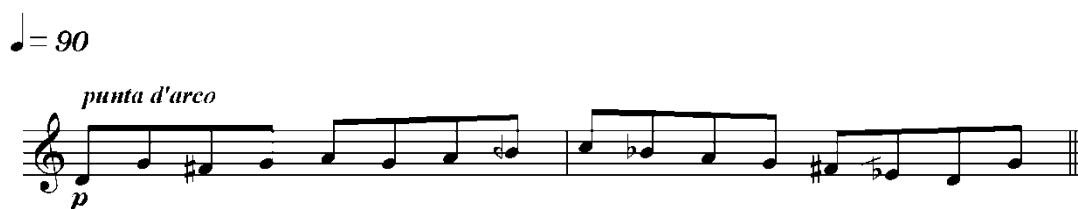


Figure 2.46: Using the tip of the bow (CD 1, track 26)

In order to perform a *détache* passage in *forte* dynamic more effectively, the heel of the bow can be used. This bowing technique that is called as *al tallone* will be discussed in the “Articulations” section.

2.1.8.2 Bowing Directions

The bowing direction symbols are mostly indicated to achieve the particular effects of two different directions. The symbols adapted from the western notation – ▢ for downward bowing and ▽ for upward bowing – are used in *kemençe* notation. All kinds of different dynamics can be performed in both directions. The Example shown

in figure 2.47 displays different dynamics performed successively in two different bowing directions:

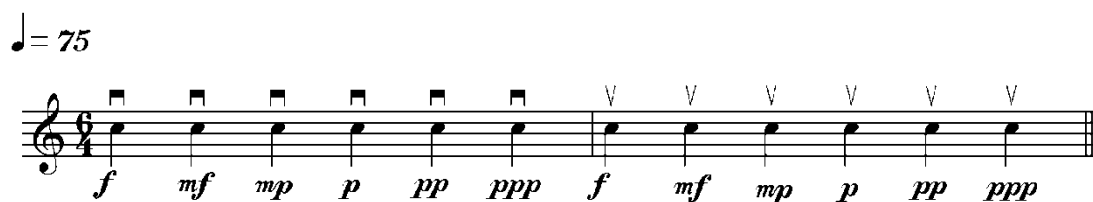


Figure 2.47: Bowing directions (CD 1, track 27)

In a standard *détache* passage the player changes the direction of the bow for every note. Nevertheless, when the same passage is played by using only one bowing direction, the result will be very different. In the following example this difference can be examined in a repeated note passage. In the sections that only one bowing direction is used, the notes sound as more detached from each other.

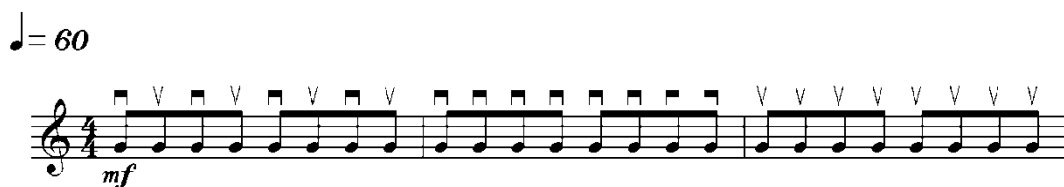


Figure 2.48: Switch between different bow directions (CD 1, track 28)

This discreteness caused by the single direction bowing, induces a more characteristic expression in the High Register:

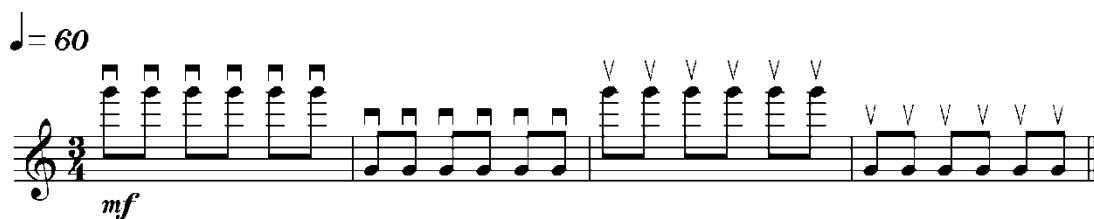


Figure 2.49: Bow directions at different registers (CD 1, track 29)

The following three examples compares the differences between a passage that is played as standard *détache* playing with the same passage played as single direction bowings.

♩ = 90



Figure 2.50: *Détache* playing along with *crescendo* and *decrescendo*
(CD 1, track 30)

♩ = 90



Figure 2.51: *Crescendo* and *Decrescendo* under downward bowing (CD 1, track 31)

♩ = 90

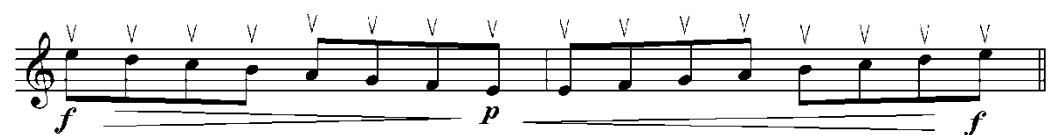


Figure 2.52: *Crescendo* and *Decrescendo* under upward bowing (CD 1, track 32)

Similar to the repeated note examples shown in figure 2.47, 48 and 49, in examples shown in figure 2.51 and 2.52, which the player uses single direction bowing, the notes are obviously more detached compared to the standard *détache* playing in demonstrated in figure 2.50. It is also possible to hear in those examples that large scale *decrescendos* and *crescendos* are perfectly available in all three kinds of different bowings. However, composers should be careful about *decrescendos* and *crescendos* in *portato* bowings rather than *détache* bowings. Even though examples in figures 2.51 and 2.52 uses single direction bowing, they are being considered as *détache* playing because in every note the bowing movement starts from the beginning. In other words on every note a new bowing movement starts. In a *portato* passage, the bowing movement of a note starts from the end of the bowing movement of the previous note. In such kind of playing, very long slurs are not practical. Especially, in a passage that contains both a decrescendo and a crescendo (like in examples shown in figure 2.50, 2.52 and 2.53); they should be placed in separate slurs. To write a passage like below is not practical:



Figure 2.53: *Crescendo* and *Decrescendo* under very long slurs

Rather, it can be played under shorter slurs as in the next example shown in 2.54. In examples shown in figure 2.54 and 2.55, the start of the passage with an upward bow is not related with any technical or musical issue, it could have started with a downward bow as well.

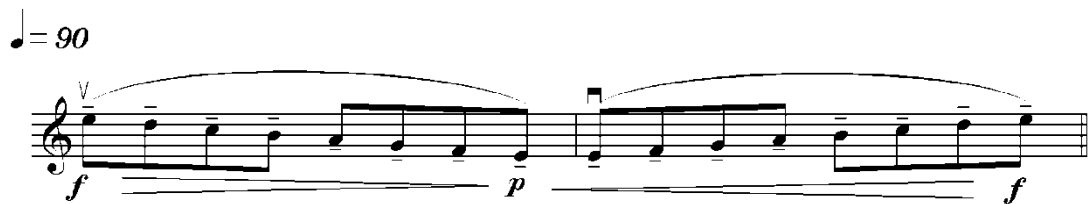


Figure 2.54: Long slurs and specified bowing directions (CD 1, track 33)

The same passage can be played under even shorter slurs as in the following example:

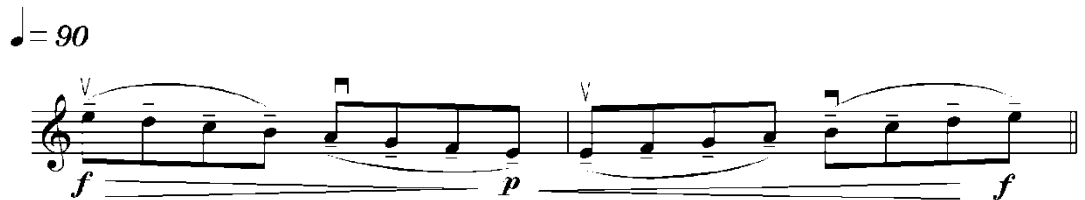


Figure 2.55: Long slurs and specified bowing directions (CD 1, track 34)

For the last two examples above, it is possible to mention that longer slurs -as in figure 2.54- are more effective for decrescendos and shorter slurs -as in figure 2.55- are more effective for crescendos.

2.1.9 Other Articulations

Legato as an articulation in *kemençe* have been examined in the “*Legato* playing and Slurs with Different Lengths” section. In this section the other articulations will be studied. A professional *kemençe* player can specify all kinds of different articulations in his/her performance. The details of different articulations are analyzed below.

2.1.9.1 *Tenuto* and *Portato*

The following three examples the same passage is first played as *tenuto* (Figure 2.56), then as *legato* (Figure 2.57) and then *portato* (Figure 2.58). In the example shown in figure 2.58, repeated notes are added to some parts of the same passage in order to display the characteristics of the *portato* playing.



Figure 2.56: *Tenuto* (CD 1, track 35)



Figure 2.57: Difference between *tenuto* and *legato* (CD 1, track 36)



Figure 2.58: *Portato* (CD 1, track 37)

2.1.9.2 *Staccato* and *Staccatissimo*

The passages shown in 2.59 and 2.60 exemplify staccato and slurred staccato playing in *kemençe*. If the passage does not include any agility problems, *kemençe* can play *staccato* effectively all throughout its sound range. In slurred *staccatos* passages, similar to *portato* playing, dynamic control can be problematic under very long slurs.



Figure 2.59: *Staccato* (CD 1, track 38)



Figure 2.60: *Staccato* under slurs (CD 1, track 39)

In the next example, different interpretations of note duration – *legato*, *tenuto*, *staccato* and *staccatissimo* – are all performed in one passage.



Figure 2.61: *Legato*, *tenuto*, *staccato* and *staccatissimo* (CD 1, track 40)

It is important here to note that among all of these interpretations, *staccatissimo* is the least familiar to *kemençe* players. Both the definition and the notation of *staccatissimo* might require extra explanation in the score.

2.1.9.3 *Marcato* and *Martellato*

As already mentioned in the “Dynamic Range” section, *kemençe* is an instrument that is unable to produce fortissimo dynamic compared to the western orchestral instruments. This situation obviously effects the *marcato* playing. One should never expect powerful accented passages from a *kemençe*. Figure 2.62 a *marcato* passage played by a *kemençe* is exemplified:



Figure 2.62: *Marcato* (CD 1, track 41)

Accents in *kemençe* playing are only effective in *martellato* passages in its very low register (G3 to D4). *Martellato* can be seen as the *staccatissimo* played in the most powerful dynamic of *kemençe*.

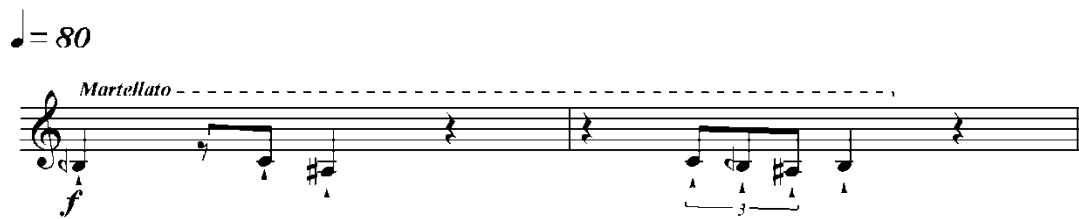


Figure 2.63: *Martellato* (CD 1, track 42)

There is another problem that occurs in *marcato* playing. Since *kemençe* is being played with finger nails, performers cannot prevent the uncontrolled sounds produced by adjacent open strings in accented *forte* passages.

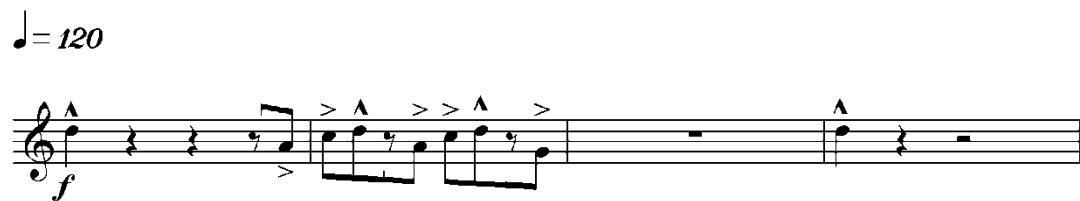


Figure 2.64: Problems in *marcato* (CD 1, track 43)

It is also common to use the heel of the bow (*al tallone*) in *marcato* passages. As one can hear in the example shown in 2.65, this technique almost doesn't make a difference in the sound but it is more practical for performance.

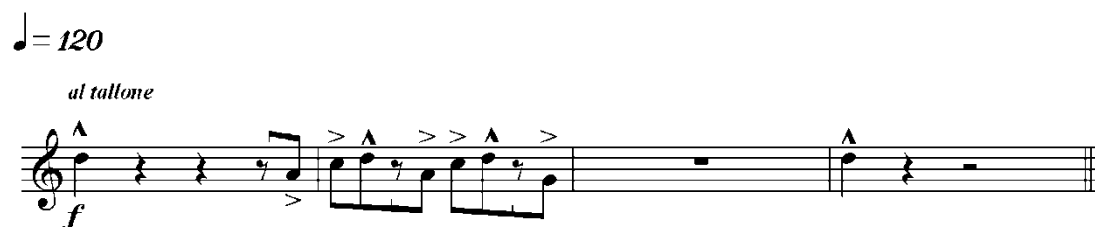


Figure 2.65: *al tallone* (CD 1, track 44)

2.1.9.4 Articulations Varied by Different Bowing Techniques

2.1.9.4a *Saltando* and *Ricochet*

Saltando, the bowing technique that is constituted by the bouncing of the bow on the strings, is available on *kemençe*. However, in a *saltando* passage pitch definitions of some notes might be indefinite. Therefore only the “Actual Ranges” of each string can be used for this technique. In the passages that use *Saltando* in the High and the Extreme Registers, the pitch definition is absolutely ambiguous. This statement is also valid for *ricochet*, the uncontrolled bouncing of the bow on the string in a single

stroke, that it can only be used in the “Actual Range” of each string in order to get clear pitch definition. The next example demonstrates a passage that uses *saltando* and *ricochet* together.



Figure 2.66: *Saltando and ricochet* (CD 1, track 45)

2.1.9.4b *Spiccato*

In *spiccato* playing, a controlled bouncing of the bow on the strings in order to play successive *staccato* notes, the pitch definition is clearer. However, upper registers are still problematic in this sense.



Figure 2.67: *Spiccato* (CD 1, track 46)

2.1.9.4c Arpeggiando

There is no technical difficulty of playing *arpeggiandos* on kemençe, but the process of *arpeggiating* chords is not familiar to a *kemençe* player. Therefore, arpeggios usually cause intonation problems. In the following figure *arpeggiando* in long and short slurs are demonstrated



Figure 2.68: *Arpeggiando* under long slurs (CD 1, track 47)



Figure 2.69: *Arpeggiando* under short slurs (CD 1, track 48)

Even though one can consider *legato* as being an important characteristic of *arpeggiando*, when the same passage is played as *détache*, players have more definite intonation control.



Figure 2.70: *Arpeggiando* under *détache* (CD 1, track 49)

2.1.10 Trills and Tremolos

2.1.10.1 Trills

Trill is a technique that *kemençe* players are absolutely familiar with. All trills are available on *kemençe*.



Figure 2.71: Trills (CD 1, track 50)

Even successive trills in different registers can be played.

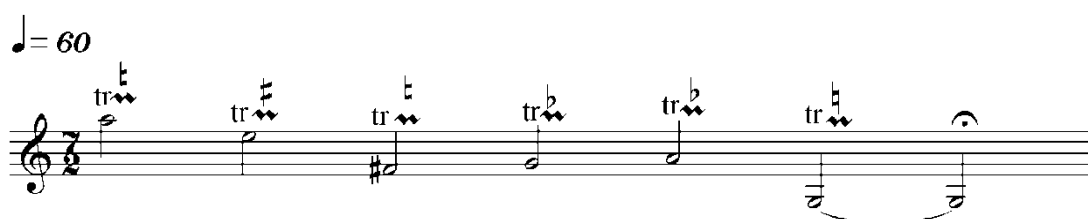


Figure 2.72: Successive trills (CD 2, track 1)

2.1.10.2 Tremolos

2.1.10.2a Single Note Tremolos

Just like the trills, tremolos on single notes are available in all registers. However a passage like the below is a difficult passage for a *kemençe* player because of the wide leaps that might prevent the performer to interpret the rhythmic values accurately.

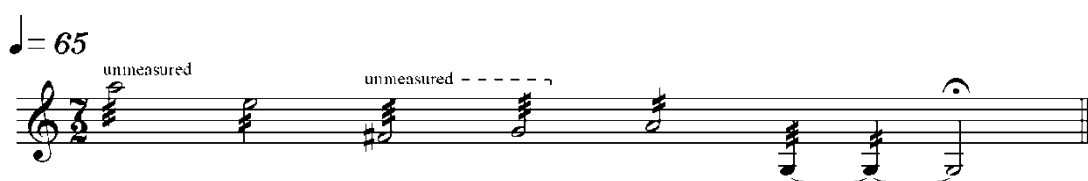


Figure 2.73: Single note tremolos (CD 2, track 2)

In figure 2.74 tremolos on a single note in different divisions during a crescendo and a decrescendo are demonstrated.



Figure 2.74: Single note tremolos along with gradual dynamic changes
(CD 2, track 3)

To use the different sections of the bow for certain dynamics can make the single note tremolos more effective. In the next example, the heel of the bow is used in order to achieve the *forte* more effectively in tremolo playing in different registers.

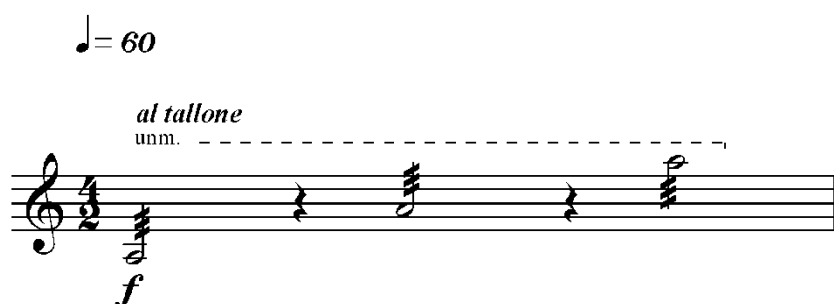


Figure 2.75: Single note tremolos and *al tallone* (CD 2, track 4)

In the example shown in figure 2.76 the tip of the bow is used for the *piano* in different registers.

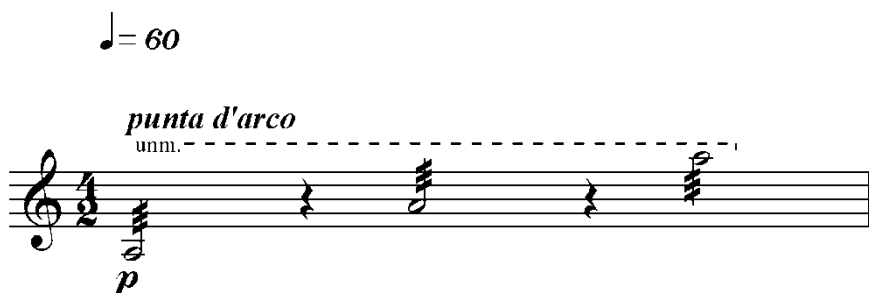


Figure 2.76: Single note tremolos and *punta d'arco* (CD 2, track 5)

Tremolos between two different pitches on a single string are limited by perfect fourth. Tremolos between two pitches that are wider than a perfect fourth apart cannot be performed (except the tremolos that include open strings. When tremolos include open strings, all kinds of intervals are possible to play) Otherwise these kinds of tremolos are available in all registers. In order to denote that the tremolo is on one string rather than two adjacent strings, the appropriate string should be indicated in notation.



Figure 2.77: Tremolos between two different pitches on one string (CD 2, track 6)

In this example the perfect fifth tremolo between A4 and E5 is available because it includes an open string.

Kemençe's bridge has a plain shape rather than the curved bridges of the western string instruments. This situation disables to play a tremolo between two different pitches on adjacent strings. The only solution that the performer can find is to turn the instrument's body constantly in order to achieve this technique. Yet, this will not be sufficient solution since it would result with a very slow and ineffective tremolo.

As it is explained above tremolos between two different pitches on adjacent strings is not a possible technique for *kemençe*; however the tremolos on double stops are available. In the "tremolo between two different pitches" technique, two pitches are played separately immediately one after another. In the "tremolo on double stop" technique two notes are played simultaneously as a chord and tremolo technique is exactly like the single note tremolo. The only difference is rather than a single note, a two note chord is being played as a tremolo. It should also be noted here that the *kemençe* bow can only play a tremolo on a double stop, triple or quadruple stops are impossible to play. The available double stops in *kemençe* are examined in the "Multiple Stops" Section. All the available double stop positions that are analyzed above can be played as tremolo as it is exemplified below:



Figure 2.78: Tremolos between two different pitches on adjacent strings
(CD 2, track 7)

All possible different dynamics in *kemençe* playing can be performed during tremolos. In the following example, dynamic changes during tremolos can be heard.

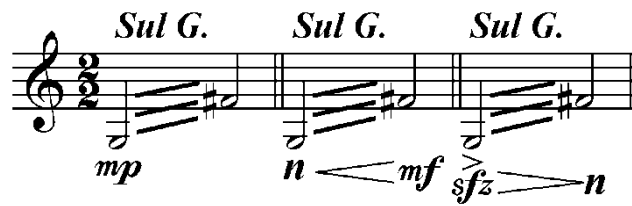


Figure 2.79: Tremolos and dynamics (CD 2, track 8)

In tremolos that include an open string like the one in example shown in 2.79, two different techniques can be played.

- 1- Regular *kemençe* playing with the touch of the fingernail to the string
- 2- Rather than the fingernail touch, the performer touches the string with his/her finger. This technique is called as the “Finger Touch” technique. It is notated as below:



Figure 2.80: Tremolos and the finger touch technique

Those two separate techniques do not create identical timbral differences (this statement only concerns the tremolo technique, when a passage is played as finger touch the sound quality of the instrument definitely changes. This will be discussed as a separate technique later). This technique can be used for the reason that some composers and performers might find the finger touch technique more practical in tremolo playing.

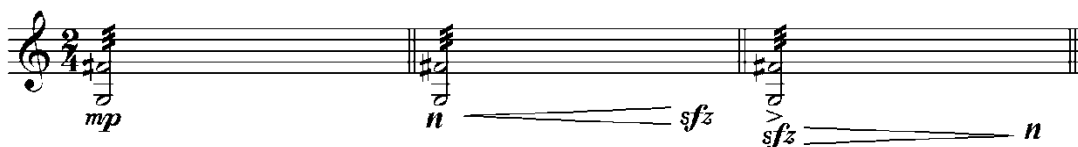


Figure 2.81: Tremolos on adjacent strings along with dynamic changes
(CD 2, track 9)

As it is demonstrated in figure 2.81, different type of dynamic changes can be performed during tremolos on double stops. However, in this example the G3, F#4 double stop includes an open string. In a passage with double stops without open strings, to perform dynamics can be problematic therefore they should be handled with care by using rests before those notes in order to give some time to the performer to get prepared.

Even in tremolos on double stops with open strings intonation can be striking. Especially during crescendos that lead to strong dynamics, the pitch tends to move towards the sharp side. It is up to the composer's decision to consider this situation as a problem or a characteristic of the *kemençe* playing.

2.1.11 *Kemençe* Techniques on Timbre Changes

Techniques that determine timbral changes can be examined in two different categories. These categories mainly designate different approaches of bow usage. The first category analyses the different placements of the bow on the string that changes the timbral quality of pitch. The second category is the analyses of timbre changes attributed to unusual usages of the bow.

2.1.11.1 Different Placements of the Bowing

2.1.11.1a Close to the Bridge

Playing close to the bridge, *sul ponticello*, creates effective changes in the *kemençe* sound. Like all string instruments the *sul ponticello* playing changes the timber of the instrument by making the overtones of the fundamental pitch more audible in the overall spectrum. The examples below focus on the timbral changes that occur during the *sul ponticello* playing. In those examples the performer starts from the *ordinario* playing of a certain pitch then first gradually moves towards to the *sul ponticello* playing (which is indicated by *SP*) and then to *alto sul ponticello* playing (which is indicated by *SP* in a circle). After reaching to *alto sul ponticello* performer gradually shifts back to the *ordinario* playing. These gradual changes are indicated in score by an arrow. If *sul ponticello* is playing close to the bridge; *alto sul ponticello* is playing on the bridge. In *kemençe sul ponticellos* are effective as the sound quality changes to a different kind of spectrum where the overtones of the fundamental pitch start to become more prominent in the overall timbre. However the *alto sul*

ponticello playing is more out of control where the sound turns into noise that we start to hear the details of the touch of the bow on the string. The *sul ponticello* technique is more effective in the low registered pitches. When the technique is applied to the higher registers the timbral changes, between the *ordinario* and the *sul ponticello*, are less significant. Yet, the *alto sul ponticello* technique still makes a difference even in the higher registers, compared to the *ordinario* and the *sul ponticello*, as the noise elements in the spectrum are more distinctive.

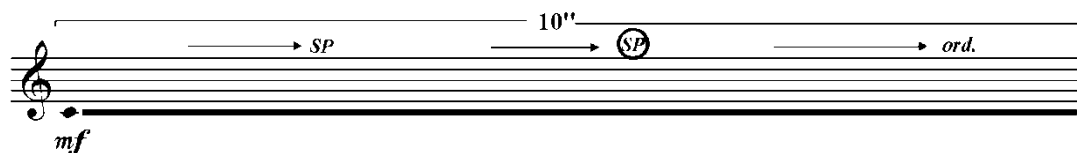


Figure 2.82: *Sul Ponticello* (CD 2, track 10)

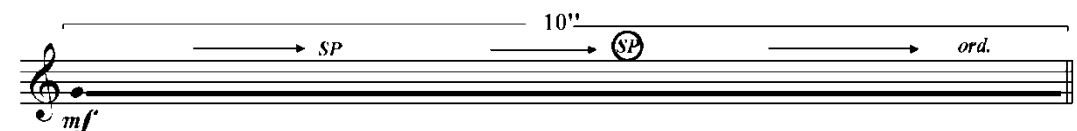


Figure 2.83: *Sul Ponticello* (CD 2, track 11)

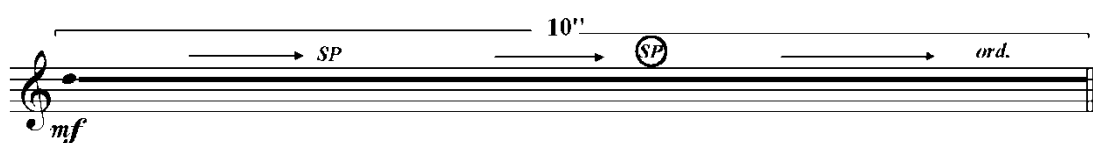


Figure 2.84: *Sul Ponticello* (CD 2, track 12)

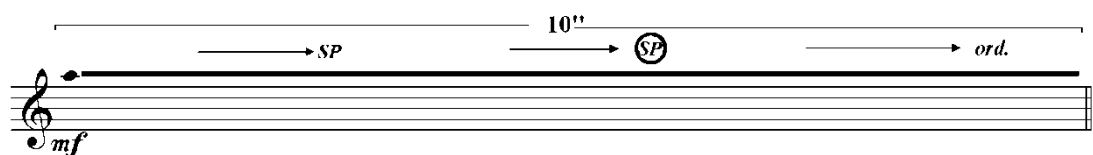


Figure 2.85: *Sul Ponticello* (CD 2, track 13)

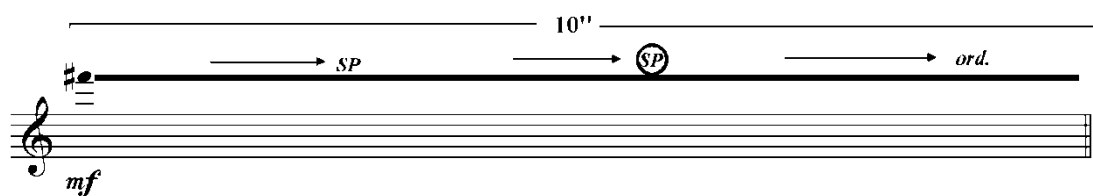


Figure 2.86: *Sul Ponticello* (CD 2, track 14)

In the example below, the timbral transitions between *sul ponticello* and *ordinario* are applied to a typical melodic passage in *rast makam*.

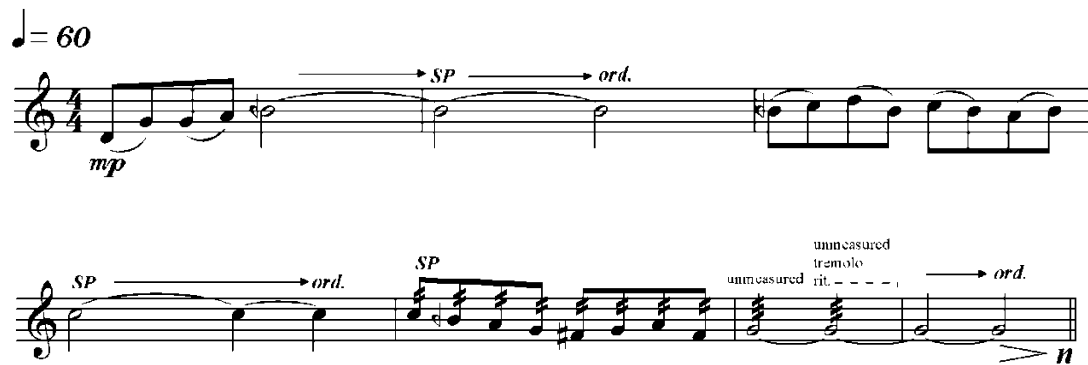


Figure 2.87: *Sul Ponticello* in a passage (CD 2, track 15)

2.1.11.1b Close to the Fingerboard

In the *sul tasto*, playing on the fingerboard, technique the fundamental pitch is more prominent in the overall spectrum rather than its overtones. As a result of this state, softer and purer sound is produced compared to the *ordinario* and *sul ponticello*. However, this is not always the case in *kemençe* playing. Besides the purer fundamental pitch, the noises that are produced by the bow as it touches the string can also become more audible. These amounts of these noises also increase in *alto sul tasto* playing as the bowing places in the upper side of the fingerboard. *Sul tasto* in *kemençe* playing can be considered as an uncontrolled technique. The sound is always softer compared to other techniques (*ordinario* and *sul ponticello*), but it is indeterminate if the additional bow noises would occur or not.

The following examples demonstrate the timbral differences of *sul tasto*, *alto sul tasto* and *ordinario* in different ranges

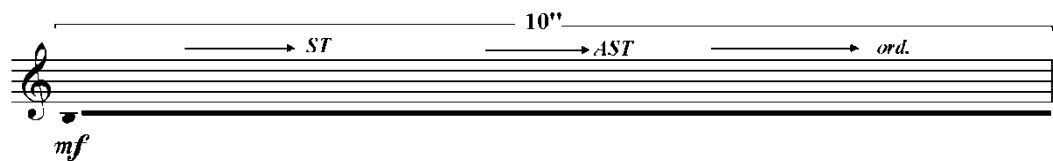


Figure 2.88: *Sul Tasto* (CD 2, track 16)

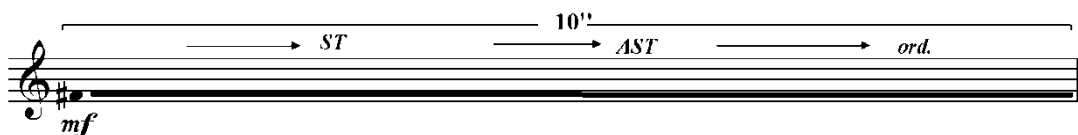


Figure 2.89: *Sul Tasto* (CD 2, track 17)

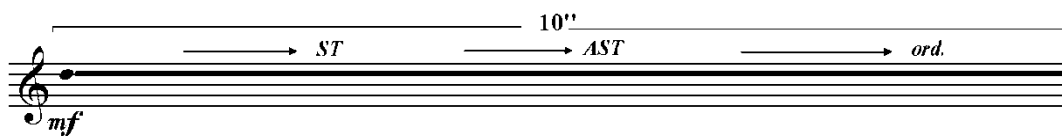


Figure 2.90: *Sul Tasto* (CD 2, track 18)

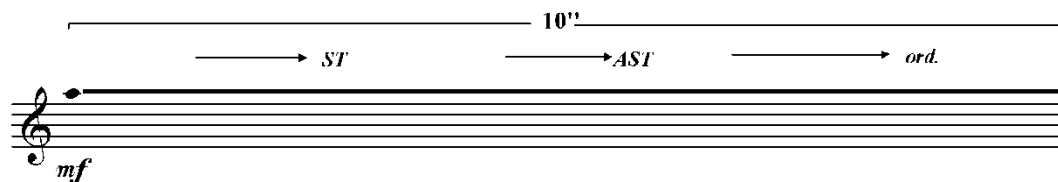


Figure 2.91 *Sul Tasto* (CD 2, track 19)

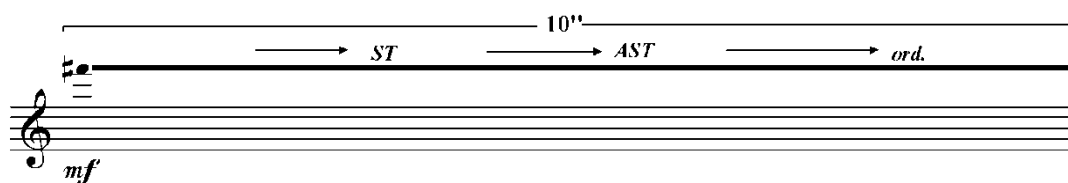


Figure 2.92: *Sul Tasto* (CD 2, track 20)

In the following example shown in figure 2.93, the timbral transitions between *sul tasto* and *ordinario* are applied to the same passage in the example shown in figure 2.87.

♩ = 60



Figure 2.93: *Sul Tasto* and *sul ponticello* in a passage (CD 2, track 21)

2.1.11.1c Long Notes and the Intonation Problem

As it is stated in the “Dynamic Range” section when the *forte* dynamic is performed on *kemençe*, it is possible that intonation problems might occur. This intonation problem is independent from the player’s ability to control the pitch, but it is related to the fact that *kemençe* strings are not produced in Turkey and performers use violin or cello strings which are not designed according to instrument’s body constitution.

Similar intonation problems can be heard in the *sul ponticello* examples and the *sul tasto* examples examined above. The intonation problems in these examples are also related to the usage of pseudo-*kemençe* string rather than the player’s performance.

At this point we’ve analyzed different techniques - *forte* dynamic, *sul ponticello*, *sul tasto* - resulting with the same problem. We should analyze this situation in detail:

- 1- Performing *forte* can always cause intonation problems since it is produced by applying extra pressure on the string.
- 2- While performing *sul tasto* and *sul ponticello*, especially when timbral shifts between *ordinario* and these effects are featured, intonation problems are more likely to occur in long held notes because of the constant pressure changes on the string.
- 3- Long held notes that contain timbral and dynamic changes have the potential to cause intonation problems.
- 4- One solution to solve this problem is to use more frequent bow changes which might lessen the long note effect.

2.1.11.2 Unusual Usages of the Bow

2.1.11.2a Scratch Tone

Scratch tone is a technique that is performed by supplying extreme bow pressure on the string. Obviously in this kind of playing, noise elements become the most dominant in the sound spectrum thus the pitch definition goes beyond the player’s control.

♩ = 60

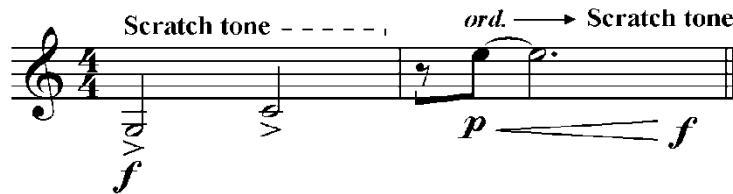


Figure 2.94: Scratch tone (CD 2, track 22)

2.1.11.2b Col Legno Techniques

a- Col Legno Tratto

In this technique, players use the wood of the bow rather than the regular bowing with the hair of the bow. The result is a weaker, closed, nasal like sound and the bow noises are always evident. This technique cannot be used above the “Actual Kemençe Range” as the pitch definition gets lost. Nevertheless, all kinds of dynamic changes and different techniques are available. In notation, the initials *c.l.t.* stands for *col legno tratto*.

♩ = 70



Figure 2.95: Col legno tratto (CD 2, track 23)

b- Col Legno Battuto

In this technique, rather than bowing the strings with the wood of the bow as in *col legno tratto*, performers strike the strings with the wood of the bow. This technique is only available “Actual Range” of all strings and in the “Actual Kemençe” range. In the higher positions of the strings and the higher registers of the overall *kemençe* range the pitch definition is completely lost. Also the strong dynamics are often not used with this technique for two reasons. First, the pitch definition gets ambiguous. Second, players would hesitate that their bows could be damaged. In notation, the initials *c.l.b.* stands for *col legno battuto*.



Figure 2.96: *Col legno battuto* (CD 2, track 24)

c- *Col Legno Spiccato*

Col legno technique can be used as *spiccato* in kemençe playing – just like the *col legno tratto* and *battuto* only in the “Actual Kemençe Range”- which results as a percussive effect in which the pitches are still definable. In notation, the initials *c.l.s.* stands for *col legno spiccato*.



Figure 2.97: *Col legno spiccato* (CD 2, track 25)

2.1.12 Left Hand Techniques

In this section the *kemençe* techniques that are basically controlled by the left hand movements on the keyboard.

2.1.12.1 Glissando

Like all other string instruments glissando is available in *kemençe*. Even intervals wider than an octave can easily be played as in the below example:



Figure 2.98: Glissando (CD 2, track 26)

Another effective glissando technique is glissando with tremolo as it is exemplified in figure 2.99



Figure 2.99: Glissando and tremolo (CD 2, track 27)

Along with tremolo, timbral changes like gradual change from *ordinario* to *sul ponticello* can be performed.



Figure 2.100: Glissando, *sul ponticello* and tremolo (CD 2, track 28)

Kemençe players are also very familiar to play diastematic fingered glissandos as in the following example.



Figure 2.101: Fingered glissando (CD 2, track 29)

2.1.12.2 Vibrato

Besides exceptionally ornamented and virtuosic styles like Tanburi Cemil Bey's, *kemençe* players use a slow, narrow kind of vibrato which is only applied to the endings of long notes. Since vibrato is not an indispensable technique in the conventional playing, performing different vibrato indications is perfectly possible for a *kemençe* player. For example it might be harder to achieve a non vibrato performance from an operatic singer. A *kemençe* player does not face this kind of

problem. In the example shown in figure 2.102, the change from *non vibrato* through *molto vibrato* to maximum vibrato is performed simultaneously with the crescendo and then the change from maximum vibrato through *molto vibrato* then back to *non vibrato* is performed simultaneously with the *decrescendo*. The only problem that occurs in such passages is the interruption of continuity of sound because of the necessary bow changes in long notes. Since vibrato is a technique that has a rhythmical perspective, these interruptions might sound more distinctive compared to other techniques played in long notes.

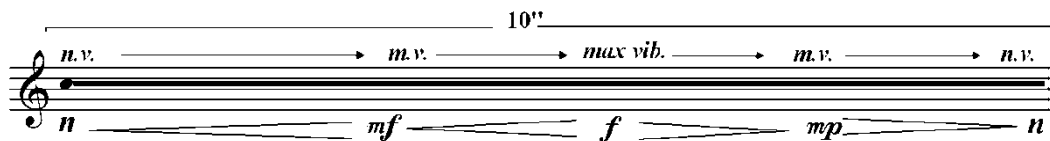


Figure 2.102: *Vibrato* (CD 2, track30)

As shown in the next example, when the changes between *non vibrato*, *molto vibrato* and the timbral changes from *ordinario* to *sul ponticello* is performed simultaneously with *crescendos* and *decrescendos*, effective results are achieved. However, as one can hear in this example, when the player performs the *sul ponticello* and *molto vibrato* together in a strong dynamic, the sound might become very unrestrained and unintended harmonics can be more prominent than the fundamental pitch.

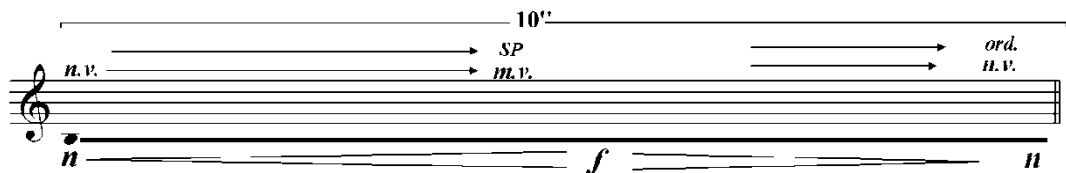


Figure 2.103: *Vibrato and, sul ponticello* (CD 2, track 31)

Molto vibratos can also be performed during the glissandos as it is demonstrated in the below example.

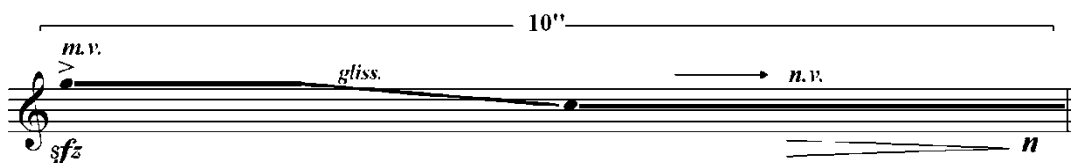


Figure 2.104: *Vibrato and glissando* (CD 2, track 32)

2.1.12.2a Tanburi Cemil Bey Vibrato

Tanburi Cemil Bey vibrato is a kind of vibrato that the *kemençe* players are very familiar with. It is a sudden, accented, short vibrato.

2.1.12.2b The Tip of the Bow Strike

As it is stated above in the “The *Kemençe* Bow” section, there is a metal piece at the tip of the *kemençe* bow. At the end of a *crescendo*, performers can strike the strings with the metal piece of the bow and create a percussive effect. Naturally, this last stroke must be a down stroke so that the metal piece hits the strings at the very end of the bowing direction. These strikes are most effective when they are used at the end of a crescendo that results with a *sforzando*. In notation this technique is indicated by an x in a circle. The example which is shown in figure 2.105 displays the “Tanburi Cemil Bey Vibrato” and the “The Tip of the Bow Strike” together.

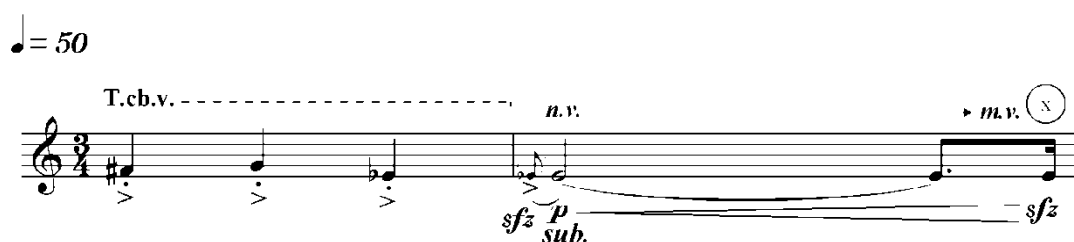


Figure 2.105: Tamburi Cemil Bey vibrato (CD 2, track 33)

2.1.12.3 Harmonics

Just like all other string instruments, by touching lightly to the certain nodes of the string, the overtones of the open string can be produced. This technique is called as the natural harmonics. The artificial harmonics cannot be produced on the *kemençe* because of the fingernail playing rather than pressing the fingers on the string against the fingerboard. The list below shows which overtones can be produced at which nodes of the string. This list uses G string as a sample, the relations between the open string and the overtones are exactly the same in other strings.

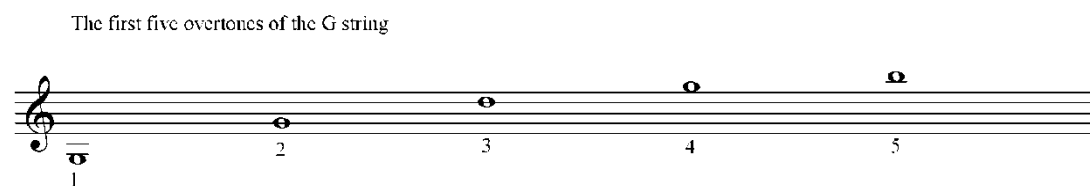


Figure 2.106: First five overtones of the G string

- 1- The second overtone (G4) is produced from the $\frac{1}{2}$ length of the string. This is the node where the player would normally play the same note (G4)
- 2- The third overtone (D5) is produced from the $\frac{1}{3}$ of the string. This is the node where the player would normally play the same note an octave below (D4).

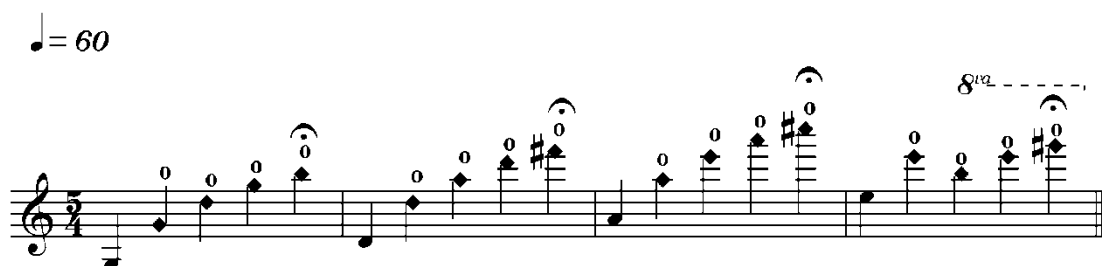
The third overtone (D5) can also be produced from the $\frac{2}{3}$ of the string. This is the node where the player would normally play the same note (D5). This node is placed at the very end of the fingerboard.

- 3- The fourth overtone (G5) is produced from the $\frac{1}{4}$ of the string. This is the node where the player would normally play the note C4.

The same overtone (G5) can also be produced from the $\frac{3}{4}$ of the string. This node is placed below the fingerboard.

- 4- The fifth overtone (B5) is produced from the $\frac{1}{5}$ of the string. This node is placed below the fingerboard.

Since kemençe is a small instrument, it has short strings and the further overtones are hard to produce. In the following example natural harmonics on all strings can be heard.



2.1.12.4 Pizzicato

2.1.12.4a Pizzicato and Fingernail Pizzicato

Pizzicatos are only available in the “Actual *Kemençe* Range” of the overall range and the “Actual Ranges” of the individual strings. *Pizzicato* in the higher registers the pitch definition is undetermined.

Kemençe players use two different *pizzicato* techniques. *Pizzicato* can be performed by using the tip of their finger (this can be considered as the standard *pizzicato*) or their fingernails. Finger nail *pizzicatos* produce brighter and more definite sound where the dynamic control is more determinate. The example shown in example 2.108 displays the difference of these two techniques in different registers. The *pizzicato* playing is indicated by *pizz.* in notation where the finger nail playing is indicated by finger nail *pizz.:*



Figure 2.108: *Pizzicato* (CD 2, track 35)



Figure 2.109: Fingernail *pizzicato* (CD 2, track 36)



Figure 2.110: *Pizzicato* and dynamic changes (CD 2, track 37)



Figure 2.111: Fingernail *pizzicato* and dynamic changes (CD 2, track 38)



Figure 2.112: *Pizzicato* and dynamic changes in higher register (CD 2, track 39)



Figure 2.113: Fingernail *pizzicato* and dynamic changes in higher register
(CD 2, track 40)

As it is evident in the example shown in figure 2.113, in this register when the fingernail *pizzicato* is used the sound of the fingernail's plucking the string gets very dominant and the pitch definition gets weaker. It is stated above that the fingernail *pizzicato* is brighter and more definite than the standard *pizzicato*. However, it should be added to this statement that the fingernail *pizzicato* loses its definition more in the higher registers compared to the standard *pizzicato*.

These two different techniques can be compared in the *sul ponticello* playing. The fingernail *pizzicato* is again less definite in *sul ponticello* that it almost turns into a percussive effect. Since the tensions of the strings are tighter in the *sul ponticello* region, only softer dynamics can be produced in *pizzicato* playing.

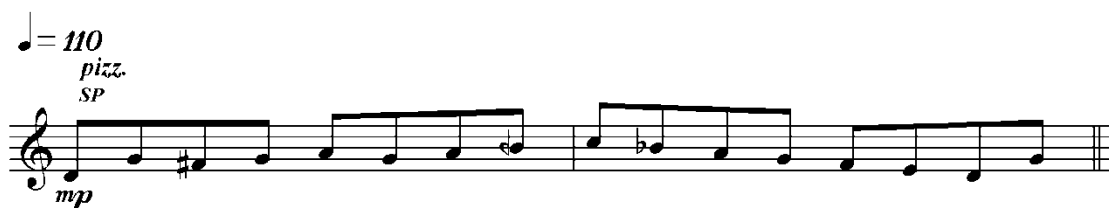


Figure 2.114: *Pizzicato* and *sul ponticello* (CD 2, track 41)



Figure 2.115: Fingernail *Pizzicato* and *sul ponticello*(CD 2, track 42)

The following example demonstrates a passage that switches from *pizzicato* to *arco* playing. In such passages composers should be careful enough to allow sometime for the player in order to get prepared for the following technique.



Figure 2.116: *Pizzicato* and *arco* (CD 2, track 43)

2.1.12.4b Left Hand *Pizzicato*

Since left hand *pizzicato* is an unfamiliar technique to *kemençe* players, to use only the open strings would be the most efficient way to use this technique. Otherwise the passages can be extremely difficult for the player.

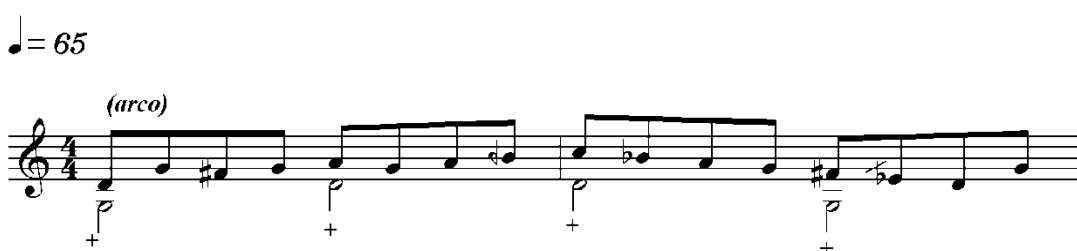


Figure 2.117: Left hand *pizzicato* (CD 2, track 44)

2.1.12.5 Multiple Stops

2.1.12.5a Double Stops

The double stops that can be achieved easily and performed with least problems are the double stops with open strings. All intervals are available when one of the notes of the double stop is an open string. In the first example below, D is the open string and Bb is played on the A string. In the second example E is the open string and D#

is played on the A string. In the last example A is the open string and D is played on the D string.



Figure 2.118: Double Stops

The double stops that do not include any open string can be examined in three steps:

- 1- Since the open strings of the *kemençe* are tuned in perfect fifths, two horizontally aligned notes on two adjacent strings would give us a perfect fifth. If we take the G4 on the D string as an example, the horizontally aligned note of the adjacent A string is D5. It is impossible to play this perfect fifth with the regular procedure of *kemençe* playing which is to play the notes with the finger nails. This kind of double stops can only be played by the *barré* position that is to stop both pitches with the placement of the forefinger on both strings.

These double stops are only possible in the “Actual Ranges”. In the higher registers the *barré* positions are not available thus these double stops cannot be played.

- 2- The wider intervals (double stops) that can be built on top of the *barré* positioned perfect fifth can be as wide as a minor seventh as the largest interval. For example the double stops that can be built on top of the G4-D5 *barré* position are:



Figure 2.119: Double Stops with *barré* position

- 3- Furthermore, other double stops can be played towards the opposite direction towards the lower register. The largest interval that can be played in this direction is a minor third:



Figure 2.120: Double Stops with *barré* position in the opposite direction

If we sum up all three steps, there are seven available double stops:



Figure 2.121: Available double Stops

One can mention that wider intervals (like the major seventh, octave, or on the opposite direction minor third, major second, etc.) might be played according to the size of the performer's hand. However, what prevents the player to play wider intervals is more about the fingernail playing method rather than the size of the hands. Even these seven available positions can be played with great difficulty. When composers use these double stops, they should consider the important problems listed below:

- 1- Since these positions can only be played with great difficulty, players need some time to prepare them. Thus they cannot play successively in a passage. There should either be rests, or double stops that include open strings between these positions.
- 2- It is very possible to face with intonation problems in these double stop positions. If the microtonal differences are emphasized, like the example below, there should be additional indications or composer's notes in the score to provide performer's extra attention and effort in the issue.

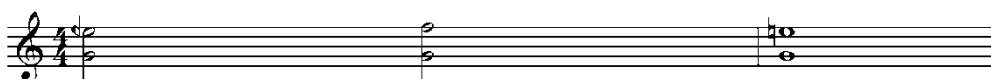


Figure 2.122: A passage with double stops and microtonal differences

2.1.12.5b Triple Stops

Only a limited number of triple stops are available on *kemençe* because of two main reasons:

- 1- In *kemençe* playing the strings are stopped by the fingernails. In this situation, two consecutive intervals on three strings form extremely hard positions to play.
- 2- The strings are placed further to the fingerboard compared to western orchestral string instruments which also makes to play three note chords almost impossible.

Under these conditions the available triple stops on *kemençe* are the ones that include at least one open string. The important considerations about the triple stops are:

- 1- Any triple stop that include two or three double stops are available as the examples below:

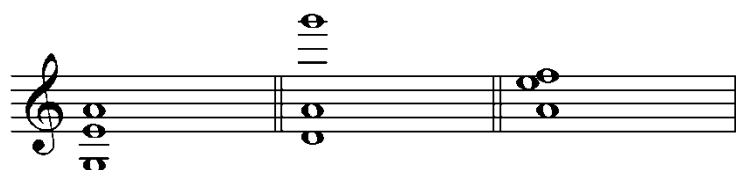


Figure 2.123: Triple stops

In order to prevent the players from misunderstandings and confusion, it should be indicated that which note is being played on which string in notation. This indication can either be the string names in circles close to the corresponding note:

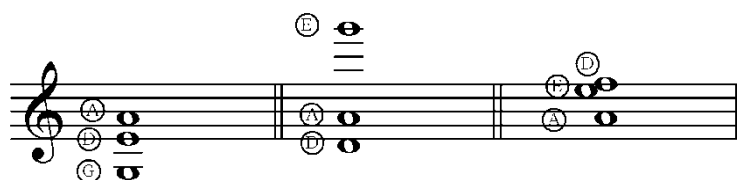


Figure 2.124: Notation of the triple stops

It is also possible to use roman numerals as E string- I, A string-II, D string-III, and G string-IV:

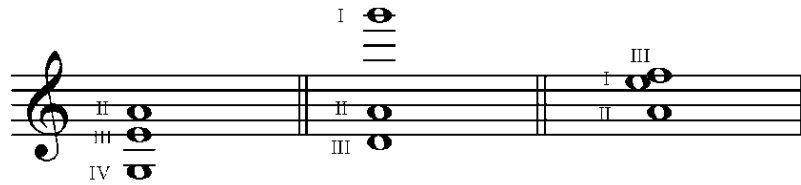


Figure 2.125: Notation of the triple stops

One important issue about the third example above is the balance between the notes of the triple stop. In this example the first and second strings are open strings where on the third string a note (F5) from the high register of the D string. Since this note will sound weaker than the open strings, this situation can create a balance problem.

- 2- Triple stops that include an open string at the bottom of a double stop that includes a fifth, thus can only be performed as a *barré* position, are not available since the *barré* as would also cover the bottom string of the triple stop and not let it vibrate. The chords given below exemplifies this situation:

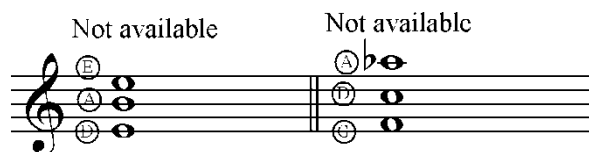


Figure 2.126: Notation of the triple stops

- 3- Other than the situation explained in the second entry, all triple stops that include an open string either above or below an available double stop, like the below examples, can be played:

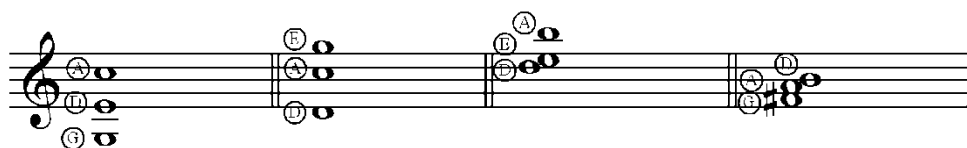


Figure 2.127: Triple stops that includes an open string

- 4- The triple stops with a open string in the middle are not available as in the below examples:

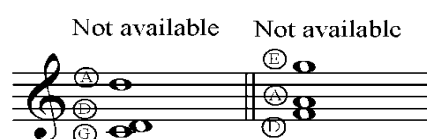


Figure 2.128: Triple stops that includes an open string in the middle

- 5- Two consecutive perfect fifths and sixths (either major or minor sixth) are available:

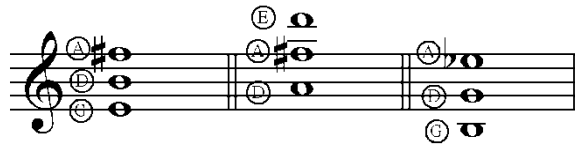


Figure 2.129: Triple stops that includes two consecutive perfect fifths and sixths

- 6- A perfect fifth preceding a sixth is available but a sixth preceding a fifth is not available:

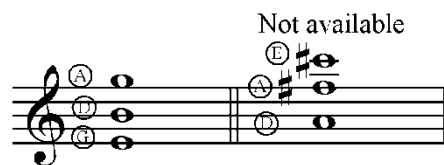


Figure 2.130: Triple stops that includes consecutive perfect fifths and sixths

- 7- Other than the conditions that are stated in the entries 5, 6 and 7, triple stops that do not include an open string are not available.

2.1.12.5c Quadruple Stops

- 1- All quadruple stops that include three open strings are available. For example:

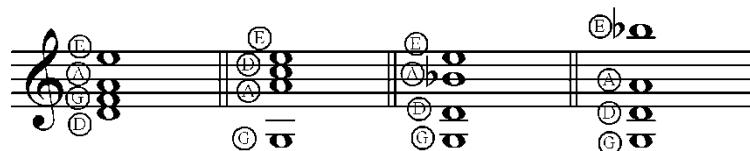


Figure 2.131: Quadruple stops

For this kind of chords composers should consider that the notes in the higher register of a string can have less volume compared to the other three open strings therefore the voicing can have balance problems.

- 2- Quadruple stops that include a triple stop with *barré* position and an open string below or inside that triple stop are not available. For example:

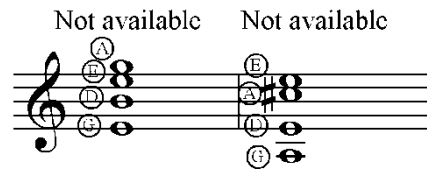


Figure 2.132: Quadruple stops with *barré* positions

- 3- Other than what is mentioned in the second entry above, all quadruple stops that include an open string below or above an available triple stop are available:

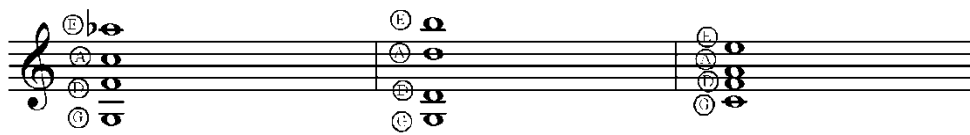


Figure 2.133: Quadruple stops that are formed by adding an open string to a triple stop

2.1.12.6 Finger Touch Technique

As it is stated in many different sections above, the *kemençe* player determines the pitches by the touch of the right hand's fingernail to the strings on the fingerboard. However, *kemençe* can also be played by the finger's touch to the strings on the fingerboard. This would produce a softer, more closed, muffled sound. Since the strings of the *kemençe* are placed further from the fingerboard, this technique is hard to perform and one should not expect passages that require difficult agility skills to be played in this technique:



Figure 2.134: Finger touch technique (CD 2, track 45)

As it can be heard in the following example when the finger press technique is played as *sul ponticello*, a very interesting sound quality can be achieved. However, as it is evident in the example, this technique causes intonation problems.



Figure 2.135: Finger touch and *sul ponticello* (CD 2, track 46)

2.1.13 Microtonal Differences

Kemençe players are accustomed to specify microtonal differences in *makam* music. However, since they are usually experts in hearing those differences, they are able to denote all different microtones in all kinds of musical passages even they are not structured around a *makam*. In the next example, the microtones are used in a non *makam* passage as an abstract practice material.

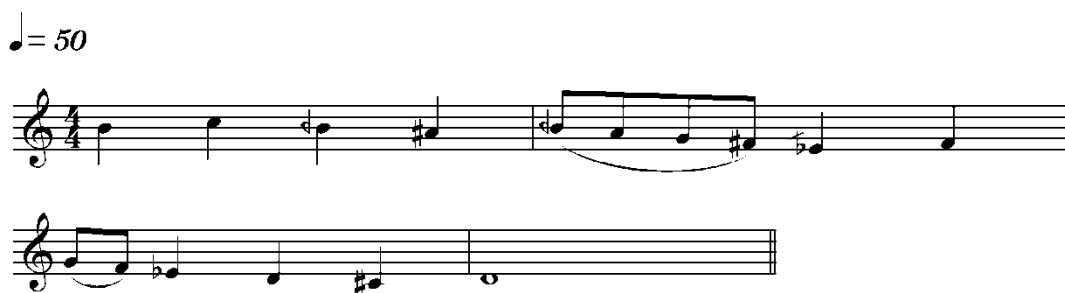


Figure 2.136: Microtonal Differences (CD 2, track 47)

Kemençe players can play all kinds of chromatic passages as it is exemplified below:



Figure 2.137: Chromatic passages (CD 2, track 48)

2.1.14 Ornaments

In traditional Turkish Music, performers are used to include many different kinds of additional ornaments – for example glissandos, vibratos, grace notes – to the original plain melody. Composers might consider using these conventional interpretations in the performance of a plain melody under the indication of *ad libitum*.



Figure 2.138: *Ad libitum* (CD 2, track 49)

2.2 *Ud*

2.2.1 Historical Background

Lutes can generally be considered as the earliest plucked string instruments that are in the form of a chest as a sound board and a neck used as a fingerboard. *Ud* is a short lute with a frontal string holder (Sachs 1940: 251-53).

The word *ud*, basically means “a piece of wood” in Arabic. Besides the widely used Persian term *barbat*, North African countries west of Egypt prefer the Greek word *qitara*. (Sachs 1940: 253). As it is reported by a fourteenth century writer (Sachs 1940: 253) *ud* was invented during the time of Persian King Sasanid Shapur in the third century (Chabrier 2005: 768). However, Curt Sachs points out that there are earlier traces of the instrument in the “art works of the so-called Gandhara style of

about 100 A.D and *ud* also existed in the orchestra of Chinese Han Dynasty (206B.C-220 A.D.)” (Sachs 1940: 253). *Ud* has been one of the most principal instruments of the Islamic World from the beginning and, most probably through Andalusia, became the “direct ancestor of European Lute” (URL-3)

The earliest *ud*’s have either two strings or four courses. The 15th century foremost Turkish musicologist and composer Albülkadir Meragi labels the four course *ud* as “*Ud-I Kadim*” (the old *ud*) and the five course *ud* as “*Ud-I Kamil*” (the mature *ud*) (Bardakçı 1986: 101-02). The fifth course is introduced by the famous Andalusian musician Ziryab in the eighth century (Chabrier 2005: 769). Starting from approximately the same period, the differences in the tuning methods mainly determines the Turkish *ud* and Arab *ud* separation- both in four and five courses - which become clearly evident in the Ottoman Period.

There are two types of six course *ud*. One is an *ud* with six pairs of strings and the other one is with five pairs and an additional low string. This lowest string is called as the “bam” string. It is still unclear when the sixth string added to the five course *ud*. However, the five pairs with an additional low string type is the most popular from Istanbul to Bagdad today (URL-3).

From the sixteenth century on to the early seventeenth century *ud* has a central position in the Ottoman courts (Feldman 1996: 114). It got out of favor in the 17th and the 18th centuries as for example, it does not exist in Charles Fonton’s *la Musique Orientale Comparée a la Européenne* written in Istanbul in 1751 (Fonton 1987).

Ud becomes a favorable instrument again in the early twentieth century by the important contributions of “two lute makers, the Greek Manol (Adelfion Veniou) and the Armenian Onnik (Garipyan) who made refined instruments with six courses, adapted for musical shifts, vibrato, and nuances of dynamics and playing with four fingers of the left hand. The two finest interpreters have been Udi Hrant and Yorgo Bacanos followed by a host of excellent soloists” (Chabrier 2005: 770).

Today, *ud* is one of the most popular instruments in Turkey. It is not only used in Turkish Art Music but also widely used in different contemporary popular music genres.

2.2.2 The Constitutional Attributes

Ud consists of three main sections: the body, neck and pegbox.

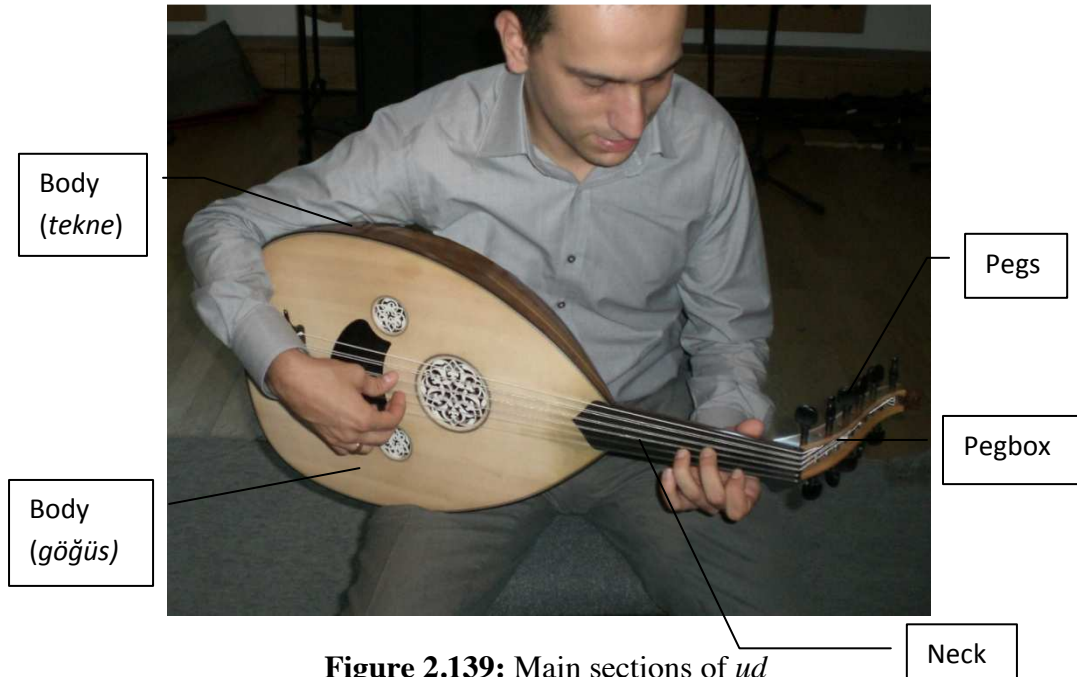


Figure 2.139: Main sections of *ud*

Ud has a large pear shaped body which has about 70 cm. length and function as a soundbox. Even though, the body has a big size, it weights only about 300 to 600 gram (URL-4).

The body has two sections: the soundboard which is called *göğüs* and its back which is called *tekne*. *Tekne* means trough in Turkish which describes the spherical shape as shown below:

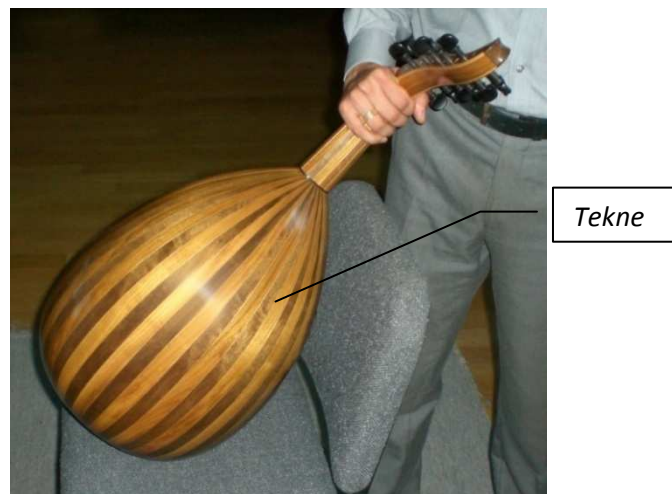


Figure 2.140: *Tekne*

Göğüs means chest in Turkish. It is a flat surface. Its maximum width is about 50 cm. There are three sound holes on the *göğüs*. These sound holes are called *kafes*, which means cage in Turkish. As it is shown in the picture below one of the sound holes is a principle one which is much bigger than the other two. The principle sound hole is called *büyük kafes* (the big cage) and the others are called *küçük kafes* (the small cage). In between the two *küçük kafes* the *mızraplık* is placed. *Mızraplık* is a black plaque attached on the soundboard in order to prevent it from the damage created by the plectrum strokes. Beneath the *mızraplık* the bridge is placed on the *göğüs* to which all the strings are attached.

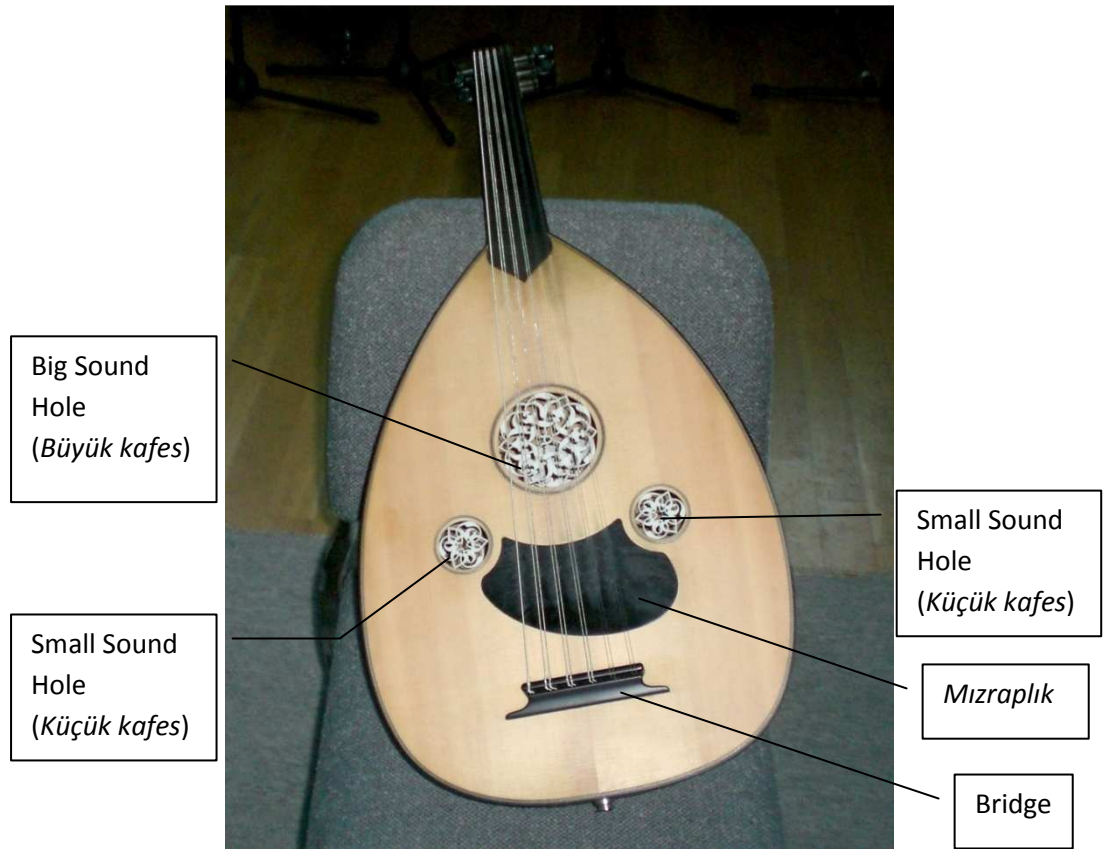


Figure 2.141: Main sections of the front part of *ud*.

As it is shown in the below picture performer places the *ud* on his/her lap. The right hand plucks the strings usually with a plectrum while the left hand stops the strings on the neck or the finger board.



Figure 2.142: A performer holding the *ud*

A professional *ud* player usually has four plectrums in different thicknesses. The thinner plectrums have lighter colors and as can be seen in the below picture the thicker plectrums have darker colors.



Figure 2. 143: Plectrums in different thicknesses

Thinner plectrums are preferred. Thicker plectrums are only used in louder ensembles if not any timbral exploration are intended. The picture below demonstrates how all the right hand fingers are actively used in order to hold the plectrum.



Figure 2.144: A performer holding a plectrum.

In order to pluck the strings the right hand makes almost a 90 degree angle at the wrist.



Figure 2.145: Right hand position

However, using a plectrum is the fundamental plucking technique; it is also possible to pluck the strings with fingers:



Figure 2.146: Plucking the strings with fingers

2.2.3 The Open Strings of *Ud*

Ud has eleven strings. The lowest, *bam*, string remains as single where the other strings are paired together in five courses. As these pairs are tuned in unison, this condition only concerns the timber of the instrument; therefore in theoretical considerations it can be presumed that *ud* has six strings. Starting from the C#2 as the lowest string the open strings are tuned in fourths. The highest D string is considered as the first string and in notation the strings are indicated with Arabic numbers in circles.

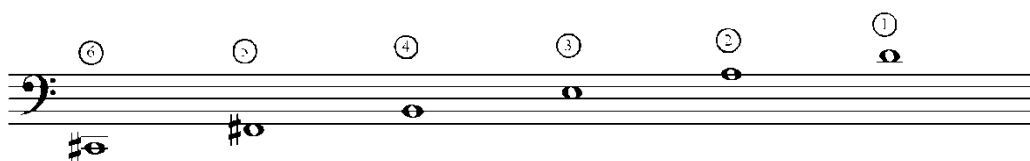


Figure 2.147: Open strings of *ud*

It is very common to apply the *scordatura* technique to the lowest two strings, C#4 and F#4, usually a minor second up to D4 and G4 .

2.2.4 The Sound Range

Each string has a range of a minor seventh or hardly an octave. In this case the overall range of the *ud* is:



Figure 2.148: The overall sound range of *ud*.

The note D5 is played at the very end of the fingerboard and the pitches above D5 are produced from beneath the fingerboard. Therefore these notes are played with the least control of the performer. It would be very appropriate to use bass clef for the notation of *ud*, especially for the application of western notation without the Turkish transposition. However *ud* players are not used to read bass clef. In this case, composers can follow two different approaches:

- 1- To notate music in treble clef and acknowledge that the instrument is a transposed instrument which is written an octave above.
- 2- To use the *8vb* treble clef. In this work I will be applying this approach in notation.

According to this notation approach the open strings of ud are:

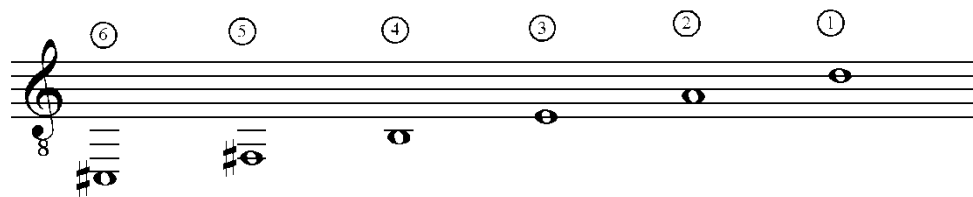


Figure 2.149: Notation of the open strings.

The overall sound range of the ud is:

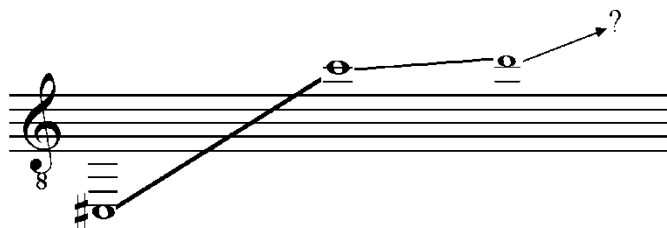


Figure 2.150: Overall sound range in treble clef

2.2.5 Fingering Positions

Each individual string of *ud* has eight fingering positions. Each position is placed a minor second apart from the antecedent position. The first notes of these positions are played with the forefinger. The following notes of the position are played by the middle, ring fingers and the pinky in successions of a minor second. Below is shown all the notes in all positions.

I. Position

II. Position

III. Position

IV. Position

V. Position

VI. Position

VII. Position



Figure 2.151: Fingering positions

2.2.6 The Sound and the Dynamic Range of Individual Strings

Similar to the other Turkish Music instruments that are being analyzed in this dissertation, *ud*'s dynamic range is also limited at the strong dynamics side. Similar to the considerations on the *kemençe* dynamic range, composers should use *forte* as the strongest dynamic in the *ud* notation or use *fortissimo* in order to denote the greater intensity level in performance with an explanation in the composer's notes.

Besides having this general dynamic characteristic of Turkish Music instruments, *ud* has an additional attribute in the performance of its stronger dynamics. For the reason that the strings are placed close to the fingerboard, *ud* contains a buzz in its normal sound. This buzz becomes evident in the *forte* passages, especially in the lower register of an individual string. In the following examples these positions are played consecutively on each string along with crescendos that displays the effect of different dynamics on different registers.



Figure 2.152: Positions on the sixth string (CD 3, track 1)



Figure 2.153: Positions on the fifth string (CD 3, track2)



Figure 2.154: Positions on the fourth string (CD 3, track 3)



Figure 2.155: Positions on the third string (CD 3, track 4)



Figure 2.156: Positions on the second string (CD 3, track 5)



Figure 2.157: Positions on the first string (CD 3, track 6)

2.2.7 Articulations

2.2.7.1 *Legato* and the Basics of Plucking the Strings

In *ud* notation, at passages that do not use slurs like, below, every single note is plucked with the plectrum individually.



Figure 2.158: A passage without slurs

When slurs are used it means that only the first note of the slurred group is plucked by the plectrum and the following notes are determined by the left hand motion on the fingerboard. *Ud* notation, as proposed by Mutlu Torun and later conventionally standardized, is very precise in *legato* playing. The notes which are not being plucked, under a slur, should always be indicated with a * sign (Torun 2000: 275). Otherwise the *ud* player would ignore the slur and perform the passage as *non-legato* and pluck every individual note. In this case the slurs only function as a phrasing indication.

These slurs should be used very carefully by the composers. First of all the unplucked notes in a slur should be placed on close positions of a single string. Passages with wide leaps are impossible play in this technique. Using short slurs are more practical since the unplucked notes in a long slur create a spontaneous *decrescendo* as exemplified below:



Figure 2.159: *Legato* (CD 3, track 7)

These unintended spontaneous crescendos become even more evident in slower tempos.

♩ = 60



Figure 2.160: *Legato* in a slower tempo (CD 3, track 8)

On the other hand when short slurs are used, the plucked and unplucked notes are performed in succession and this contrast interrupts the continuity of musical line which is definitely not intended in a *legato* passage. The other important point is that in this technique the plucked notes are automatically accented even it is not indicated that way. All these considerations can be analyzed in the example below.

♩ = 70

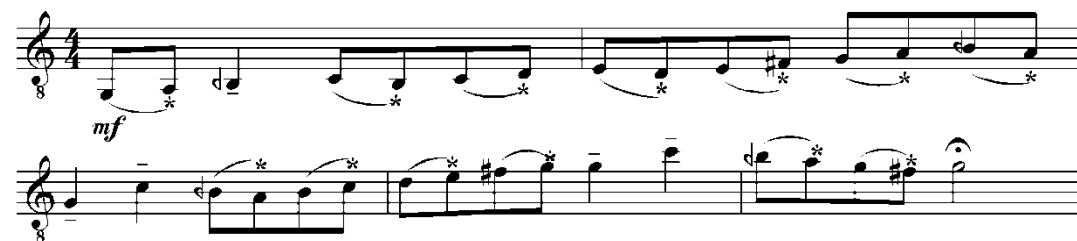


Figure 2.161: *Legato* under shorter slurs (CD 3, track 9)

It is also possible to use *legato* as a general characteristic of the passage without using any slurs. In this case the player would possibly pluck all the notes but he/she would interfere the duration of the notes rather than separating them as a *tenuto* passage. Since no slurs are used in this case, then the composer might prefer to use accents in order to control the phrasing of the passage.

♩ = 70



Figure 2.162: *Legato* without slur indications (CD 3, track 10)

In passages with sixteenth notes, it is more possible use long slurs however only in softer dynamics like *piano* or *mezzopiano*. When *forte* is used in such passages a spontaneous decrescendo would occur.

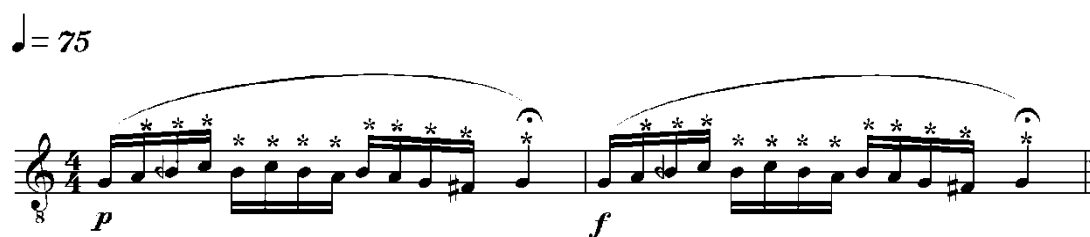


Figure 2.163: Dynamics under long slurs (CD 3, track11)

Therefore composers should be careful enough not to expect a controlled *crescendo* or *decrescendo* in similar passages.

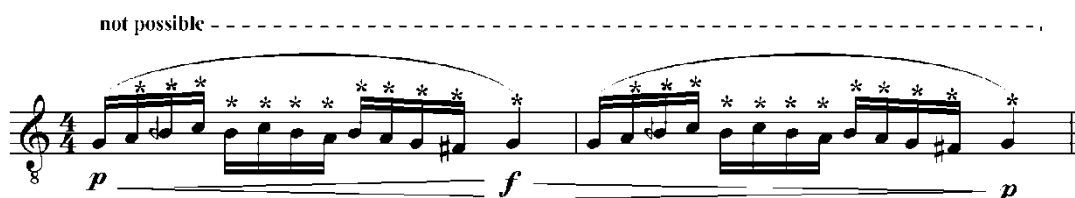


Figure 2.164: Dynamic changes under long slurs

Controlled dynamic changes can only be performed by plucking every note individually.



Figure 2.165: Dynamics under no slurs (CD 3, track 12)

Similarly, fast passages can only be played by plucking every single note.



Figure 2.166: Fast passages (CD 3, track 13)

Also the passages that include wide leaps can only be played by plucking every note.

♩ = 90



Figure 2.167: Fast passages with wide leaps (CD 3, track 14)

2.2.7.2 Tenuto

In this technique every note is plucked individually and the duration of each note is separated from each other.

♩ = 70



Figure 2.168: *Tenuto* (CD 3, track 15)

2.2.7.3 Staccato

Staccatos can be performed effectively all throughout its register. In order to perform this technique, players dampen the string either with left or right hand immediately after it's plucked.

♩ = 65



Figure 2.169: *Staccato* (CD 3, track 16)

In the *staccatissimo* playing this damping the string process must be more abrupt than staccato. The following example below is an etude that concentrates on the differences of articulations, from legato to *staccatissimo*, in an *ud* performance.



Figure 2.170: *Legato, tenuto, staccato and staccatissimo* (CD 3, track 17)

2.2.7.4 Marcato

All different kinds of *marcatos* can be performed effectively by a strong down stroke of the plectrum. In such passages performers can also play sudden dynamic changes.

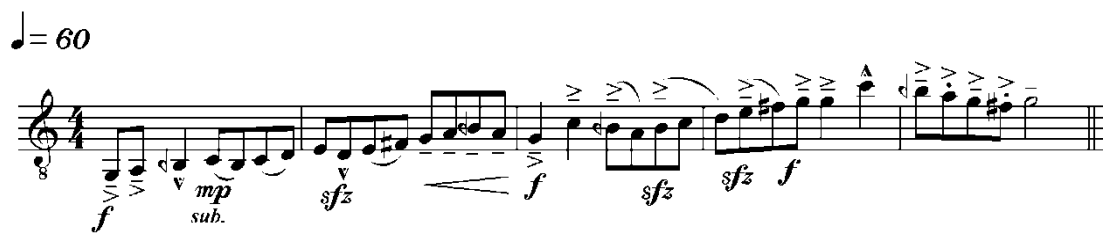


Figure 2.171: *Marcato* (CD 3, track 18)

2.2.8 Alternative Usages of Plucking the Strings and Fingering Positions

Ud players have the opportunity to choose from different alternatives of plucking the strings and fingering positions in order to achieve different sound colors and different effects of articulation

2.2.8.1 Specified Stroke Directions

The alternatives of plucking the strings are created by using specified stroke directions. In *ud* playing, the strong beats and the accented notes are almost always played by a down stroke. Yet, up strokes can easily be performed when indicated. However, up strokes does not sound strong as the down strokes. The difference between these different strokes is demonstrated in the below example.

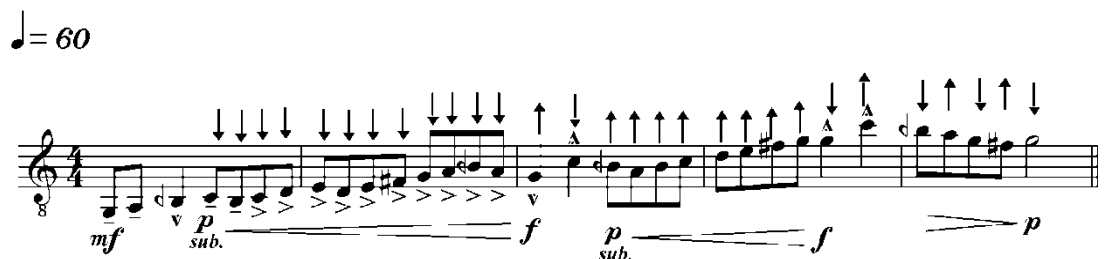


Figure 2.172: Specified stroke directions (CD 3, track 19)

The usual way to perform such a passage like above is to use up and down strokes consecutively. When a passage is played by using only down strokes (as in measure 2 and 3), or only upstrokes (second half of third measure and the first half of the fourth measure) the notes are more detached from each other compared to a regular passage. In the sections that only down strokes are used, the notes are strongly accented. On the contrary, in the sections that only up strokes are used the accents are less effective.

2.2.8.2 Closed Positions

In *ud* playing, a passage can either be played on a higher string in a lower position or on a lower string in a higher position. The latter state is called as the close position and indicated by K since “*Kapalı*” means closed in Turkish. Similar to all other string instruments, closed positions have a darker and more intense sound compared to the same passage being played on lower position of a higher string where brighter sound quality is achieved. However these kinds of differences are lessened in the lower strings. Especially on the F# and C# strings, playing a passage in a closed position or in the lower position on a higher string, produce similar results. In examples shown in figures 2.172 through 2.176, the close positions on the A, E, B, F# and C# strings are exemplified.

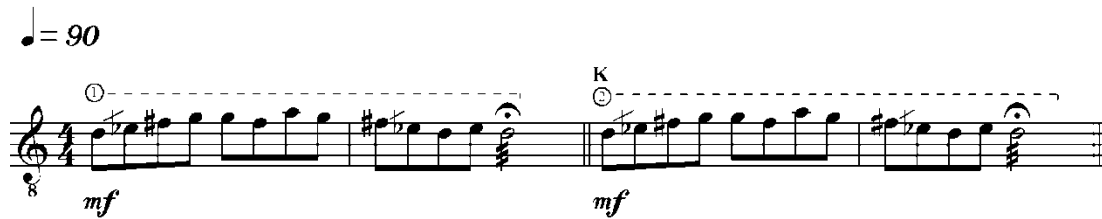


Figure 2.173: Closed positions on the second string (CD 3, track 20)

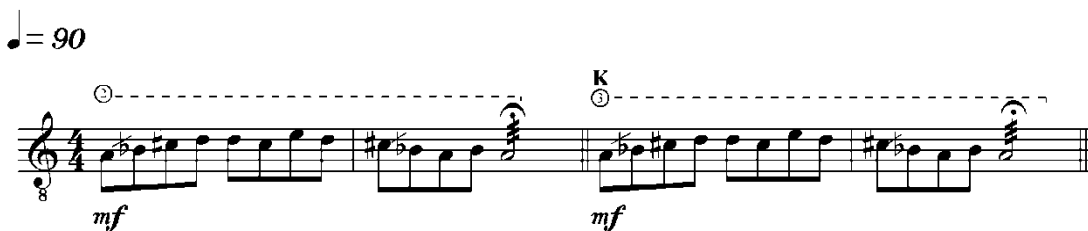


Figure 2.174: Closed positions on the third string (CD 3, track 21)

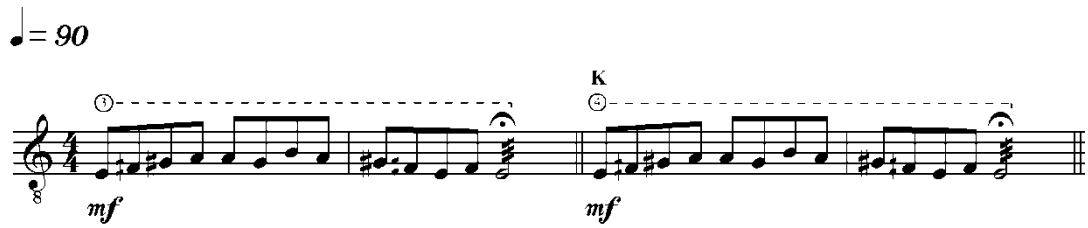


Figure 2.175: Closed positions on the fourth string (CD 3, track 22)

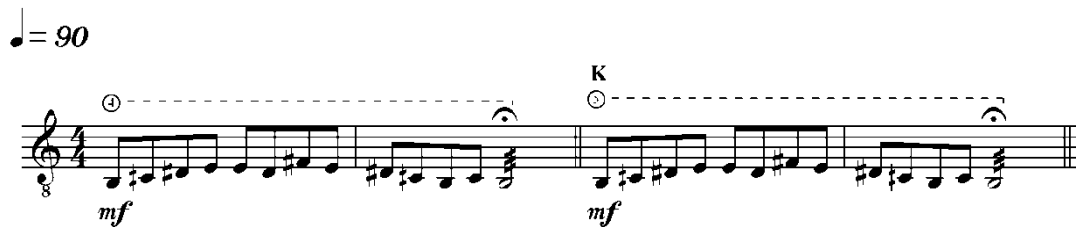


Figure 2.176: Closed positions on the fifth string (CD 3, track 23)

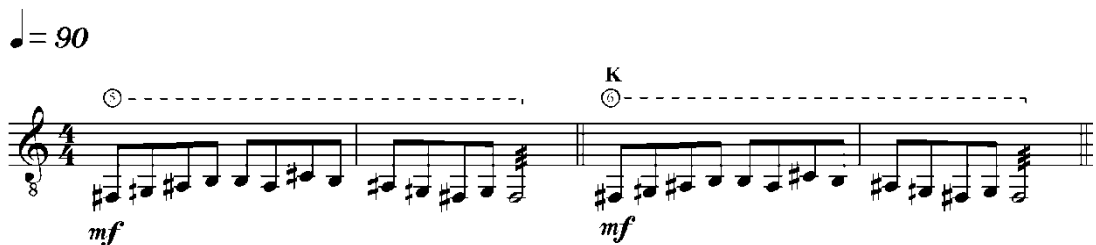


Figure 2.177: Closed positions on the sixth string (CD 3, track 24)

2.2.9 Playing Intervals and Chords on *Ud*

2.2.9.1 Intervals on Two Adjacent Strings

Even though *ud* is a fretless instrument, players are accustomed to play chords. In order to understand which chords can be played by *ud*, one should first comprehend which intervals are possible to play on two adjacent strings. Before going on to those explanations, we should here note that whenever composers write intervals or chords for *ud*, they should always indicate which note is being played on which string.

- 1- If the interval on two adjacent strings contains an open string, all kinds of intervals, within these strings' ranges, are possible to play like the two examples below:

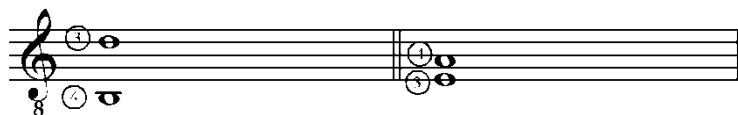


Figure 2.178: Intervals on two adjacent strings

- 2- The interval between two adjacent open strings is a perfect fourth. In order to play other perfect fourths on the same strings, players use a *barré* position.

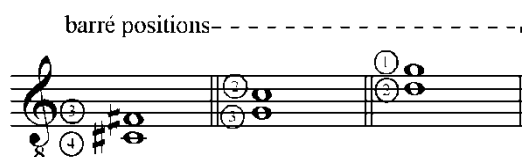


Figure 2.179: Intervals on two adjacent strings with *barré* position

- 3- The larger intervals than this *barré* position can be as large as an octave. However, since the octave requires a very hard playing position, it cannot be produced precisely, the pitch definition gets ambiguous. Therefore, the largest interval that can be performed clearly is a minor seventh.

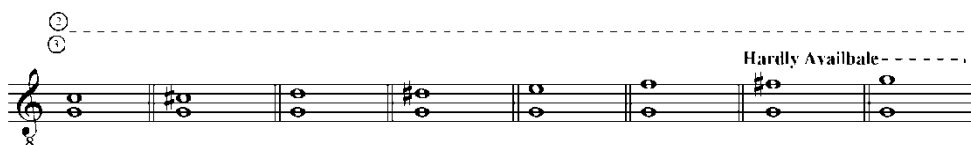


Figure 2.180: Intervals that are larger than a perfect fourth on adjacent strings

- 4- The smaller intervals than this *barré* perfect fourth position can again be as large as a unison which can hardly thus unclearly be performed.

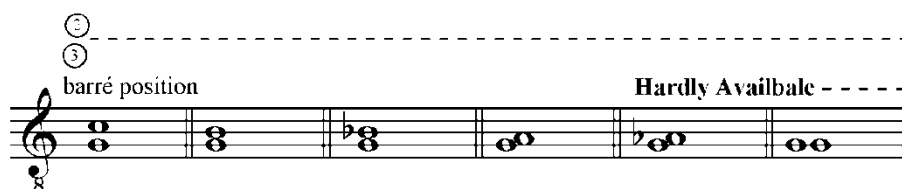


Figure 2.181: Intervals that are smaller than a perfect fourth on adjacent strings

In this case, all the available intervals according to this example are:

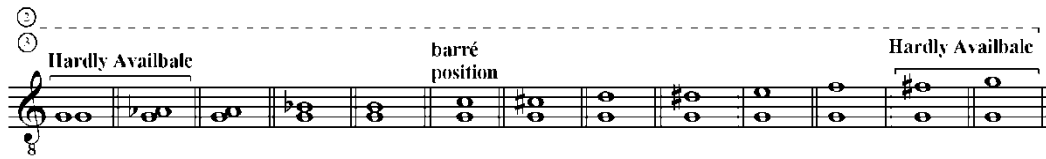


Figure 2.182: All available intervals on two adjacent strings

The example shown in figure 2.182 demonstrates a passage with intervals played on two adjacent strings. As it is heard in this example, the intervals that are placed at the positions higher than the eighth position, (like the G4-C5 in the second measure that corresponds to the highest register of the first and second strings) creates unclear sounds with ambiguous pitch definition.

Largo

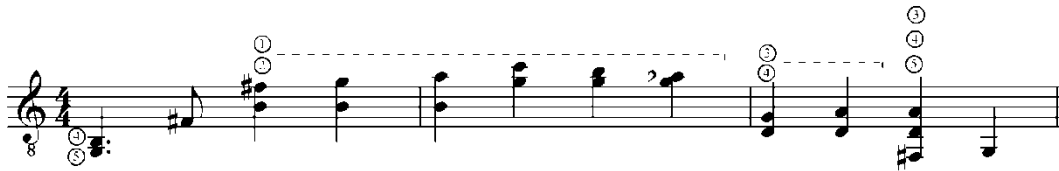


Figure 2.183: Intervals on two adjacent strings used in a passage (CD 3, track 25)

2.2.9.2 Chords

Since *ud* is a fretless instrument only a limited number of chord types can be performed practically on *ud*. In order to achieve a clear understanding of chord playing on *ud*, one should analyze the kinds of three note chords that are available. The bigger chords that include four, five and six notes are created by adding notes to the possible three note chords.

2.2.9.2a Three Note Chords

In order to determine what kind of three note chords can be played on *ud*, the following situations should be considered.

All intervals that are available to play on two adjacent strings can be played with an open string added to the above or below.

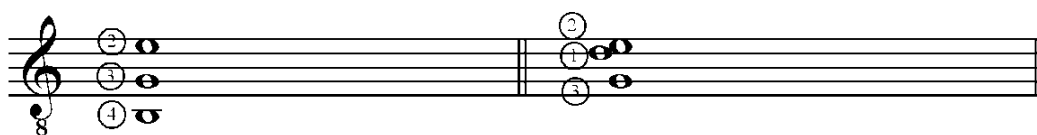


Figure 2.184: Three note chords

When the open string is placed in the middle of three strings, the available intervals between the outer strings can only be the intervals that are shown in the below figure 2.185

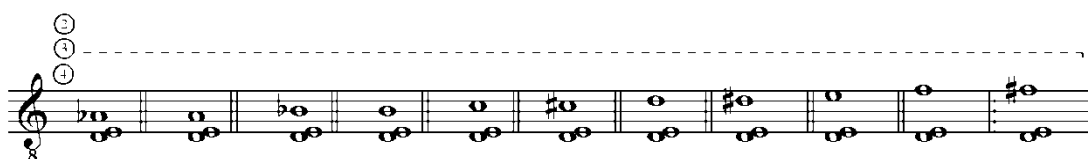


Figure 2.185: Three note chords with an open string in the middle

Two successive perfect fourths in *barré* positions are possible to play as shown below.

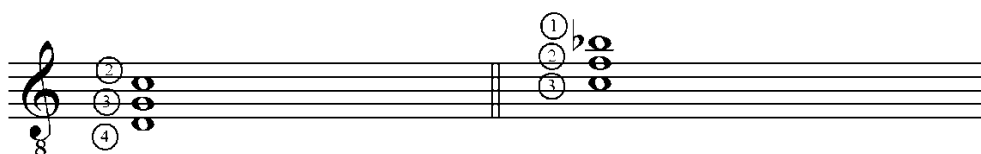


Figure 2.186: Two successive perfect fourths in *barré* positions

An interval that succeeds a perfect fourth or a tritone can be as wide as a minor seventh. For example:

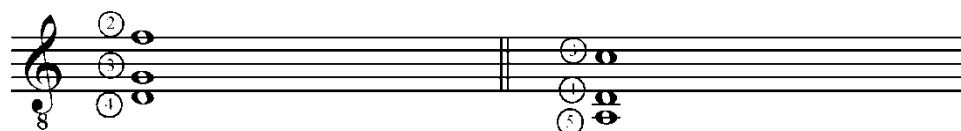


Figure 2.187: An interval that succeeds a perfect fourth or a tritone

An interval that succeeds a perfect fifth can be as wide as a minor sixth. For example:

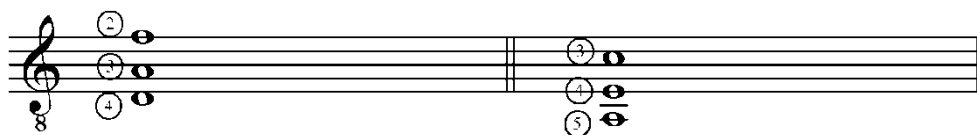


Figure 2.188: An interval that succeeds a perfect fifth

The wider intervals, sixths and sevenths, can only be followed by a perfect fourth or a tritone

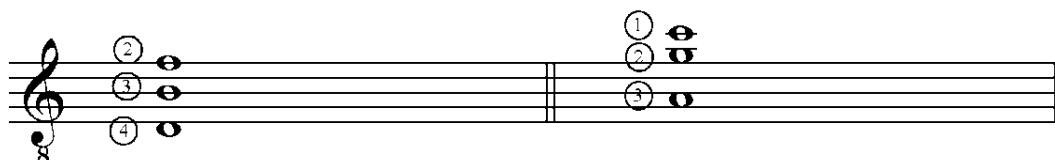


Figure 2.189: Wider intervals that are followed by a perfect fourth or a tritone

Since the perfect fourth interval requires a *barré* position it cannot be followed by smaller intervals, a third or a second. However, a tritone or a perfect fifth can be followed by a third or a second

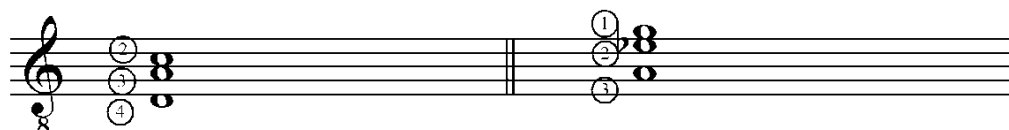


Figure 2.190: Smaller interval that are following the *barré* positions

2.2.9.2b Four Note Chords

Three note chords are most practical for *ud* playing. However, chords for more than three strings can create effective expressions.

- 1- To use *barré* positions that stop the strings with the forefinger the other fingers play remaining of the notes of the chords. This kind of *barré* positions are used most effectively on four strings. The four note chord below exemplifies such positions. In the example below, the D3 and F4 are being played by the *barré* positioned forefinger, which stops all four strings, while the other fingers are playing the remaining notes of the chord; A3 and Eb4

barré position



Figure 2.191: Four note chords

When such positions are used on five or six strings, it is possible that intonation problems and unclear, ambiguous sounds occur.

- 2- Only lower open strings can be added to such *barré* positions. In the example below the F#2 which is the fifth open string on *ud* is added to the four note *barré* positioned chord:

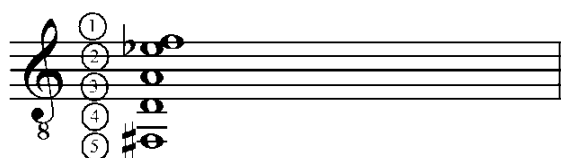


Figure 2.192: Four note chords with an open string

- 3- Four note chords without *barré* positions should be considered as three two note groups in order to determine the chord's convenience for performance. For example, in the chord that is shown below the three two note groups are: D3-A3, A3-Eb4 and Eb4-F4.

barré position

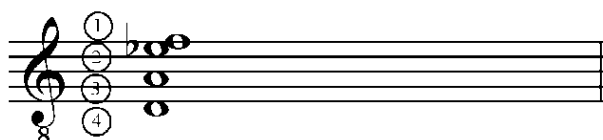


Figure 2.193: Four note chords with *barré* positions

First of all, these two note groups should employ intervals that are defined as available intervals to perform on *ud*. Secondly, composers should consider the “directions” of successive intervals. There are two kinds of directions about how the intervals are designed. The intervals that are larger than the perfect fourth, in other words the central *barré* position, will be called as the “forward direction” and the intervals that are smaller than perfect fourth will be called as the “backward direction”

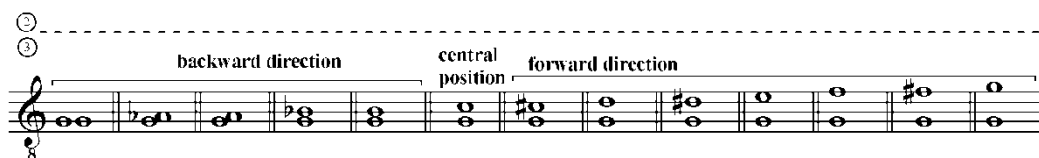


Figure 2.194: All possible intervals on two adjacent strings

Here we will examine the chords that include intervals in forward direction, in backward direction and chords that include both directions. In those analyses, in order to determine which chords are possible to play; only the intervals between the adjacent string pairs, the three two note groups of a four note chord, are considered. For the chords that include intervals only in the forward direction:

- a- Chords that contain two perfect fourths, thus two separate *barré* positions, sounds unclear. Example:

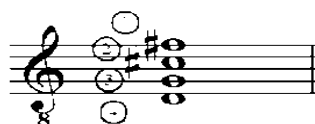


Figure 2.195: Four note chords contain two perfect fourths

- b- Other than what is mentioned above in a, all successive fourths and fifths can easily be performed. Examples:

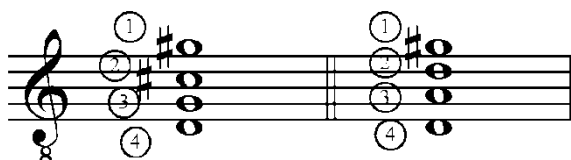


Figure 2.196: Four note chords that contain successive fourths and fifths

- c- If one of the two note groups is larger than a fifth then usually the chord is impossible to play. Example:

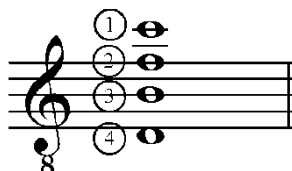


Figure 2.197: Four note chords that contain an interval larger than a fifth

For the chords that include intervals only in the backward direction:

- a- Chords that include a perfect fourth, thus a *barré* position, cannot be played.

Example:

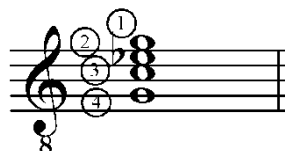


Figure 2.198: Four note chords that include intervals in the backward direction

- b- All successive thirds can easily be played. Examples:

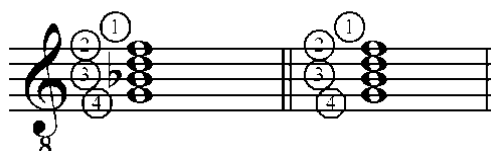


Figure 2.199: Four note chords with successive thirds

- c- Chords that include intervals that are smaller than thirds are usually impossible to play. Example:

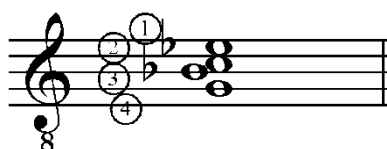


Figure 2.200: Four note chords that include smaller than third intervals

For the chords that include intervals on both directions:

- a- Chords that include intervals smaller than sixth and larger than second can usually be played. Examples:

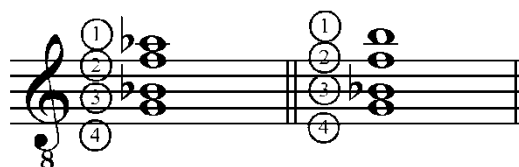


Figure 2.201: Four note chords that include intervals on both directions

- b- Chords that include a perfect fourth, thus a *barré* position cannot be played. Example:

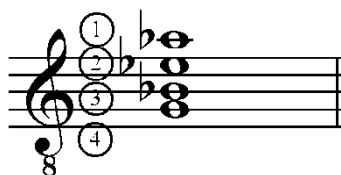


Figure 2.202: Chords that include *barré position* intervals on both directions

- c- Chords that include intervals larger than a fifth and smaller than a third cannot be played. Examples:

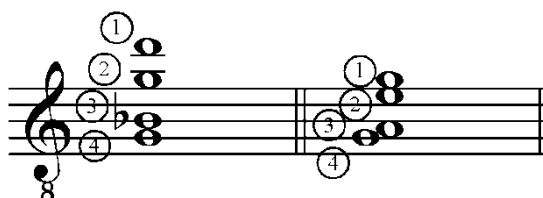


Figure 2.203: Chords that include intervals larger than a fifth smaller than a third

- 4- Four note chords can also be achieved by adding open strings to an available three note chord or adding a new note, to a three note chord that includes an open string. However, this new note should not create a *barré* position perfect fourth with the note on the bottom string of the three note chord and should create an available interval with the note on the bottom note of the three note chord. For example the first chord shown below is not available. Here the three note chord is A4 on the second string, B4 on the third string and G#5 on the first string. This is a three note chord with an open string in the middle which is A4. When F#4 is added on the fourth string, it makes a *barré* positioned perfect fourth with the bottom string of the three note chord B4. If the added note were F4 rather than F#4, the chord would be possible to play. The next chord is available to play as an open string F#3 is added to a three note chord which is possible to play.

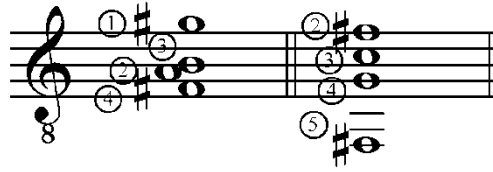


Figure 2.204: Chords formed by adding an open string to a third note chord.

2.2.9.2c Five and Six Note Chords

As the *ud* player can only use four fingers to stop the strings, chords that have more than four notes can be played in two different ways:

- 1- Two use *barré* positions that the forefinger stops the strings in consecutive perfect fourths and other fingers play the remaining notes of the chord. However, as it is stated above these *barré* positions that include more than four notes have a great potential to create ambiguous, non clear sounds. Therefore, these kinds of chords are not used.
- 2- To include open strings to an available four note chord or adding extra notes to a four note chords that include open strings. Open strings to a four note chord which employs a *barré* position that stops four strings with the forefinger can only be added to the lower part of the chord. The more the chords include open strings, they produce bigger sounds. In the examples below first the given chords are *arpeggiated* then played as a whole chord.

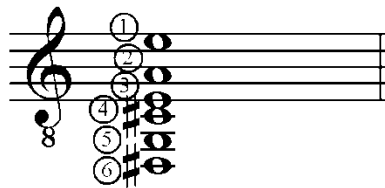


Figure 2.205: Six note chords (CD 3, track 26)

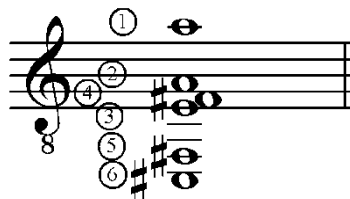


Figure 2.206: Six note chords (CD 3, track 27)

2.2.9.3 Alternative Usages in Chord Playing

2.2.9.3a Chords with Specified Stroke Directions

Composers can specify the stroke direction of the chord. The difference between the down stroke and upstroke makes a greater difference in the six note chords as the down strokes sound much stronger. The below example demonstrates a crescendo on such a chord in both directions.

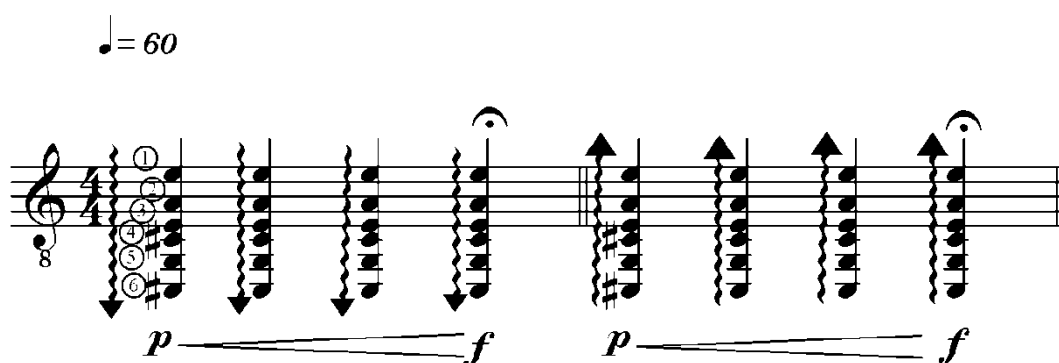


Figure 2.207: Chords with specified stroke directions (CD 3, track 28)

2.2.9.3b Chords with Specified Stroke Directions in Closed Positions

Another important timbral difference can be realized when a chord is played in closed position (K). These chords usually have weaker and more intense sounds compared to the chords played in lower positions, especially to the ones that employ open strings as the chord in example 17. In the closed positioned chords the softer dynamics like *piano* can be more precisely performed. The *forte* and stronger dynamics can hardly be produced.

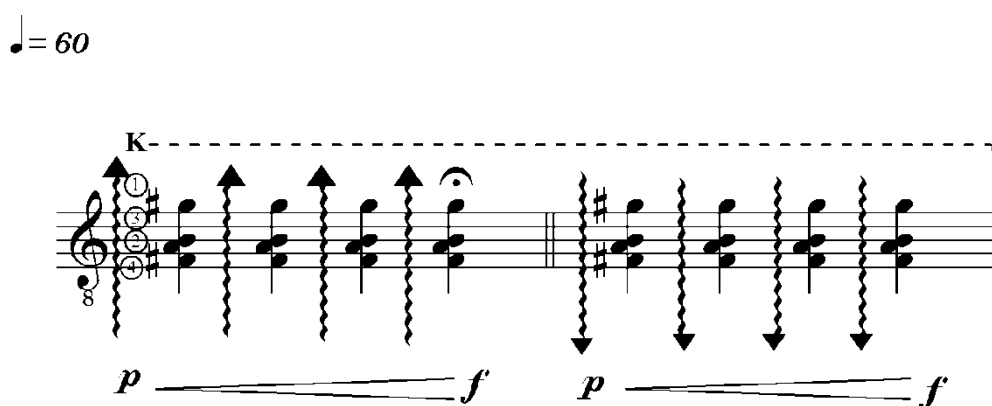


Figure 2.208: Specified stroke directions in closed positions (CD 3, track 29)

2.2.9.3c Arpeggios

All kinds of chords, even chords that are not possible to play on *ud*, can be played as an arpeggio. In the below example an arpeggio passage is exemplified.



Figure 2.209: Arpeggios (CD 3, track 30)

2.2.10 Harmonics

On an open *ud* string the second, third, fourth and the fifth harmonics can effectively be played. The second harmonic which is an octave higher than the fundamental (the open string) is produced by the lighter touch of the right hand on the string from the node where normally the same pitch would be played. This is the XII position on that string therefore this harmonic is indicated by XII in notation. The third harmonic which is an octave and a fifth above the open string is produced from the node where normally a perfect fifth above open string is played. This is the VII position on that string therefore this harmonic is indicated by VII in notation. The fourth harmonic which is two octaves above the open string is produced from the node where the perfect fourth above the open string is played. This is the V position on that string therefore this harmonic is indicated by V in notation. The fifth harmonic which is two octaves and a fifth above the open string can be produced from the node where the major third above the open string is played. This is the IV position on that string therefore this harmonic is indicated as IV in notation. The following example demonstrates all the harmonics on all strings. As it is heard in this example, harmonics on the first string, especially the fifth harmonic, sounds weaker compared to the other strings.

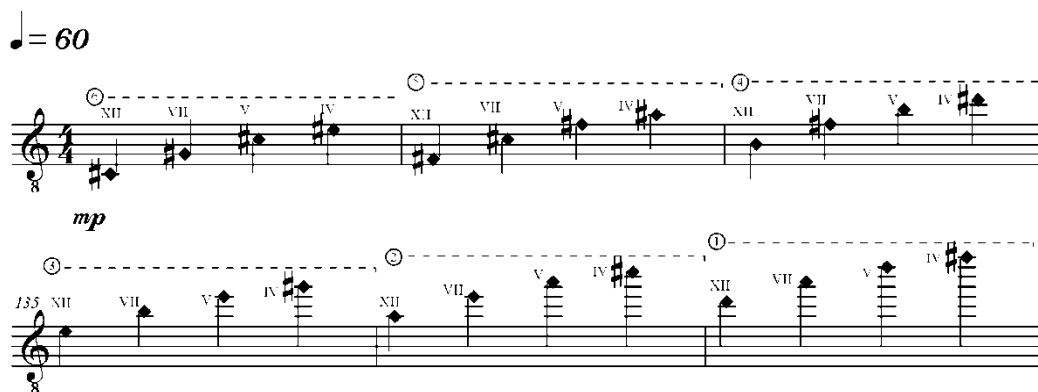


Figure 2.210: Harmonics (CD 3, track 31)

These harmonics on *ud* sound clear and effective so that the dynamic changes can be controlled. In the examples shown in figure 2.210, 211, 212 *crescendos* on different harmonics can be heard.

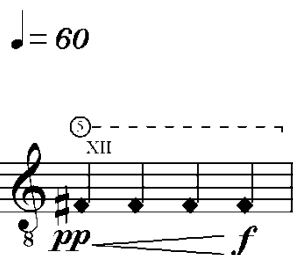


Figure 2.211: Harmonics and *crescendo* (CD 3, track 32)

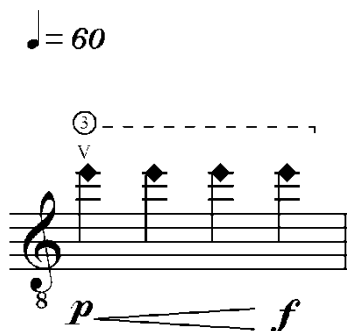


Figure 2.212: Harmonics and *crescendo* in the higher register
(CD 3, track 33)

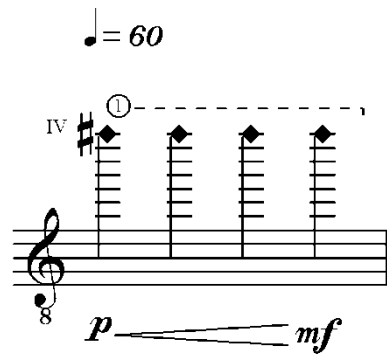


Figure 2.213: Harmonics and *crescendo* in the higher register
(CD 3, track 34)

This last example is the weakest harmonic on *ud* and cannot be played as *forte*.

2.2.11 Trills

All kinds of trills are perfectly available to perform. Both the practice and the notation are familiar to performers.

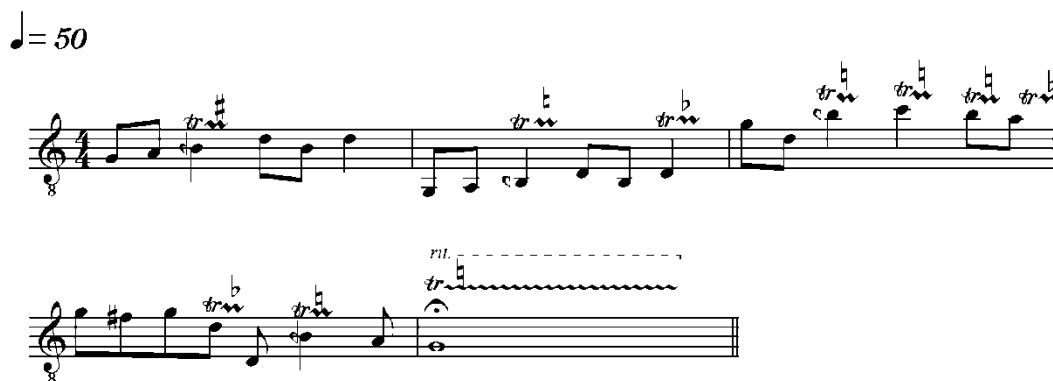


Figure 2.214: Trills (CD 3, track 35)

2.2.12 Tremolos

Tremolos on a single note can be performed effectively in all registers except in the higher positions – IX, X, XI and XII – the stronger dynamics are harder to achieve. As the sixth string is a single string, while the others are paired in five courses, the tremolos are harder to play on that string. However, usually this difficulty is not reflected in performances. Players can play tremolos on the sixth string just like they do on other strings. The following examples demonstrate tremolos on a single note on different strings and different registers along with crescendos.



Figure 2.215: Tremolos (CD 3, track 36, 37, 38, 39, 40, 41, 42, 43, and 44)

The tremolo on a single note technique can also be applied to harmonics. The example below demonstrates such passage.

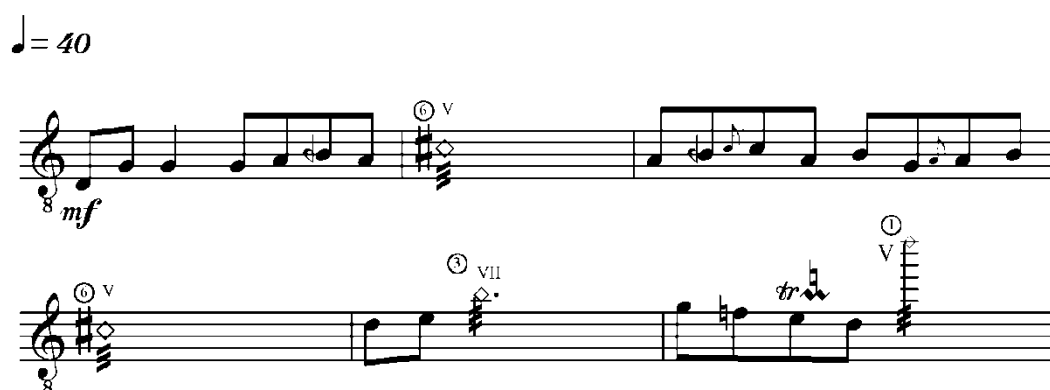


Figure 2.216: Tremolos and harmonics (CD 3, track 45)

Ud players are also familiar to play tremolos between two notes. When one of the notes is an open string, tremolos can easily be performed with any other note on the same string.

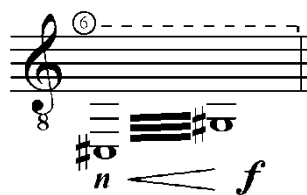


Figure 2.217: Tremolos between two notes with an open string
(CD 3, track 46)

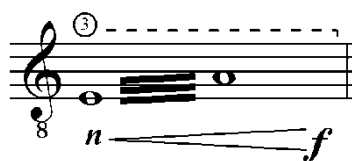


Figure 2.218: Tremolos between two notes with an open string
(CD 3, track 47)



Figure 2.219: Tremolos between two notes with an open string
(CD 3, track 48)

When the tremolo does not include an open string, the widest interval between two notes can be a major third.

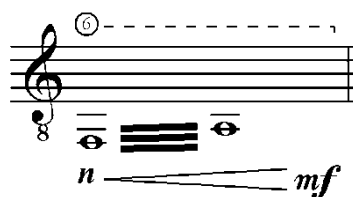


Figure 2.220: Tremolos between two notes (CD 3, track 49)

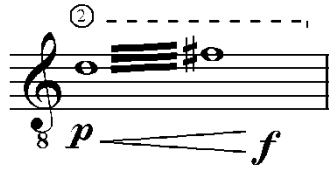


Figure 2.221: Tremolos between two notes (CD 3, track 50)

Fast tremolos between two adjacent strings cannot be played. Rather intervals placed on two adjacent strings can be played as a chord tremolo as exemplified below:

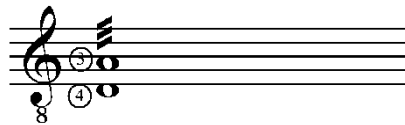


Figure 2.222: Tremolos between two adjacent strings

However, these chord tremolos do not sound as fluent as tremolos on a single string.

2.2.13 *Ud* techniques on Timbre Changes

2.2.13.1 Different Placements of Plucking

By plucking the strings from different placements, different timbral results can be achieved. The *ordinario* of *ud* playing is to pluck the strings right on the *mizraphk*.

Rather than the *ordinario* plucking, the strings can be plucked close to the bridge. This placement of plucking is called as *sul ponticello* and can indicated as *SP* in notation. In the *sul ponticello* playing, the overtones of the fundamental pitch are more prominent in the overall spectrum. In this technique a more nasal sound with less depth (compared to the *ordinario*) is produced.

The other placement of plucking is to play right on the sound hole. In this kind of placement of plucking purer sounds, that the overtones are much less perceptible and the fundamental is prominent in the spectrum, are produced. Besides to this pure quality, as the plucking takes place in a more voluminous space, the sound has a natural reverb effect. This kind of playing is preferred by the players very rarely and almost never indicated in the score. Therefore, there is no standard indication for notation. I propose to call this technique as “on the sound hole” and indicate it as OSH in notation. In the following examples the differences between *SP* and OSH is examined in different registers



Figure 2.223: *SP* and on the OSH in different registers (CD 3, track 51)

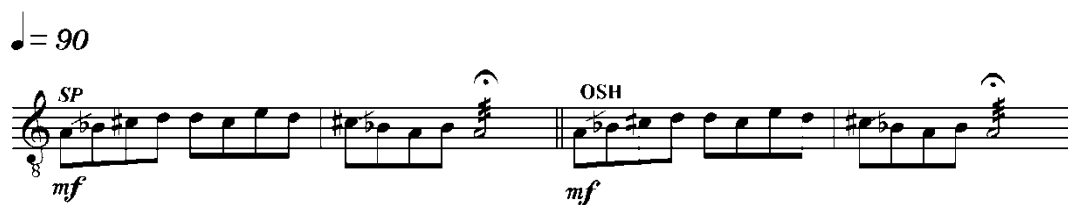


Figure 2.224: *SP* and on the OSH in different registers (CD 3, track 52)

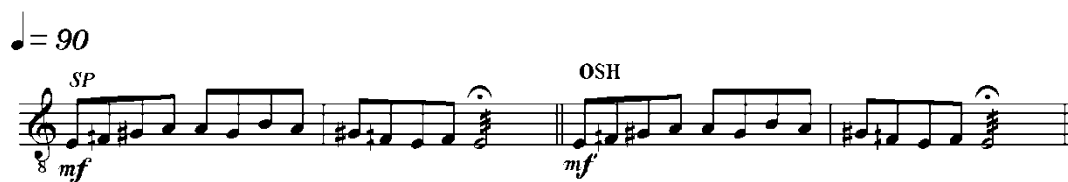


Figure 2.225: *SP* and on the OSH in different registers (CD 3, track 53)

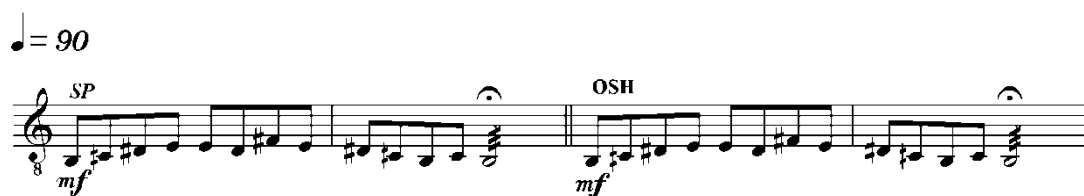


Figure 2.226: *SP* and on the OSH in different registers (CD 3, track 54)



Figure 2.227: *SP* and on the OSH in different registers (CD 3, track 55)

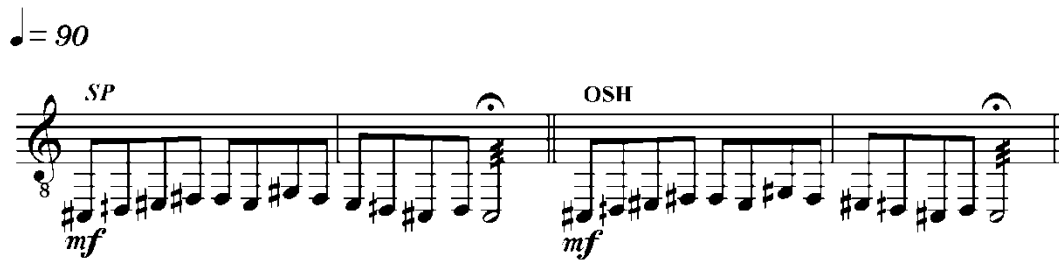


Figure 2.228: *SP* and on the OSH in different registers (CD 3, track 56)

In the examples shown in figures 2.228, 229,230,231 the gradual changes between these different techniques are performed in different registers. In this example the single note tremolo on the given note is first played as OSH and then gradually changed to *ordinario* and then to *SP* along with a *crescendo*. In order to perform these changes the placement of the plucking is moved gradually from the sound hole gradually to the bridge.

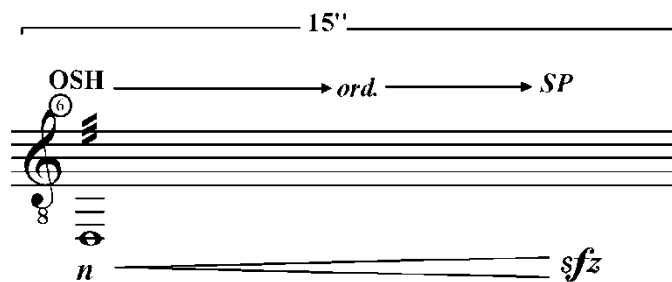


Figure 2.229: Gradual timbre changes different registers (CD 3, track 57)

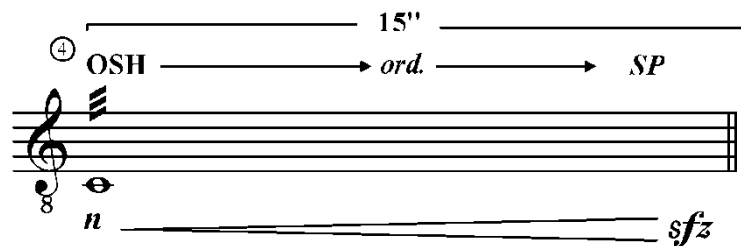


Figure 2.230: *SP* and on the OSH in different registers (CD 3, track 58)

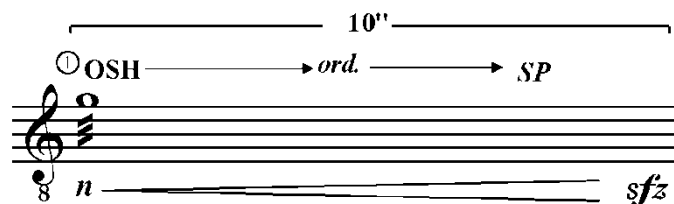


Figure 2.231: *SP* and on the OSH in different registers (CD 3, track 59)

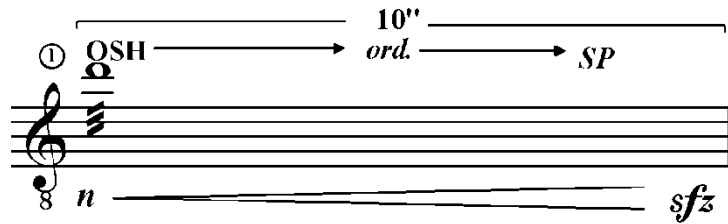


Figure 2.232: *SP* and on the OSH in different registers (CD 3, track 60)

Another placement of plucking in *ud* playing is to play on the fingerboard which is known as *sul tasto* and can be indicated as *ST* in notation. Since *ud* is an instrument with a large body, to play to reach to fingerboard creates a hard playing position therefore *sul tasto* is a technique that can rarely be applied. Also the amplitude of sound in this technique is really small. Only soft dynamics like *pianissimo*, *piano* can be performed. This is another reason that *ST* is only used as an extended technique. *ST* on *ud* sounds close to OSH that both techniques create a spectrum that the fundamental is much more prominent than the overtones. However, there is an important timbral difference that the natural reverb of OSH is absent in *ST*. In the following example a passage played as *sul tasto* can be heard.

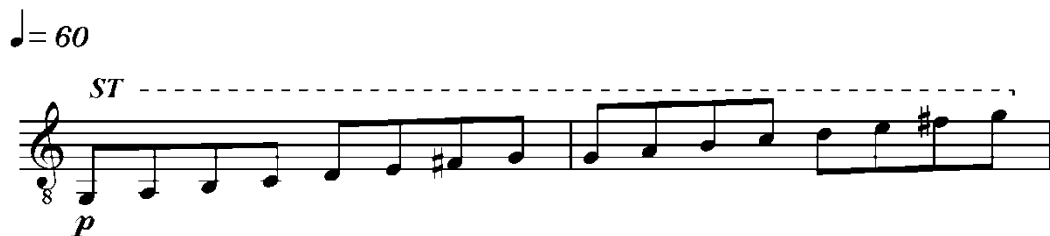


Figure 2.233: *Sul Tasto* (CD 3, track 61)

2.2.13.2 Alternative Plucking Techniques

In *ud* playing, the most common way to pluck the strings is to use a plectrum. However, different timbral colors can be achieved by using fingers or hard plectrums. It is also possible to apply alternative techniques such as muted playing.

2.2.13.2a Playing with fingers

It is possible to pluck the strings by fingers rather than plectrum. Naturally, playing a passage with fingers creates a sound difference. Plucking the strings with fingers produce softer sounds compared to playing with plectrum. In the next example a passage played with fingers can be heard.



Figure 2.234: Finger Playing (CD 3, track 62)

In the following example, the player performs dynamic changes by finger playing. As it is evident in the example the strong dynamics and especially *sforzando* accents are less effective when the strings are plucked with fingers rather than a plectrum.

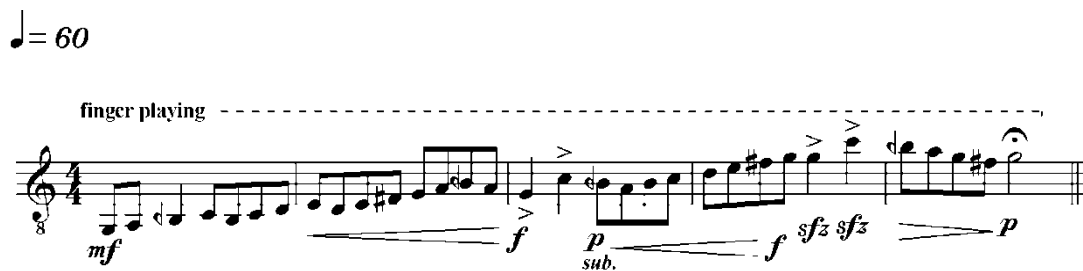


Figure 2.235: Finger Playing along with different dynamics and articulations
(CD 3, track 63)

Players are more used to play with a plectrum. Even arpeggio passages are always played with plectrum rather than finger playing unless indicated.

2.2.13.2b Playing with a Hard Plectrum

Performers use hard plectrum in order to achieve a stronger sound. Especially when *ud* players, perform in large ensembles that contain loud instruments, hard plectrums are preferred. In the examples below, the difference between a normal plectrum (figure 2.235) and a hard plectrum (figure 2.236) can be heard.



Figure 2.236: Playing with a normal plectrum (CD 3, track 64)



Figure 2.237: Playing with a hard plectrum (CD 3, track 65)

When hard plectrum is used, the *ud* sound gets strong however, the buzz that belongs to the normal sound of *ud* (see the “Sound and the Dynamic Range of Individual Strings” section) becomes more evident especially in the lower register. The other problem that occurs in using the hard plectrum is that the agility of playing gets harder. Because of these reasons players always prefer to use normal plectrum unless is indicated.

2.2.13.2c Muted Playing

Another alternative plucking technique is muted playing. In this technique the right hand mutes the strings at the same time it plucks the strings. The result is a percussive, *staccato* effect. In muted playing, strong dynamics and the dynamic changes like crescendos or decrescendos cannot be performed. The passage can only be played as *piano* all throughout.



Figure 2.238: Muted playing (CD 3, track 66)

2.2.14 Vibrato

Vibrato can easily be performed in *ud* playing. Even though performers are not familiar to see vibrato indications in notation, they are accustomed to differentiate between non vibrato and vibrato. As *ud*'s sound does not have a long sustain, they perform vibrato as a sudden and accented technique. Therefore the vibratos in long held notes usually are not employed. For the same reason, the speed and the range of

vibratos cannot be diversified. Only three main vibrato types can be used. These are *non-vibrato* (indicated as *n.v.* in notation), vibrato (indicated as *vib.* in notation), and *molto vibrato* (indicated as *m.v.* in notation). *Molto vibrato* can only be achieved by a very sudden and strong accent. *Molto vibratos* cannot be performed under a soft dynamic or in an unaccented passage. To perform vibratos become almost impossible in the highest positions (XI. and XII. positions) of each string.

$\text{♩} = 60$

Figure 2.239: Vibrato (CD 3, track 67)

In the above example another important issue occurs that composers should consider when writing vibrato passages. In the third and the sixth measures even though the whole measures are indicated as *molto vibrato*, some notes are not played as *non-vibrato* in those measures. These notes are the A3 (in the third measure) and D4 (in the sixth measure) which are open strings. If the composers are concerned with such interruption, one should indicate a position that includes no open strings. Then the passage can be strictly played as a vibrato passage. In this case this passage would be notated like this:

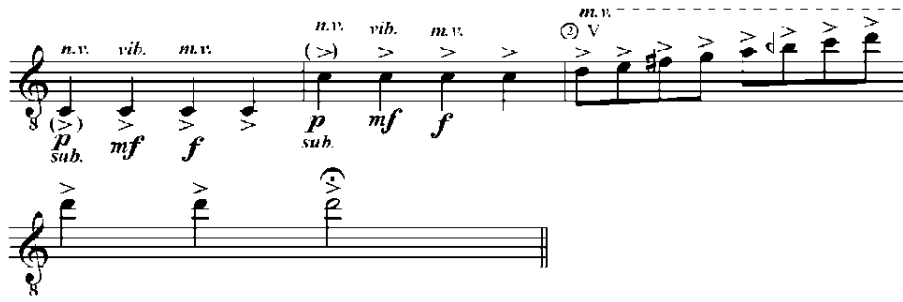


Figure 2.240: Vibrato and specified positions

2.2.15 Glissando

As *ud* is a fretless instruments glissandos can be played easily. Glissandos can be performed all along an individual string which generates an octave range. However, since it is a plucked string instrument the long ranged glissandos create a simultaneous *decrescendo* which might lessen the techniques effect. In order to avoid these simultaneous *decrescendos*, composers might consider using tremolo glissandos. In this case the dynamic and timbral changes can be controlled during the glissando.

In the next example below, an octave glissando is played in different strings; first as *piano*, then as *forte*, then a tremolo glissando with dynamic changes and then tremolo glissando with dynamic changes as *sul ponticello*.



Figure 2.241: *Glissando* (CD 3, track 68, 69)

The tremolo glissandos can be extended and continued beneath the fingerboard as it is exemplified in the following example.

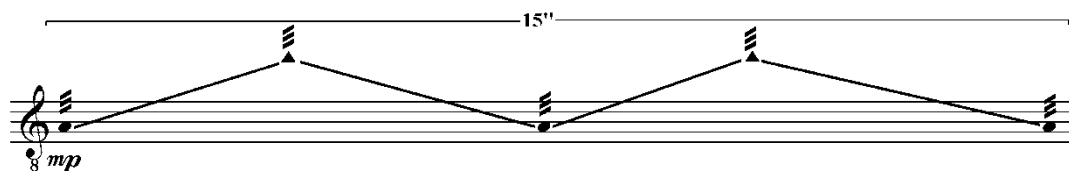


Figure 2.242: Large scale *glissandos* (CD 3, track 70)

2.2.15.1 Harmonic Glissando

In this technique, the player plays a harmonic on a string - which could be any harmonic the second, third, fourth or fifth - and then immediately slides his/her finger on the same string in order to create a harmonic glissando. This glissando can be as wide as a perfect fifth. In the next example, the glissando of the second harmonic is played on all strings.

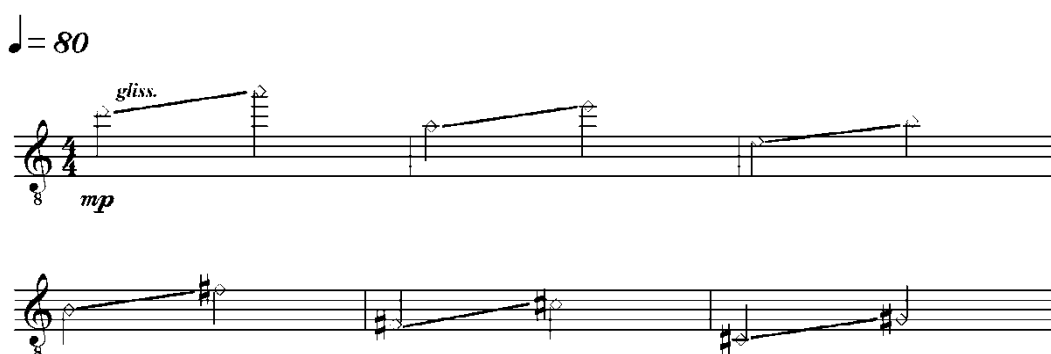


Figure 2.243: Harmonic *glissando* (CD 3, track 71)

2.2.15.2 Glissando with One Finger

Glissando with one finger is a common ornament technique used by the *ud* players. Mostly in stepwise ascending passages, rather than chancing fingers, the performer keeps playing the passage with the same finger and pass on to the next note by glissando.

♩ = 70

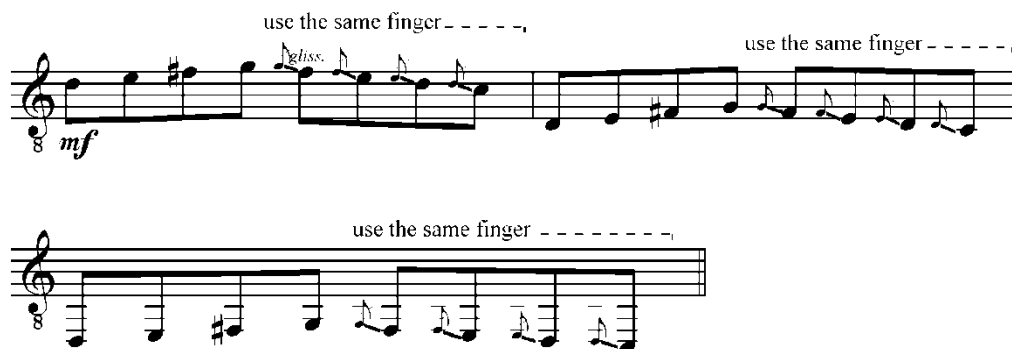


Figure 2.244: *Glissando* with one finger (CD 3, track 72)

2.2.16 Microtonal Differences

Ud players are so specialized in the microtonal differences that exist in Turkish music system that they are able to denote the difference even in passages that do not have *makam* reference as exemplified in the passage below.

♩ = 50



Figure 2.245: Microtonal differences (CD 3, track 73)

However, composers should be careful about one point when writing for microtonal music. Today, the open strings are usually tuned with the help of a tuner. In that case the open strings are tuned according to equal temperament. In this case, for example, the passage below should not be performed by using open strings:



Figure 2.246: Microtonal differences

In order to be more precise about pitch, composers can indicate on which string the passage should be played without employing any open strings.



Figure 2.247: Microtonal differences and open strings

2.2.17 Percussion Effects

Performers can create percussive effects by hitting the instrument. As *uds* are fragile and expensive instruments one should not expect *forte* strokes. In order to notate these percussive effects, composers should specify two main issues:

1- Where to hit?

There are two main answers to this question. The players can hit to the: body (*gövde*) or to the vessel (*tekne*) of the instrument

2- How to hit?

There are three main answers to this question. In order to hit to the instrument, the player can use his/her palm, wrist or use the *rasgueado* technique.

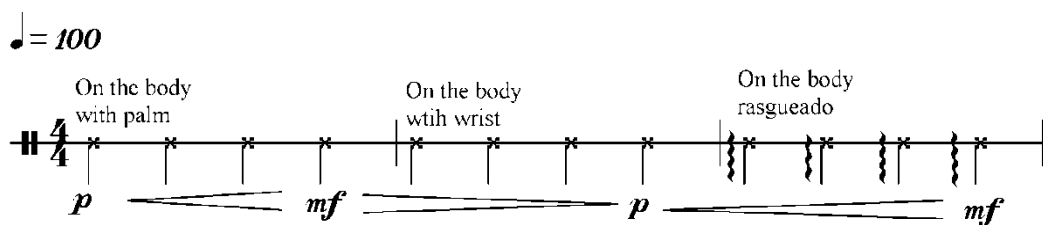


Figure 2.248: Percussive effects (CD 3, track 74)

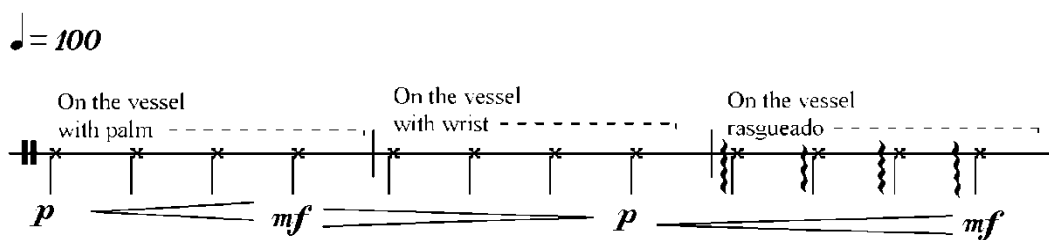


Figure 2.249: Percussive effects (CD 3, track 75)

Performers can also play unpitched chords as a percussive effect. As the right hand (or the plectrum) sweeps thorough the strings, left hand holds the strings so that no pitch would come out.

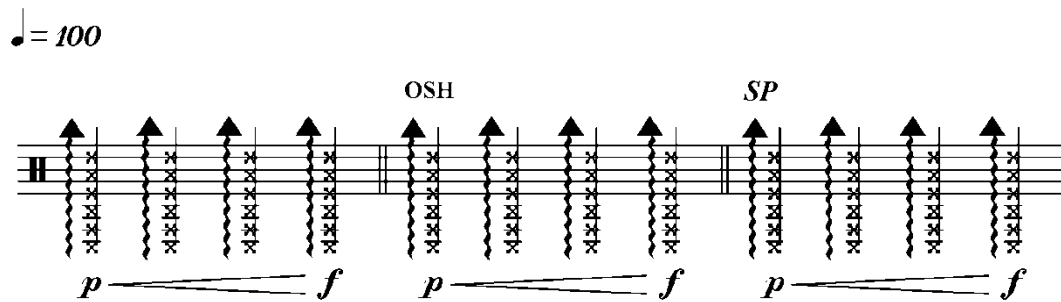


Figure 2.250: Percussive effects (CD 3, track 76)

As it is mentioned above, these are only the main possibilities. Composers can explore other ways to create percussive effects.

2.3 *Kanun*

2.3.1 Historical Background

The earliest form of *kanun* is acknowledged as the kithara of the ancient Greece (Karakaya 2001: 327-28). This situation can be exemplified by the tenth century Syrian lexicographer Bar Bahlul's depiction of a trapezoidal zither as *qithoro* (Sachs 1940: 257). However, *kanun* and kithara are different instruments as they belong to different categories of chordophones. Kithara is a version of lyre and *kanun* is actually a zither. According to Geneviève Dourdon's definition a zither is: "strings stretched over a straight bearer, strings parallel to each other and with the plane of the bearer setting in vibration" (Dourdon 1992: 276). The word *kanun*, as "*qanun*" (derived from Greek *kanon*), first appears in the Ali ibn Bakkar and Shams al-Nazar's tales in the Arabian Nights (hundred and sixty-ninth night) which ascribes to the tenth century (Sachs 1940: 257).

Until 15th century, *kanun* was being held and played vertically. In the 15th century, it started to be held horizontally which enabled both hands to pluck the strings (Karakaya 2001: 327-28). According to Albulkadir Meragi's - a 15th century musicologist and composer - description *kanun* had a trapezoidal shape and had almost the same number of strings as today (Bardakçı 1986: 105). In the same description it is stated that the strings were made up of brass and arranged in groups of three (Feldman 1996: 127). *Kanun*'s strings gradually changed from brass to gut during the second half of the seventeenth century (Feldman 1996: 157).

Kanun started to exist in the ensembles of the Ottoman Courts starting from the 15th century (Karakaya 2001: 327-28). According to Walter Feldman: “*Kanun* is seldom presented in Turkish (or Persian) miniatures of the 16th century so its popularity is difficult to gauge” (Feldman 1996: 127). As *kanun* and compositions by *kanunis* (*kanun* players) are mentioned neither in Ali Ufki (Wojciech Bobowski) (1610-1675) nor in Dimitri Cantemir’s (1673-1723) collections, it was assumably not a foremost instrument in the seventeenth century (Feldman 1996: 156). The form of the Ottoman *Kanun* in the 18th century was very close to the contemporary *kanun* (Karakaya 2001: 327-28). According to the illustration of the Hızır Ağa’s (1765-1770) 1766 treatise, “the instrument has a characteristic shape with the right side perpendicular and the left on an oblique angle. Bridges on the right and the tuning pegs on the left”. (Feldman 1996: 157). *Kanun* gained a firm position in Ottoman classical music only in the nineteenth century. Especially during the eighteenth century it was a forgotten instrument. (Yekta 1986: 92). The development of new playing techniques due to the change from brass to gut strings in addition to the fundamental constructional changes might have been effective in the disappearance of *kanun* from the Ottoman classical music in this period (Karakaya 2001: 327-28). In the nineteenth century it became a favorable instrument especially among woman performers and the foremost *kanun* virtuoso of the first half of the twentieth century is a woman: Vehice Daryal (1908-1970) (Feldman 1996: 157). At the beginning of the 20th century, the last important development has been completed by the addition of the levers to each string (Karakaya 2001: 327-28). These levers enable each string to play certain microtonal indications of Turkish music.

2.3.2 The Constitutional Attributes

A standard *kanun* has 25 groups of strings. Today, plastic strings are used. Each group has 3 strings that are tuned in unison. It is played by plucking the strings with a plectrum or fingers. The strings are placed over a flat, wooden sound board.



Figure 2.251: *Kanun*

The performer places the instrument on top of his/her lap in a position that the lower strings are next to the player's belly.



Figure 2.252: A performer playing *kanun*

In this position the bridge is on the right side. Under the bridge there is a leather section which provides the resonation of the strings.



Figure 2.253: The bridge

The tuning pegs and the levers are placed on the left side.



Figure 2.254: Tuning pegs and levers

In between the bridge and the pegs, there is the wooden sound board with three sound holes on top.

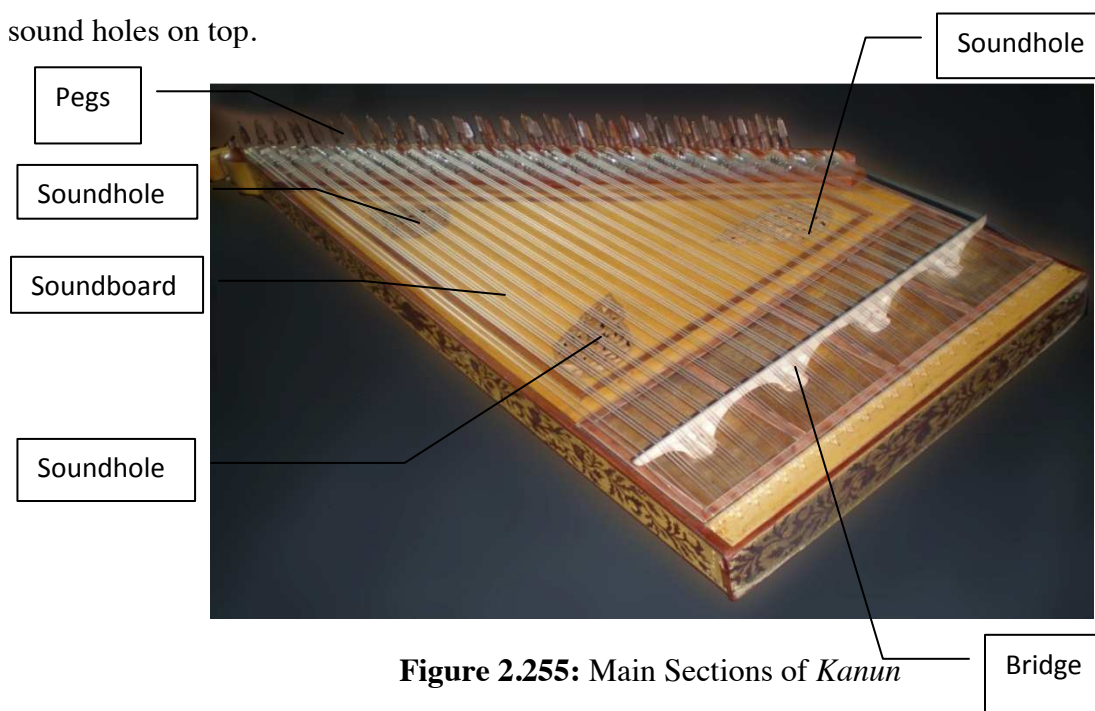


Figure 2.255: Main Sections of *Kanun*

The strings are plucked with the plectrums that are attached to forefinger of both hands with rings.

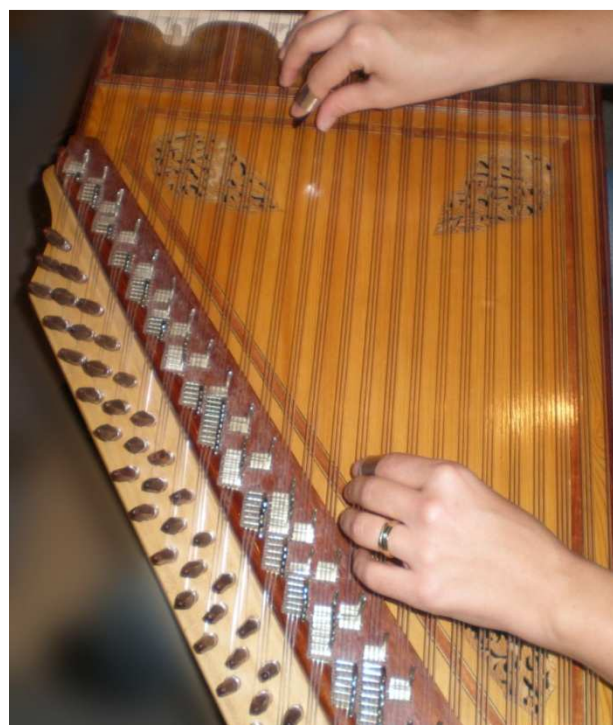


Figure 2.256: Plucking the strings

It is also customary to use the other fingers except the pinkies to pluck the strings



Figure 2.257: Plucking the strings with fingers in addition to plectrum

2.3.3 The Range

The lowest string is A2 and the highest string is D6. However, the lowest note of the *kanun* is Ab2/G#2 rather than A2 and the highest note is D#6 rather than D6. In *kanun* terminology the strings are named according the notes of the *hüseyni makam* in western transposition: A, B, C, D, E, F# and G but each string have a major second range when the levers are used. For example the A string can be tuned down to Ab by turning down the levers and it can also be tuned up to A# by turning up the levers. Therefore the A2 string can be tuned down to Ab2 and the D6 string can be tuned up to D#6 by using levers. In this case the range of *kanun* is:



Figure 2.258: The sound range of *kanun*

This range is divided into five registers. These five registers are determined by the thickness of the strings. The first register has 1.2 mm, the second range has 1 mm, the third register has 0.9 mm, the fourth register has 0.8 mm and the fifth register has 0.7 mm string thickness (Aydoğdu 2007: 28)



Figure 2.259: Registers of the sound range

2.3.4 Basics of *Kanun* Notation

Music for *kanun* can be notated either in one staff or in two separate staves. When a passage is notated in two separate staves for *kanun*, it strictly means that the upper staff is played by right and the lower staff is played by the left hand. In most cases, *kanun* players prefer to read single staff and determine which hand to play which note by themselves. Two staves can be necessary in two cases:

- 1- In polyphonic passages that two hands are playing individual musical lines.
- 2- When the music contains extreme leaps.

However notation in two staves have a definite meaning as the upper staff for right and the lower staff for left hand, music written in one staff does not mean that it will be played by only one hand. As it is mentioned above, this type of notation is actually more favorable for performers that they decide which hand plays which note. In order to determine this, players usually follow certain conventions. It is necessary to comprehend these common practices to manipulate them for an intended expression.

2.3.4.1 Two Hand Coordination

In notation the right hand is indicated with an “A” (referring to the “a” of the Turkish word *sağ* which means right) and the left hand is indicated with an “O” (referring to the “o” of the Turkish word *sol* which means left). Here’s a list of principal considerations about when to use “A” and when to use “O”:

- 1- Kanun players tend to use “A” in all the phrase beginnings even in phrases that start on an offbeat.

- 2- Every downbeat usually starts with an “A”.
- 3- In repeated notes, in most cases, the indication of the preceding note is repeated (as in measure 6 and 7 of the example shown in figure 2.262).
- 4- If a melody contains a clear register distinction, then each hand is associated to each different register (as in measure 7 and 8 of example figure 2.262).
- 5- If a group of notes have smaller note values that succeed bigger note values, then usually the last note of the group is indicated with an “O” after repeated A’s.

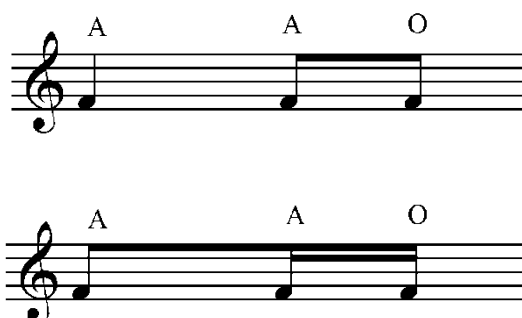


Figure 2.260: Two hand coordination

- 6- If a group of notes have smaller note values that precede bigger note values, then usually the last of the smaller notes is indicated with an “O”.

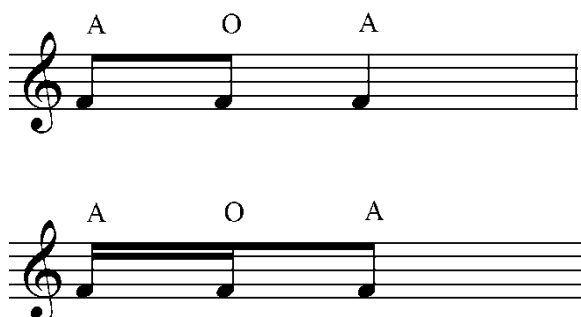


Figure 2.261: Two hand coordination

The example below demonstrates how these first six generalizations can be used in a passage:



Figure 2.262: Two hand coordination indicated in a passage
(CD4, track 1)

- 7- In order to play an interval, the top note is played by “A” and the lower note is played by “O”.



Figure 2.263: Two hand coordination indicated in a passage
(CD4, track 2)

- 8- Grace notes that exist before the downbeats are indicated as an “O”.
- 9- Grace notes that exist before the upbeats are indicated as an “A”.
- 10- If grace notes remain as a group, their “A”, “O” coordination designed according to the following beat.



Figure 2.264: Two hand coordination indicated in a passage
(CD4, track 3)

- 11- If the grace note contains an interval then the following note's hand coordination is determined by its register. If that following note's register is close to the "A" of the grace note then it is played by "A", if it is close to the "O" of the grace note then it is played by "O".

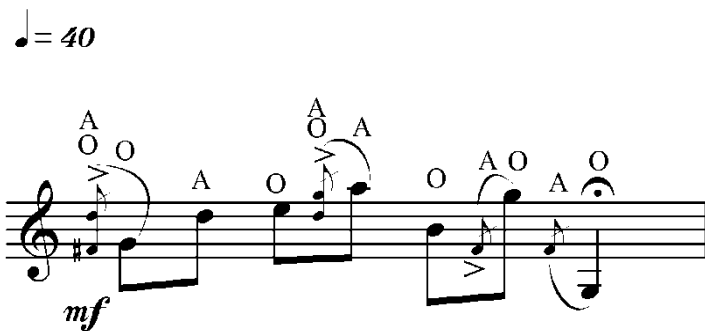


Figure 2.265: Two hand coordination indicated in a passage
(CD4, track 4)

These "A" and "O" indications are almost never used in notation and the determinations about hand coordination are left to the performer's decision. However, composers should denote these symbols whenever they want to use them unconventionally in order to create certain expressions. In the following example, a short passages is first played by using conventional "A" and "O"'s and then the same passage is performed by using only "A"'s and then "O"'s.



Figure 2.266: Two hand coordination and dynamic changes
(CD4, track 5, 6, 7)

The difference becomes more evident in passages that include extended leaps.



Figure 2.267: Two hand coordination and timbral differences (CD 4, track 8, 9, 10)

2.3.5 The Dynamic Range

Kanun has a wider dynamic range compared to other Turkish music instruments. It has a capability to play extremely soft dynamics to relatively strong dynamics (*fortissimo*). The *fortissimos* of *kanun* still sound weaker compared to a western instrument like piano which can create extreme loud sounds. Besides the physical characteristic of the instrument, there are three important issues that restrain to play stronger dynamics.

- 1- As the string is plucked harder to achieve stronger dynamics, it becomes more possible that the instrument can get out of tune.
- 2- As the strings plucked harder, the buzz sounds occur
- 3- As the strings plucked harder, agility becomes harder to perform.

In the next example, the effects of different dynamics are demonstrated in all five registers. As it is evident in the example, the sound of *kanun* has a long sustain. Since the lower strings are longer, they have a longer sustain. The notes in the higher register have shorter strings and shorter sustain.

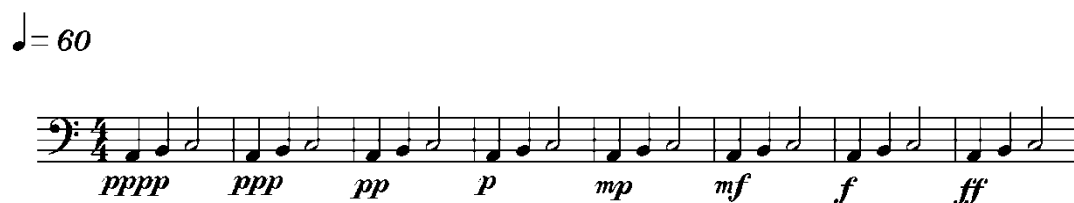


Figure 2.268: Dynamics in the first register (CD 4, track 11)

♩ = 60



Figure 2.269: Dynamics in the second register (CD 4, track 12)

♩ = 60



Figure 2.270: Dynamics in the third register (CD 4, track 13)

♩ = 60



Figure 2.271: Dynamics in the fourth register (CD 4, track 14)

♩ = 60



Figure 2.272: Dynamics in the fifth register (CD 4, track 15)

2.3.6 Articulations

2.3.6.1 Legato

Kanun is an instrument that its natural sound has a long sustain. Therefore playing legato is easier and more practical for *kanun* players than performing other articulations. This characteristic also effects the interpretation of notation. A passage that has no articulation indication will be automatically interpreted as a *legato* passage by the performer.

This type of playing resembles piano playing with the pedal on. In this case the correspondence of the dampening the pedal is to stop the strings with one of the player's hand in *kanun* playing.



Figure 2.273: *Legato* (CD 4, track 16)

2.3.6.2 *Tenuto*

In *tenuto* playing, this natural sustain of the instrument is stopped by one of the player's hand after the string is plucked by the other hand. If the sustain of the note stopped immediately after it's plucked, the interpretation becomes staccato rather than *tenuto*. In order to achieve the *tenuto* effect, the player should let the string sustain precisely as the duration of the note.

Composers should be aware of the fact that such articulations like *tenuto* or *staccato* which requires dampening the strings, can be played by only one hand.

Composers and performers should decide how the strings should be stopped. Usually players use their arms to stop the rest of the strings and dampen the string that is being played at that moment with their hand. It is harder to apply this method for the lowest strings placed in the first and second register that there is no space to use the performer's arm. Because of this reason to play fast staccato notes in these register can be problematic, especially if they are approached by a wide leap.

There are usually two different methods applied about how the strings will be stopped by hand.

- 1- To dampen the strings with the palm.
- 2- To dampen the strings by a stroke in which the hand is placed by approximately 90 degrees angle with the strings.

Definitely, the using the palm is more effective to dampen the strings. However, in fast passages players might refer to the second method more since the stroke of the

hand can be performed more rapidly. One other problem can occur when the palm is used. If there are leaps in music, while detaching the palm from the strings unintended *glissandos* can be heard.

Composers do not have to indicate all these details about how the strings will be dampened. Nevertheless, they can. If they think these details are necessary to indicate to achieve the correct expression.



Figure 2.274: *Tenuto* (CD 4, track 17)

2.3.6.3 Using Slurs in *Legato* and *Tenuto* Playing

If slurs are used in a passage, the sustain of the note is stopped by one of the hands only at the end of the slur in order to separate it from the rest of the passage as demonstrated in the example below.



Figure 2.275: Using slurs in *legato* and *tenuto* playing (CD 4, track 18)

In example shown below the same passage is played by using longer slurs.

♩ = 70



Figure 2.276: Using long slurs in *legato* and *tenuto* playing (CD 4, track 19)

2.3.6.4 Staccato

As it is mentioned in the “*tenuto*” section, staccato playing requires the string being stopped immediately after it is plucked. Because of this reason, staccato passages can only be played by only one hand.

♩ = 70



Figure 2.277: *Staccato* (CD 4, track 20)

As the stopping of the strings becomes more immediate after they are plucked, the notes become more staccato. In the example shown in figure 277, an example of a *staccatissimo* passage can be heard.

♩ = 70

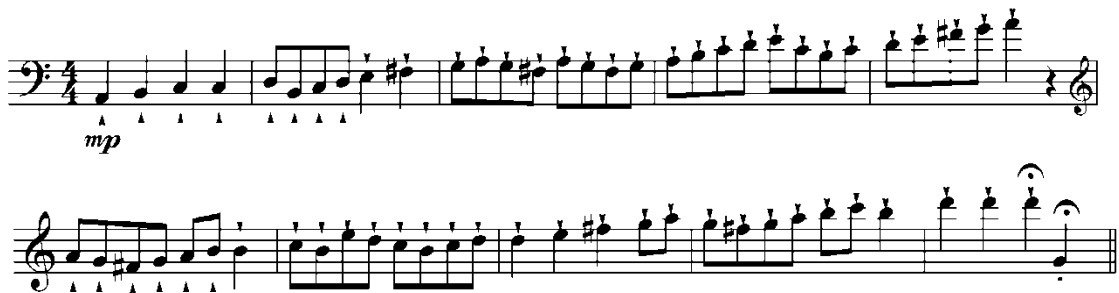


Figure 2.278: *Staccatissimo* (CD 4, track 21)

2.3.6.5 *Marcato*

In a passage in which different accents and dynamics are constantly shifting, the dynamic changes are determined by one hand that plucks the string while the other hand determines the articulation changes by stopping the strings. Since this process can become quite complex, such passages can only be played by one hand.



Figure 2.279: *Marcato* (CD 4, track 22)

In passages that includes wide ranged leaps with *staccatos* or accents, composers should consider giving sometime to the performer in order to stop the strings as shown in the below example.

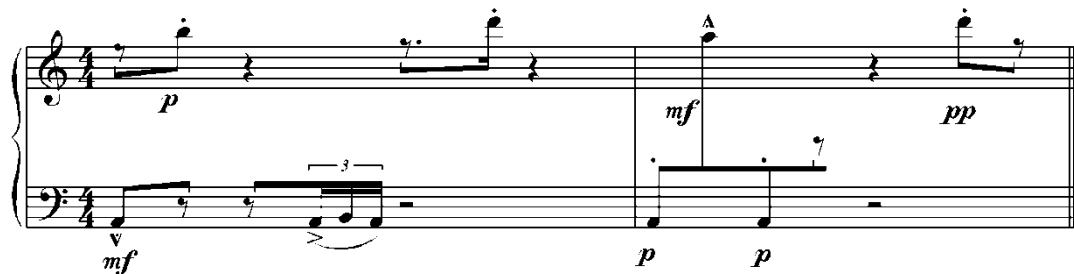


Figure 2.280: *Staccato* and *marcato* in a passage with wide leaps

There is another important issue about such passages. While stopping the strings, the players are performing extra physical gestures that require extra time which is not written on musical score. In these cases players should be more careful to perform the given rhythms more precisely.

2.3.7 Tremolos

2.3.7.1 Single Note tremolos

In order to perform single note tremolos effectively both hands are used. Because of the difficulty of the playing position, tremolos are harder to perform in the first register. In the below example unmeasured tremolos are performed in an overall ascending passage.

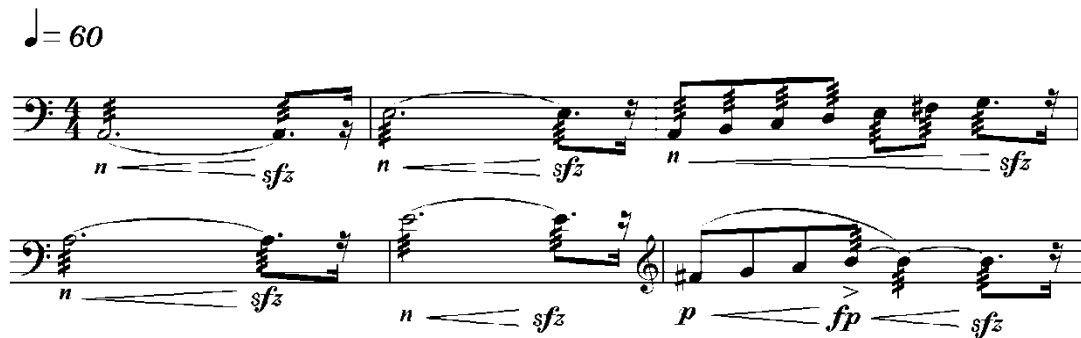


Figure 2.281: Single note tremolos (CD 4, track 23)

In the following example, the differences between measured and unmeasured tremolos are played again in an ascending passage.



Figure 2.282: Different type of single note tremolos (CD 4, track 24)

2.3.7.2 Tremolos between Two Notes

Besides single note tremolos, tremolos between two notes can also be played. Even tremolos between two notes that are extremely apart from each other can be effectively performed.

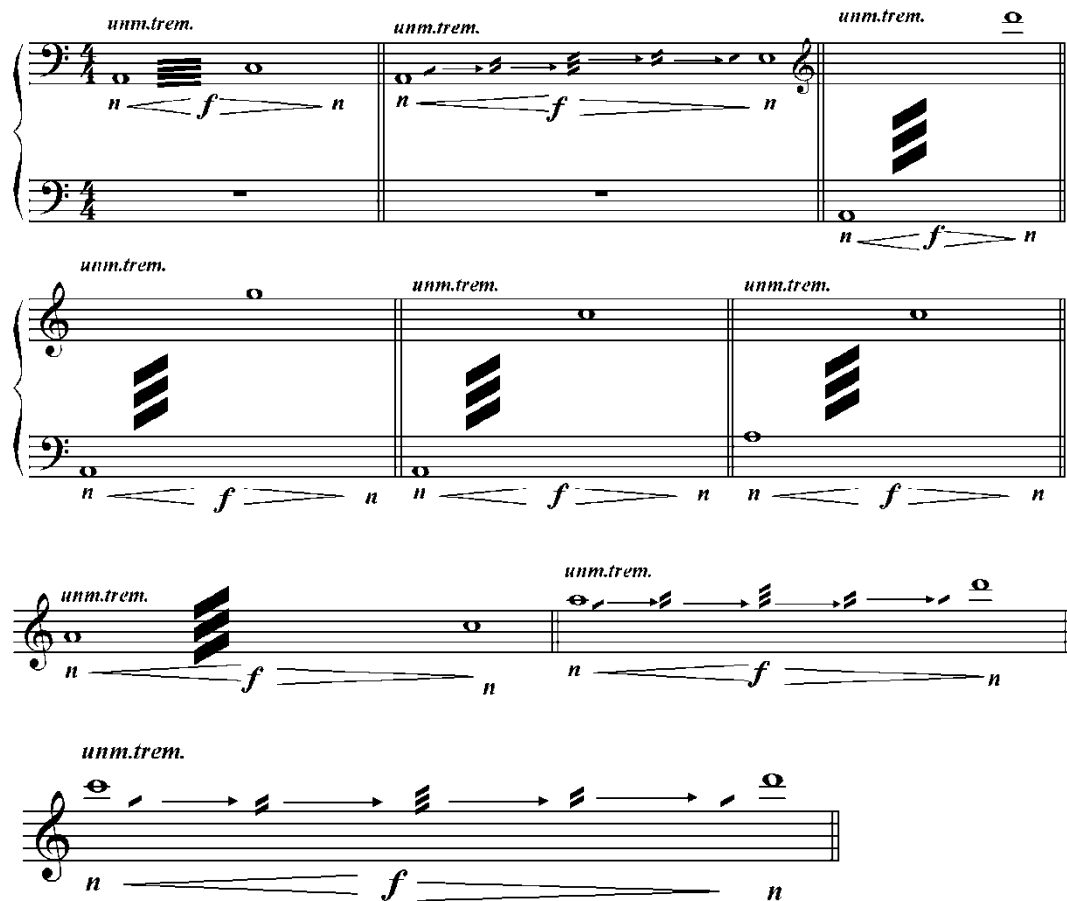


Figure 2.283: Tremolos between two notes (CD 4, track 25)

Tremolos by one hand can only be played by the right hand. This technique will be examined in more detail in “Polyphonic Passages” section. Tremolos by left hand sound slower and weaker compared to the left hand tremolos. Because of this reason chord tremolos cannot be performed in kanun.

2.3.7.3 *Bisbigliandos*

Bisbigliandos can be performed effectively in all registers. However, since all notes of the chords are plucked individually by fingers, usually the speed of the tremolo appears to be slower than expected.

♩ = 50

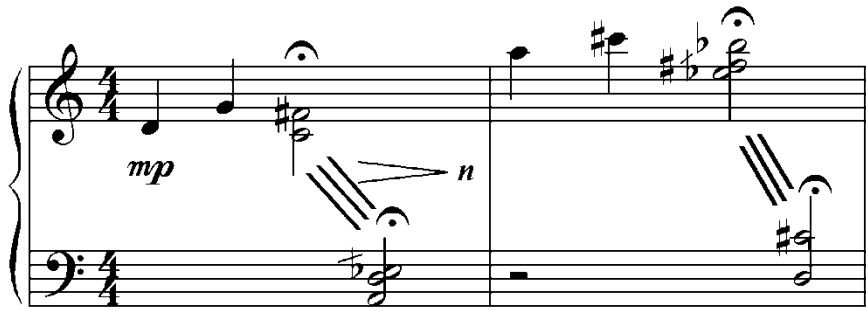


Figure 2.284: *Bisbigliandos* (CD 4, track 26)

2.3.8 Agility

A professional *kanun* player can play any type of fast passages. However, they might have difficulties to sight read music which has extreme leaps (like the passage in figure 2.284) because they need some preparation time to decide about the “A” “O” coordination.

♩ = 80



Figure 2.285: *Agility* (CD 4, track 27)

2.3.9 Changing Levers

2.3.9.1 The Mechanism of Levers

The range of each string can be enlarged by a minor second to both flat and sharp directions. As it is mentioned in “Explanations on the Turkish Music Terminology” section, in Turkish music system a major second is divided into 9 equal parts. Each of these divisions is called as a *koma*. Since these commas divide the major second into nine equal parts each *koma* is about 22 cents. Ideally kanun can play all of these *koma* differences. In order to play these *komas* each string must have at least 11 levers. Usually the 6 of these levers are used *komas* on the flat direction and called as

the inner levers and the remaining 5 are used for *komas* on the sharp direction and called as outer levers. In order to play the natural note all levers on the flat side must be in upper position and all levers on the sharp side must be in down position.

2.3.9.2 Inner Levers

There are five levers that are placed after the ground lever (*dip mandal*) on the flat direction. These levers can also be called as inner levers. The ground lever is placed right after the tuning pegs and is never changed. The first lever placed after the ground lever is called as the first lever as the next is called as the second lever and so on.

- 1- When all five inner levers are in upper position the natural note is achieved.
- 2- When the fifth inner lever is in down position and the other four are in the upper position, the one *koma* flat note is achieved
- 3- When the fifth and fourth inner levers are in down position and the other three are in the upper position, the two *koma* flat note is achieved
- 4- When the fifth, fourth and the third inner levers are in down position and the other two are in the upper position, the three *koma* flat note is achieved
- 5- When the fifth, fourth, third and the second inner levers are in down position and only the first lever is in the upper position, the four *koma* flat note is achieved
- 6- When all five inner levers are in the down position then the five *koma* flat note is achieved.

In the below figure these lever changes are exemplified according to the note D:

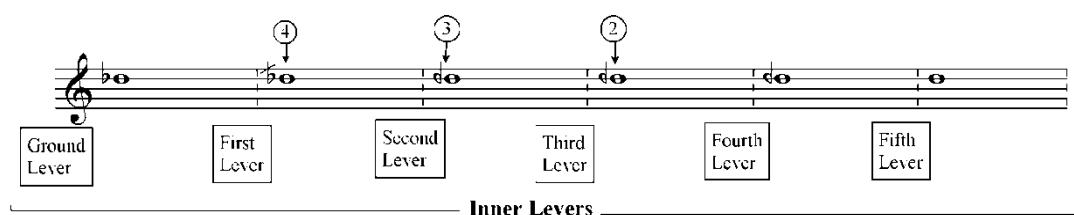


Figure 2.286: Mechanism of the inner levers

As it is shown in the above figure the second, third and fourth *koma* flats are indicated by numbers above the staff. This notation is only particular to kanun notation.

2.3.9.3 Outer Levers

There are five levers that are placed after the inner levers. These levers can also be called as outer levers. The first lever placed after the last inner lever is called as the first lever as the next is called as the second lever and so on.

- 1- When all five outer levers are in down position the natural note is achieved.
- 2- When the first outer lever is in upper position and the other four are in down position, the one *koma* sharp note is achieved
- 3- When the first and second outer levers are in upper position and the other three are in down position, the two *koma* sharp note is achieved
- 4- When the first, second and the third outer levers are in upper position and the other two are in down position, the three *koma* sharp note is achieved
- 5- When the first, second and the third outer levers are in upper position and only the fifth lever is in down position, the four *koma* sharp note is achieved
- 6- When all five inner levers are in upper position then the five *koma* sharp note is achieved.

In the below figure these lever changes are exemplified according to the note D:

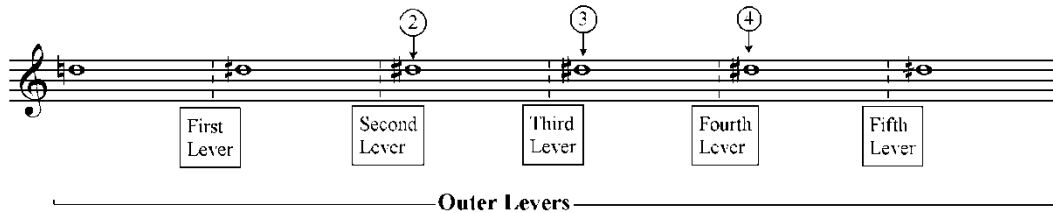


Figure 2.287: Mechanism of the outer levers

As it is shown in the above figure the two, three and four *koma* sharps are indicated by numbers above the staff. This notation is only particular to *kanun* notation.

2.3.9.4 Lever Changes between Two Minor Second Apart Notes

In the notation of *komas* between two diatonic notes that are minor second apart in descending passages some kind of confusion takes place. Usually these kinds of lever changes are performed on one string and this string is almost always the lower note of the minor second interval. For example a passage like figure 2.287 is usually performed on the E string as shown in figure 2.288

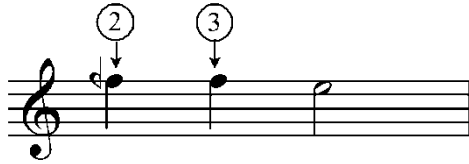


Figure 2.288: Lever changes between two minor second apart notes

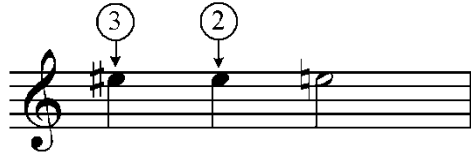


Figure 2.289: Lever changes between two minor second apart notes

However this passage is usually notated as below:

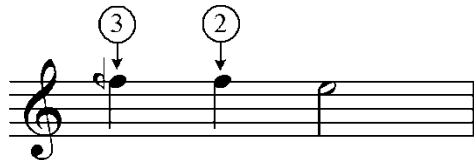


Figure 2.290: Lever changes between two minor second apart notes

Even today the number of levers that each string should have is not standardized. It depends on the performers' choice and his/her personal relations with the *kanun* makers. This situation becomes more evident with intonation problems when two *kanuns* play together either as a duo or in an ensemble. Especially in the first two registers (from A2 to G3) it is very likely that *kanuns* have very few levers. In order to write lever changes, composers should consult with their performers.

Kanun players are accustomed to change levers even in fast passages if the music is not extremely chromatic. The lever changes should be indicated above the staff right before the note that should be changed.

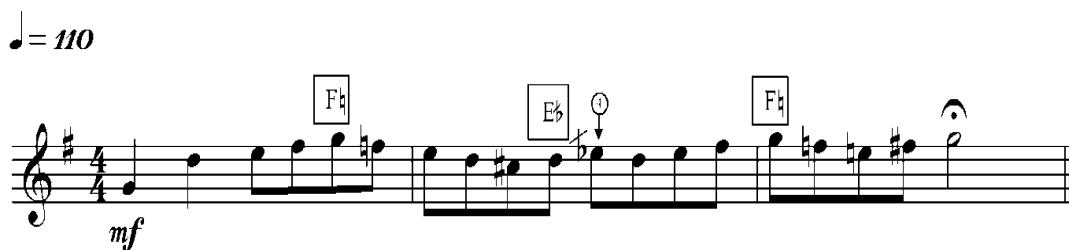


Figure 2.291: Changing the levers (CD 4, track 28)

As it is heard in the example above, the lever changes can easily be done without having any difficulty. However, in such passage that has too many lever changes, articulation or dynamic changes cannot be performed.

In the following example lever changes that denote microtonal differences are performed. In passages like this, if the microtonal references are concerning Turkish music *makams*, composers can indicate which *makam* they are using. These references are always very helpful for performers. These indications should also be placed above the staff along with indications about lever changes.

A passage similar to example shown in 2.291, with frequent microtonal lever changes cannot be played two octaves below, or in other words in the I and II registers, since in most of the *kanuns* these strings do not have enough levers to supply these changes.

♩ = 90

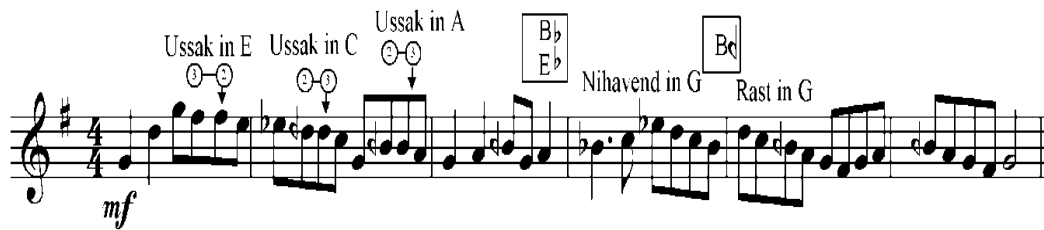


Figure 2.292: Microtonal levers changes (CD 4, track 29)

In chromatic passages that require too many lever changes, since performers need extra preparation for such passages anyhow, the indications above the staff concerning the lever changes might be omitted. As constant lever changes occur in these kinds of passages, the lever sounds become a regular part of the passage.

♩ = 70



Figure 2.293: Levers changes in a chromatic passage (CD 4, track 30)

Usually performers use their left hand to change levers, while right hand continues to play the passage. Therefore, lever changes cannot be played in octave passages as they are played by using both hands. For example a passage like below cannot be played.



Figure 2.294: Levers changes in octave passages

A diatonic version of the same passage that does not require any lever changes can be played without any difficulty.

♩ = 60



Figure 2.295: Octave passages (CD 4, track 31)

2.3.9.5 Trills and Lever Changes

Trills can be easily performed on *kanun*. Trills can only be performed on two separate strings. It is not possible to change levers during the performance of a single trill since both hands are occupied on two separate strings. Lever changes can be done between two separate trills. However, composers should be careful about lever changes in trills as trills are always played on two separate strings. For example a trill that is shown below can only be played by using G and A strings together as a G-Ab trill.

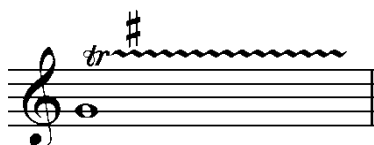


Figure 2.296: Trills and lever changes

The example shown in figure 2.296 demonstrates a passage with lever changes during trills. The lever change takes place between G4-Ab4 trill and A4-Bb4 trill.

After the G4-Ab4 trill is played, player changes the A4 string back to A natural in order to play the A4-Bb4 trill. As it is impossible to change two levers at the same time, the player should prepare the Bb4 string before one starts to play this passage.

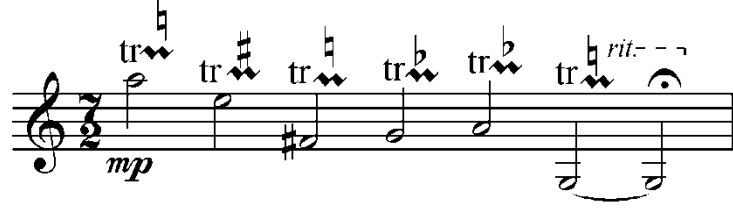


Figure 2.297: Trills (CD 4, track 32)

In the following example, lever changes take place along with tremolos and trills.

$\text{♩} = 60$



Figure 2.298: Lever changes along with tremolos and trills. (CD 4, track 33)

2.3.10 Chord Playing

Kanun is the only Turkish Music instrument which can play almost all kinds of chords. Chords are usually played by using all ten fingers rather than using only two plectrums. Because of this reason in chordal passages composers should indicate if the music is being performed by plectrum or fingers. The conventions for these indications are:

- 1- Using plectrum is denoted by \triangle_m in which “m” stands for Turkish word *mızrap* which means plectrum.
- 2- Using fingers is denoted by \odot_p in which “p” stands for Turkish word *parmak* which means finger.
- 3- Both of these indications are notated below the staff.

2.3.10.1 Alternative Methods of Plucking

2.3.10.1a Using Plectrum

Arpeggios can be both played by plectrum and fingers. In the next example, an arpeggio passage is played with plectrum.



Figure 2.299: Arpeggios played with a plectrum (CD 4, track 34)

2.3.10.1b Using Fingers

However, for arpeggios performers prefer to use fingers almost in all cases. As fingers move along the strings such passages can be played more fluently rather than the detached leaps of the plectrum. Playing arpeggios with fingers create a more lyrical, harp-like effect.



Figure 2.300: Arpeggios played with fingers (CD 4, track 35)

In order to control the phrasing, composers can use two staves which specify the right and left hand coordination.



Figure 2.301: Two stave notation for arpeggios (CD 4, track 36)

Nevertheless, it is difficult to control dynamic changes when fingers are used. In example 27, a passage is demonstrated in which playing with fingers and plectrums are switched. Arpeggiated chords are played with fingers; the stepwise sixteenth notes are played with plectrum. However, the arpeggio in the second measure is played with plectrum in order to perform the crescendo effectively.

2.3.10.1c Switch between Plectrum and Fingers

The other important issue is, in passages that includes constant shift between finger and plectrum the player has to keep the plectrum on his/her hand. In this case even the parts that are determined to be played with fingers, the forefinger plucks the strings with the plectrum. In such situation the timbral differences between two different techniques is lessened.

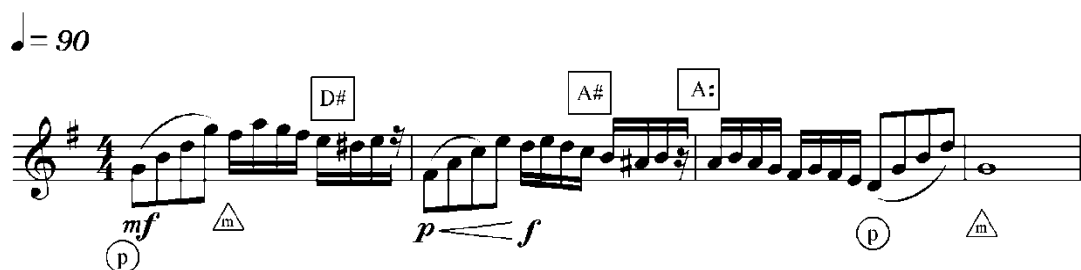


Figure 2.302: Switch between plectrum and fingers (CD 4, track 37)

Especially for passages that is consist of only chords and arpeggios, composers can use the “*senza plettro*” or “without plectrum” indication in order to denote that the passage is going to be performed strictly by hand.

2.3.10.2 Chordal Passages

When writing chords, composers should consider the circumstances below:

- 1- All five fingers of the performer are used in chord playing
- 2- Each hand can play maximum three notes at the same time
- 3- The interval between the lowest and highest note of a chord played by one hand can be as wide as an octave.

2.3.10.2a Chordal Passages with no Lever Changes

In figure 2.302 a chordal passage with no lever changes is performed.



Figure 2.303: Chordal passages with no lever changes (CD 4, track 38)

2.3.10.2b Chordal Passages with Lever Changes

In order to play a chordal passage with quite a lot of lever changes as in the example shown in figure 2.304, the performer should prepare the levers of all strings that are going to be used in the passage. For the passage in this example, the levers should be prepared as shown below before it is being played:



Figure 2.304: Preparation of lever changes in a chordal passage

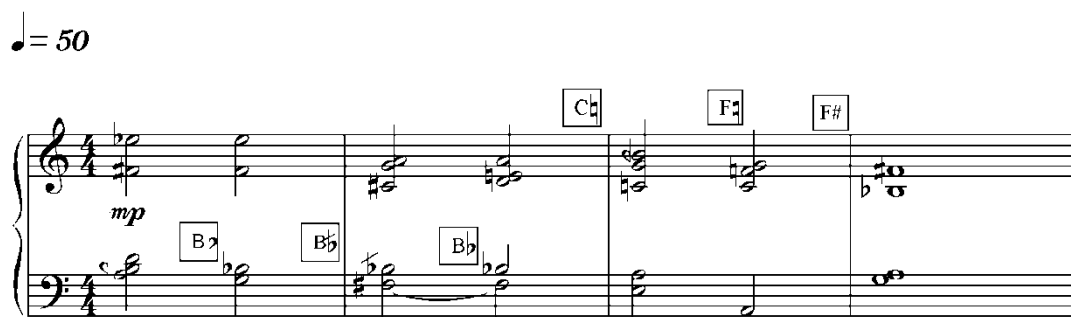


Figure 2.305: Chordal passages with lever changes (CD 4, track 39)

As it is heard in the above example, there is no technical obstacle for playing a passage like this. However, such music is considered as very difficult passages by *kanun* players for the reason that not only extra preparation is required but also

performers are not used to -and not educated according to -read chordal music. As a result, in similar passages asking for dynamic and articulation changes can only be possible after the performer's special practice on the very passage.

2.3.10.3 Polyphonic Passages

2.3.10.3a Plucking the Strings in Polyphonic Passages

Same statements can also be mentioned for polyphonic passages. In polyphonic passages in order to emphasis some parts, they can be indicated by a \triangle_m .

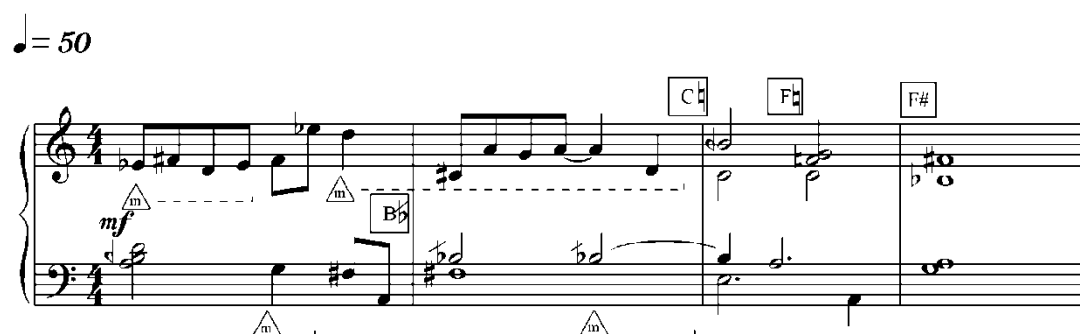


Figure 2.306: Polyphonic passages (CD 4, track 40)

2.3.10.3b Right Hand Tremolo

Another common technique, as polyphonic passages, is the right hand tremolo. In this technique, the right hand accompanies the melody played by the left hand by long held tremolo notes. Here one should realize that, in the notation of the right hand tremolo, the right hand can be notated in the lower staff if the tremolo note is below the melodic passage performed by the left hand. Because of the difficulty of the hand position, right hand tremolos cannot be played in the first register. As it is heard in the last measure of this example left hand can hardly play tremolos by itself.

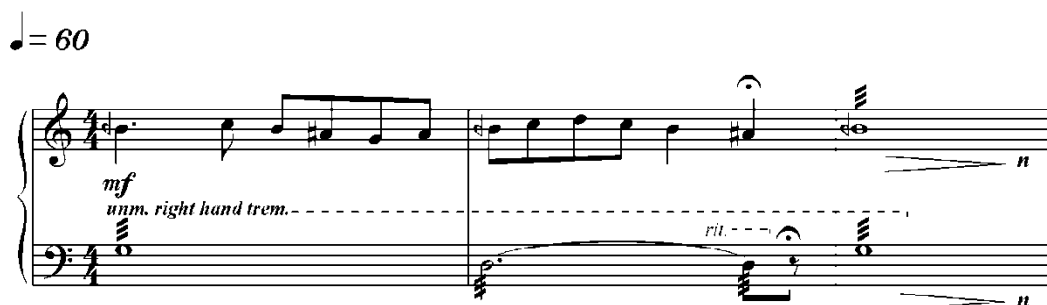


Figure 2.307: Right hand tremolo (CD 4, track 41)

2.3.11 Harmonics

There are mainly two harmonics that can be achieved from a *kanun* string:

- 1- By touching lightly to the middle of the string the second harmonic, that is an octave above the actual string that is being played, can be produced. This harmonic is notated by a small circle above the note (the actual string) that is being played rather than the sounding pitch.
- 2- By touching lightly to the 3/2 of the string the third harmonic, that is an octave and a fifth above the actual string that is being played, can be produced. In order to notate this harmonic the string being played is notated as a diamond shape and the sounding pitch is also indicated on top of it with a smaller note head.

The dynamic changes can only be controlled in the III and IV registers. In these registers the harmonics are produced most effectively. In the below example the first measure which is in the IV. Register with octave harmonics sound much clearer than the octave harmonics played in the second and the third measure.

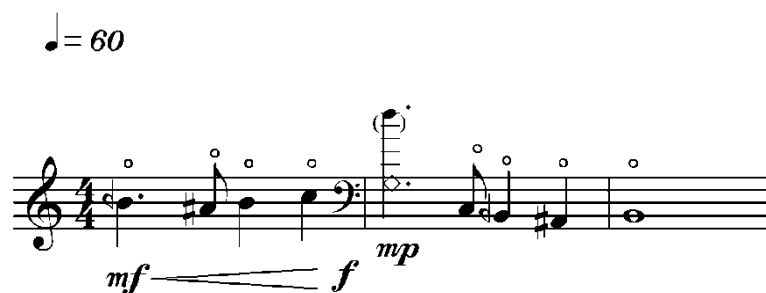


Figure 2.308: Harmonics (CD 4, track 42)

In the fifth register the octave harmonics have a shrilling character that *pianissimo* or *piano* dynamics cannot be produced. At the edge of this register (from B5 to D6) harmonics, especially the third harmonics, become weaker and more ambiguous.

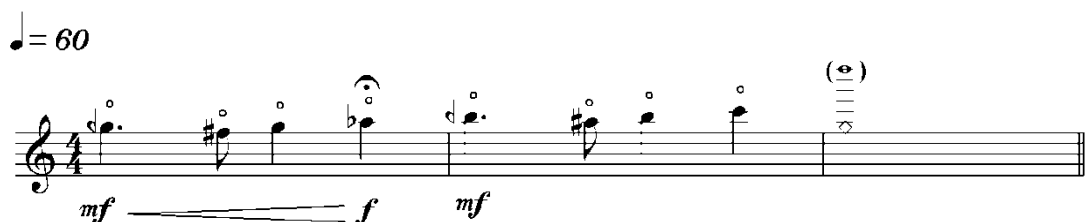


Figure 2.309: Harmonics in high register (CD 4, track 43)

As one can easily realize the last note sounds an octave lower than written. Here, the performer presses her finger on the string rather than a lighter touch. I intentionally preserved this mistake in the recording because similar errors can easily occur in these high registered notes especially in the performance of third harmonics rather than the second.

2.3.12 Glissando

Glissandos at any range can be played perfectly on *kanun*. There are two important issues that composers should take into consideration about glissandos:

- 1- As *kanun* can only produce diastematic glissandos, necessary lever changes should be indicated for the notes placed in between the start and the arrival point of the glissando.
- 2- At slow tempos, or for long durations, glissandos smaller than a fifth might be problematic.



Figure 2.310: *Glissando* (CD 4, track 44)

Composers can explore different sounds by switching between finger and plectrum playing.

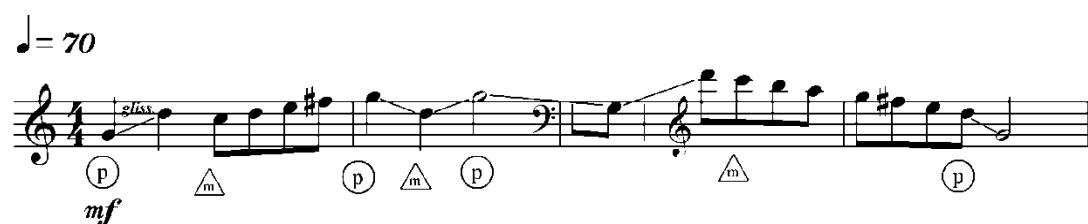


Figure 2.311: *Glissando* and switching between finger and plectrum playing
(CD 4, track 45)

2.3.12.1 Glissandos and Lever Changes

Composers can indicate lever changes for the notes in between the start and the end of glissando.

♩ = 70

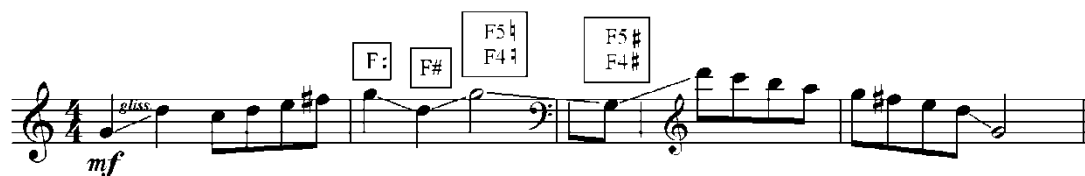


Figure 2.312: *Glissando* and lever changes (CD 4, track 46)

If the lever changes take place in wide ranged glissandos, then performers might need some time to prepare for the lever changes.

♩ = 80

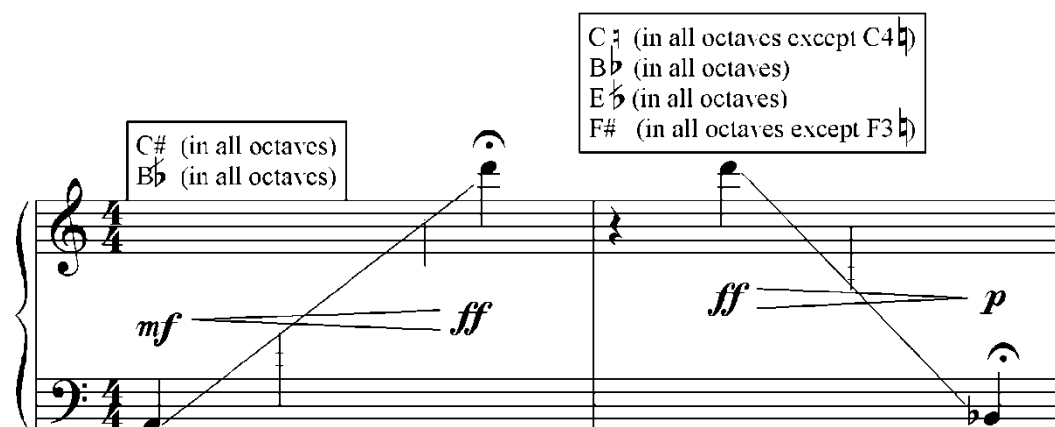


Figure 2.313: Wide ranged *glissandos* and lever changes (CD 4, track 47)

These wide ranged glissandos can be played in shorter note values

♩ = 60

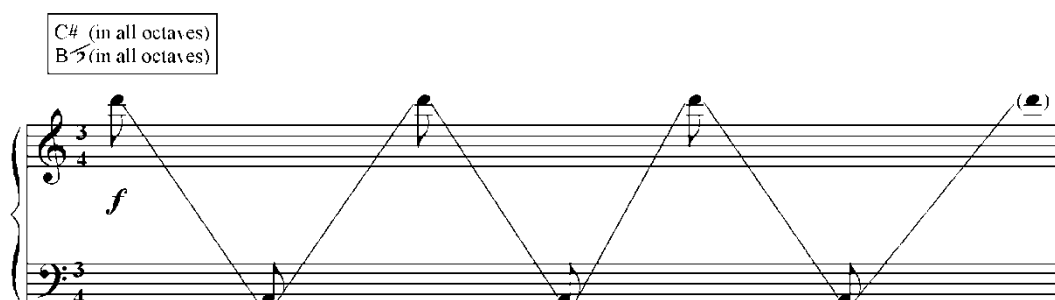


Figure 2.314: Wide ranged *glissandos* in shorter note values (CD 4, track 48)

In another glissando technique two hands play separate, simultaneous glissandos in mixed directions.

♩ = 60

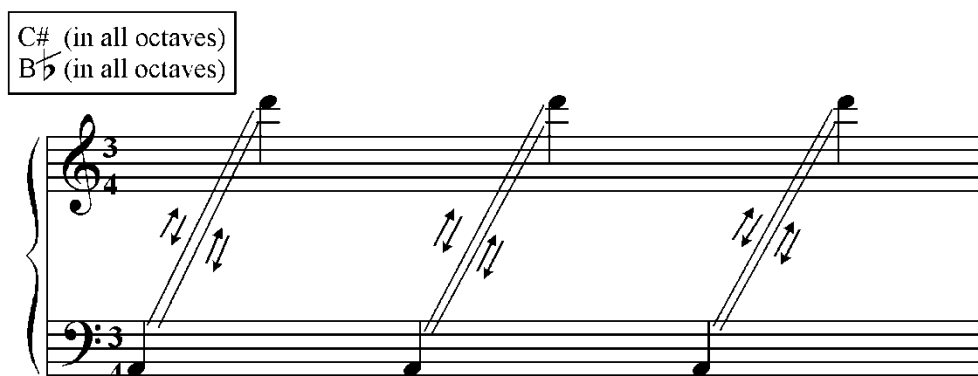


Figure 2.315: Separate, simultaneous *glissandos* in mixed directions
(CD 4, track 49)

2.3.12.2 Tremolos between Intervals

Tremolos between intervals can also be played even in between different type of intervals.

♩ = 70



Figure 2.316: Tremolos between intervals (CD 4, track 50)

For chords that have more than two notes glissandos can be played only between parallel chords. Glissandos between chords that have different intervals cannot be played.

2.3.12.3 Glissando by levers

Glissandos can be performed on a single string by changing the levers. Even though a major second range can be achieved by the lever changes on each string, a glissando by lever can only be as wide as a minor second. Inside a minor second all kinds of microtonal glissandos by levers can be played if these levers exist on that string.

Glissando by levers are indicated as *l.gliss.* in notation. When writing for glissando by levers, composers can follow two different approaches in notation:

- 1- To indicate correct enharmonic notes. In this case the notation might be theoretically correct, but in terms of the action of *kanun* playing it is wrong since the glissando does not take place between two adjacent strings.



Figure 2.317: Glissando by levers

- 2- To use enharmonic indication according to the string that the glissando takes place. In this case the notation might be theoretically wrong, but in terms of the action of *kanun* playing it is correct. Usually this second approach is more helpful for performers.



Figure 2.318: Glissando by levers

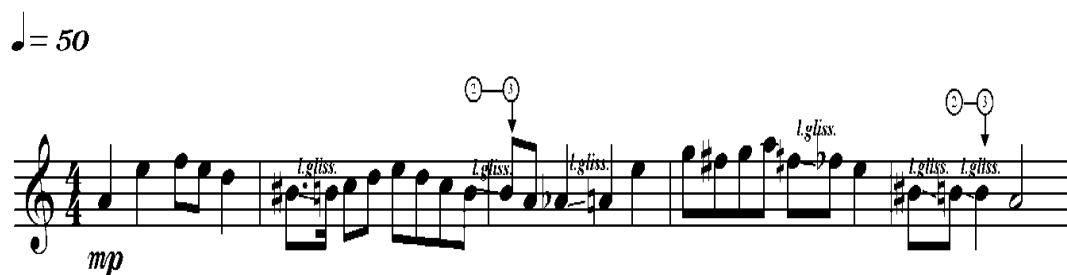


Figure 2.319: Glissando by levers in a passage (CD 4, track 51)

2.3.13 Fiske

Fiske is a technique that is particular to *kanun* and accustomed by all professional players. *Fiske* is performed by the sudden strike of one of the hands on the string while the other hand plucks the string.



Figure 2.320: A player performing a *fiske*

The term *fiske* is actually is the name of this sudden strike on the string and requires specific position. In this position the thumb and the forefinger touch each other's tips.

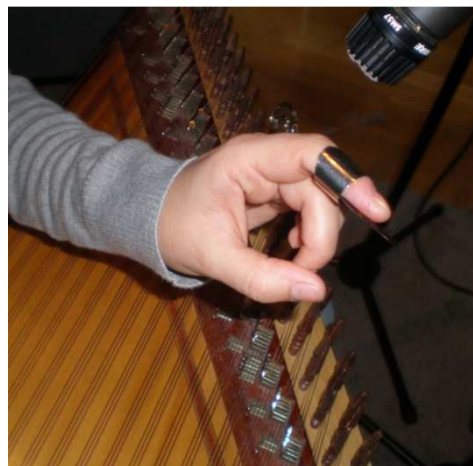


Figure 2.321: *Fiske* position of the performer's hand

When *fiske* is performed usually the second harmonic, the octave higher pitch, of the note comes out. The number *fiskes* is determined by the small dots that are placed on top of the note that the *fiske* is being applied. These dots are separated from the note head by a thin line. The number of dots, therefore the number of *fiskes*, determine different rhythmical divisions in different cases.

2.3.13.1 The Division of Note Values

a- For both duple note values and triple note values (except the triple note values in a duple meter)

- 1- One and two dots are performed as a grace note before the actual note. However, *fiskes* are always performed as grace notes that start on the beat. In this case the duration of the actual note value is shortened.
- 2- More than two dots divide the actual note value in equal parts. For example, if three dots are placed on top of a quarter note, then it is performed as a eighth note triplet by three *fiskes*.

b- The triple note values in a duple meter

The triple note values in a duple meter are dotted notes that include the 3/4 of a duple meter. For example a dotted quarter note embraces 3/4 of a half note. In order to explain how *fiskes* are used in these dotted notes we will call the 2/3 of the dotted note as X and the remaining 1/3 part as Y.

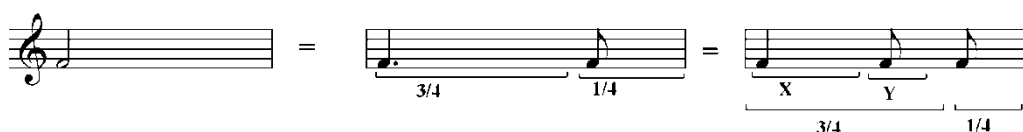


Figure 2.322: Triple note values in a duple meter

The number of *fiskes* divide X in equal parts and Y is played separately from X even though it is not notated that way. For example the measure shown below is performed as four sixteenth notes and two eighth notes

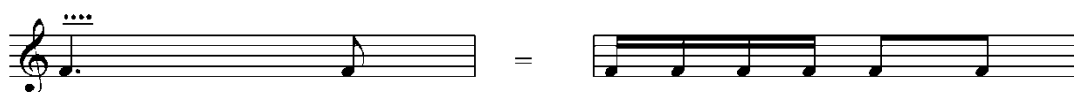


Figure 2.323: Triple note values in a duple meter in *fiske* playing

Here's another example:

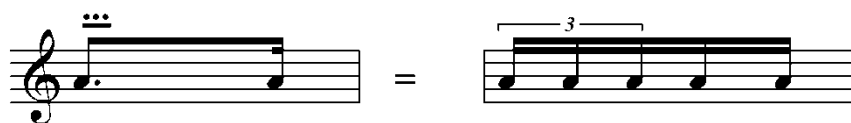


Figure 2.324: Triple note values in a duple meter in *fiske* playing



Figure 2.325: A passage with *fiske* (CD 4, track 52)

As an important characteristic of *fiske*, they are almost always performed as a crescendo form *niente*. This characteristic might create ambiguity in the rhythmic perception of the *fiske* performances.

2.3.13.2 Fiske with Glissando

In order to perform this technique the string is always plucked by the right hand and it is always indicated in notation by the “A” symbol. Immediately after the right hand plucks the string, the left hand in *fiske* position hardly presses on the part of the string which is right next to the levers. The result is a minor second ascending glissando. Naturally this kind of glissando can never be produced as descending.



Figure 2.326: *Fiske* with *glissando* (CD 4, track 53)

2.3.13.3 Glissando by Fiske

In this technique, immediately after the string is plucked by the right hand, the left hand in *fiske* position slides on the string towards to the bridge. This technique is most effective in the first three registers that the glissandos can be as wide as an octave. In the fourth and fifth registers, the range of a glissando by *fiske* usually cannot exceed a perfect fifth. Despite the other types of glissandos, performers pluck the arrival point as the sound gets gradually weaker along the glissando.



Figure 2.327: *Glissando* by *fiske* (CD 4, track 54)

2.3.14 Vibrato

There are mainly two types of vibratos:

- 1- The vibratos produced by shaking one of the levers that belongs to that string. In order to achieve faster and more intense vibratos, the performer shakes the lever faster. In that sense the vibratos for *kanun* can still be categorized as non-vibrato, vibrato and molto vibrato.

Since the instrument is a plucked string instrument and the attack of sound gradually fades away, the gradual changes in between those vibrato types cannot be performed in a single stroke. The more the string is plucked accented; the vibratos can be faster and effective.

As this type of vibrato is produced by lever's motion on the string, using different levers does not produce different pitches.

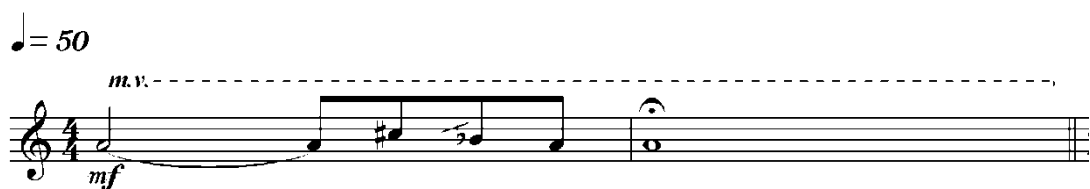


Figure 2.328: Vibrato (CD 4, track 55)

- 2- The vibratos produced by pressing down on the string from beyond the bridge. Naturally this type of vibratos can only be very slow and irregular and

ineffective in long notes. This technique can be indicated as “press vibrato” in notation.

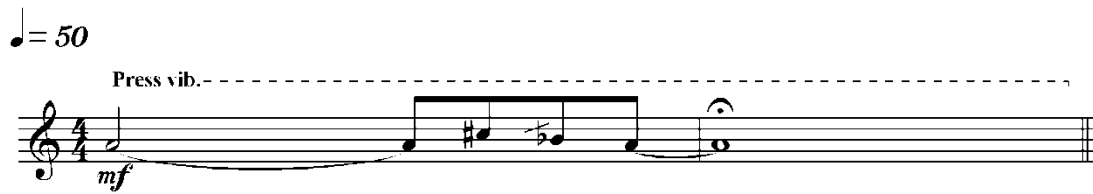


Figure 2.329: Pressed vibrato (CD 4, track 56)

2.3.15 *Kanun* Techniques on Timbre Changes

Different sound colors are generated by plucking the different placements of the string

2.3.15.1 *Sul Ponticello*

Sul Ponticello means playing close to the bridge. As in all string instruments, this kind of playing produces sharp, nasal sounds since in the spectrum of a *SP* sound, the overtones are more prominent than the fundamental. At this part of the string only one hand can be used to pluck the strings.



Figure 2.330: *Sul Ponticello* (CD 4, track 57)

2.3.15.2 Middle of the string

At this part of the string, purer sounds are produced but this part of the string is close to *ordinario* than the *sul tasto* sound (of bowed string instruments) in which the overtones of the spectrum is still present. However, the middle of the string still produces the purest sounds compared to the other placements of the string. At this part of the string only one hand can be used to pluck the strings.

♩ = 80

m.s. - - - - -

ff *p sub.* *f* *pp sub.* *ff p sub.*

--- (m.s.) ---

mf *ff* *p*

Figure 2.331: Playing on the middle of the string (CD 4, track 58)

2.3.15.3 *Ordinario*

This is the only part of the string where the performer can use both hands. Therefore it has two separate placements. One is located between the middle of the string and levers which is used by the left hand. The other is located between the middle of the string and the bridge which is used by the right hand.

♩ = 80

ord. - - - - -

ff *p sub.* *f* *pp sub.* *ff p sub.*

--- (ord.) ---

mf *ff* *p*

Figure 2.332: *Ordinario* (CD 4, track 59)

2.3.15.4 Close to levers

The sound of this part of the string is close to *ordinario*, only with more edge that the attacks are more evident. At this part of the string only one hand can be used to pluck the strings.



Figure 2.333: Playing close to levers (CD 4, track 60)

2.3.16 Playing Over the Bridge

One can pluck the strings from over the bridge, however only the pitch definition would be indeterminate.

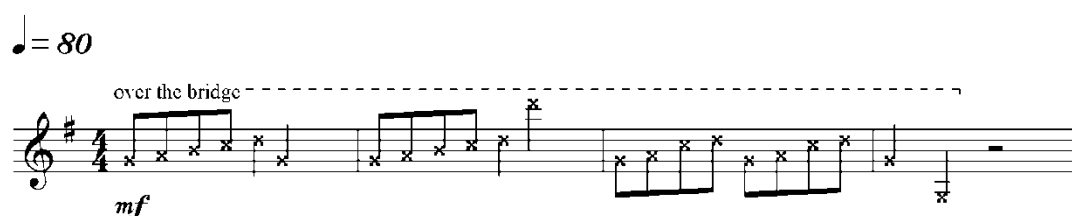


Figure 2.334: Playing over the bridge (CD 4, track 61)

Playing glissandos or tremolos can at that part of the string be interpolated in a passage as a special effect.

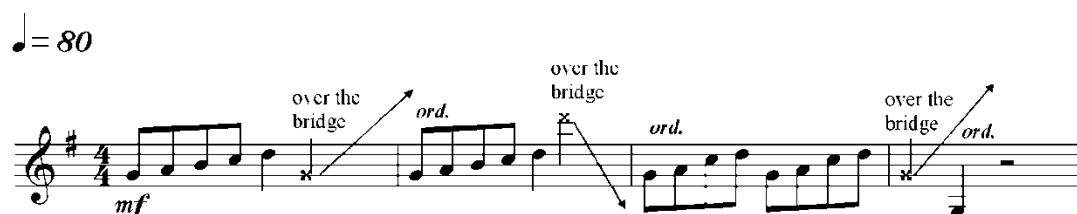


Figure 2.335: *Glissando* over the bridge (CD 4, track 62)

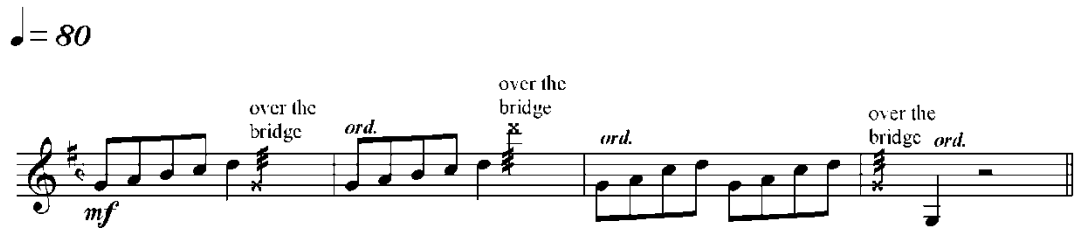


Figure 2.336: *Glissando and tremolo over the bridge* (CD 4, track 63)

2.3.17 Muted Playing and Percussive Effects

In this technique one hand mutes the strings while other plucks them. The result is a percussive sound in which the pitch definition is still evident. In *kanun* terminology this technique is called as *pizzicato*. *Kanun* pizzicatos should be performed very carefully that if the pressure applied on the string is more than necessary, the passage can sound out of tune.

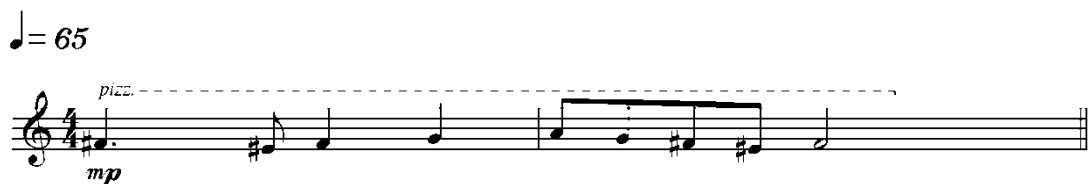


Figure 2.337: Muted playing (CD 4, track 64)

In the pizzicato technique the performer's hand covers only the string that is plucked at that moment. If one uses his/her palm to cover the whole region, the pitch definition becomes indeterminate. This technique can only be used as a percussion effect.

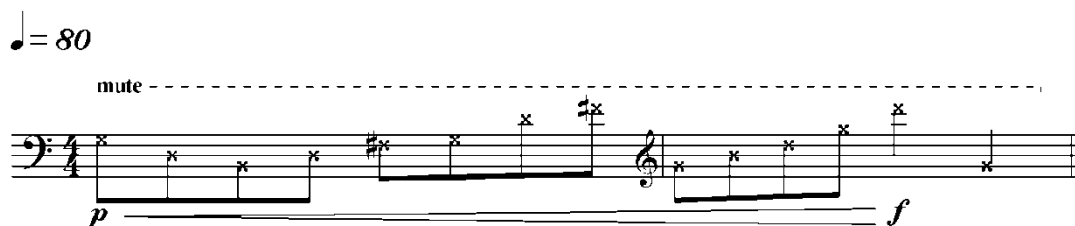


Figure 2.338: Muting the strings with the palm (CD 4, track 65)

If rather than playing one string, if the player sweeps through the whole string region, then a drum like effect is achieved.

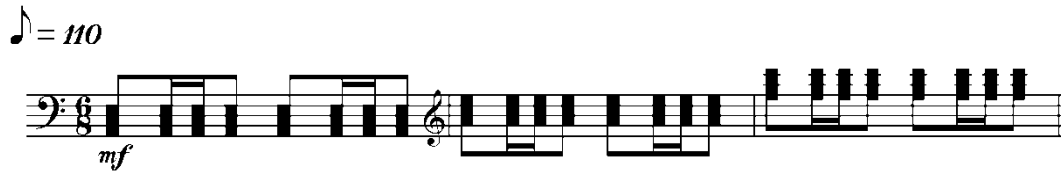


Figure 2.339: Drum effect (CD 4, track 66)

One of the most common percussive effects used in *kanun* playing is to hit on the wood of the instrument.

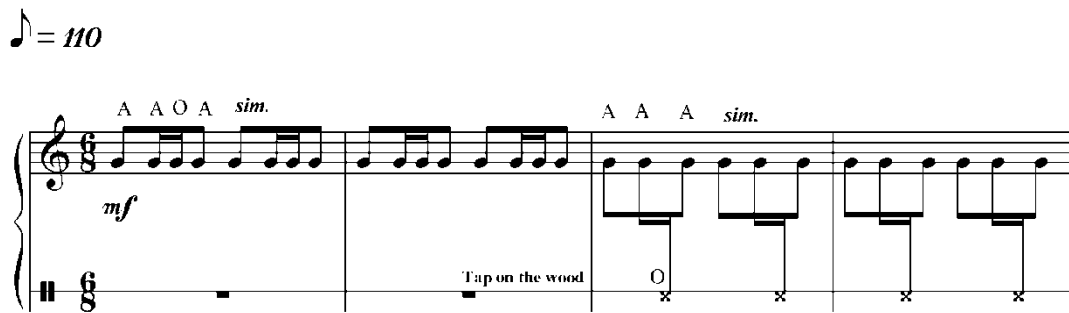


Figure 2.340: Percussion effects (CD 4, track 67)

The other muting technique used is to mute the strings with an object. It is most common to use the tuning key for this process. The placement of the tuning key on the strings changes pitch. Because of this reason performers should give extra attention to intonation while performing this technique. Especially in wide leaps, it is perfectly possible to play out of tune notes.



Figure 2.341: Muting the strings with the tuning key (CD 4, track 68)

2.3.18 Prepared Kanun

One can insert objects between the string pairs in order to explore different sound. In the example below coins are inserted between the pairs of G4 and D6 strings.



Figure 2.342: Prepared kanun(CD 4, track 69)

2.3.19 Lever Buzz

If one of the levers on a string is not in its proper position but rather appearing half-way up or down, then it creates a buzz sound which can be used as an effect. This lever position should not require extra preparation. The player can change the lever position while performing the passage as one change the levers position as usual. This technique is indicated by M (which stands for *mandal*, the Turkish word for lever) in a square with a crossed line.



Figure 2.343: Lever Buzz (CD 4, track 70)

2.4 Ney

2.4.1 Historical Background

Ney is an end-blown flute. It is played by blowing air directly into the instrument, mostly, through a mouthpiece called *başpare* (for explanation, see next paragraph). This instrument has definitely an antique origin. The earliest records of the vertical flute are from *Hieraconpolis* from the fourth millennium B.C. and the descriptions of Egyptian flutes are not very different from contemporary *ney*: “Cut from a simple cane generally a yard long and half inch wide, the Egyptian flute had from two to six finger holes near the lower end; one excavated specimen was even provided with a thumb hole in the back” (Sachs 1940: 90). In Sumerian language the words “*nī*” or “*na*” exist and a Sumerian *ney* from 2800 B.C is preserved in the Museum of Philadelphia University (Erguner 2002: 29). In Sumerian language the vertical flutes were generally called as “*ti-gī*” and “*gī*” means cane (Sachs 1940: 71-72), which

might support the idea that the construction of the instrument has not changed over thousands of years. The fundamental constructional change was created by the Ottomans by adding a mouthpiece in the later sixteenth century and producing different *ney* types to be played in different keys (Feldman 1996: 119)

Ney has always been a principal instrument in Islamic Culture and mostly associated with Sufism. This relation becomes evident in Turkish Music as *ney* remains as the basic instrument of the ensembles that perform at *Mevlevi* (an important *sufi* order in Turkey) rituals starting from the 13th century. Mostly due to its sacred history, *ney* has always been considered as a solemn instrument in Turkish music and almost never lose its strong position in classical music. According to Dimitri Cantemir's statement, it shared the principal responsibility for the accompaniment of the singer with the *tanbur* and in the next century Charles Fonton states that *ney* is the principal instrument of the Orientals (Feldman 1996: 139). From that period until today *ney* is prominently used in all sacred and secular genres of Turkish Art Music.

2.4.2 Constitutional Attributes

From the perspective of its body constitution, *ney* is actually a reed itself, therefore it is certainly a woodwind instrument. It's a reed with seven holes, six on the front side of its body and one in the back.



Figure 2.344: Six holes on the front side of *ney*



Figure 2.345: The thumb hole at the back

The player holds the instrument in an oblique position. The back hole is controlled by the left hand thumb while the other holes are controlled by the fingers of both hands.



Figure 2.346: A ney player

The Main parts of *ney* is shown below:

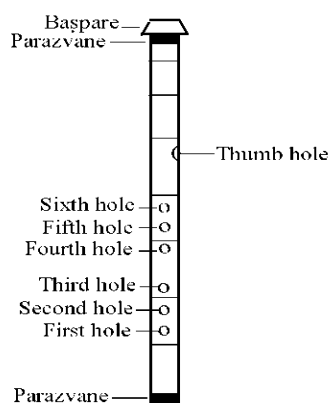


Figure 2.347: Main sections of ney

At the upper end of *ney* a mouthpiece, called as *başpare* is used.



Figure 2.348: *Başpare*

Başpare is mainly made up of buffalo horn, ivory or wood. Using *başpare* is not indispensability; *ney* can be played without a *başpare*. However, musicians almost always use *başpare* in order to have more control on their dynamic range and intonation, besides to create sound with more dept. In the “*Ney Techniques* section”, to play without *başpare* is considered as an individual technique. In order to prevent the reed from *başpare*’s pressure, a brass bangle, *parazvane*, is attached to the upper and the lower ends of the ney.



Figure 2.349: *Parazvane*

2.4.3 Ney Positions

2.4.3.1 Finger Positions

Performers blow air into the *ney* through *başpare* and the pitches are produced by closing and opening these holes by fingers while the blown air circulate inside the instrument. There are four different positions that a finger closes a hole to produce different pitches:

- a- Finger closes the whole hole
- b- Finger closes the 2/3 of the hole
- c- Finger closes the 1/2 of the hole
- d- Finger closes the 1/3 of the hole (Erguner 2002: 86)

The pitch correspondence of these four different positions will be explained below in the “Registers of *Ney*” section. However, these 1/2, 1/3 and 2/3 positions are not strictly determined fingering positions. Performers are accustomed to find pitches through their hearing perception, rather than a standardized fingering position.

Below pictures exemplifies different positions:

- a- The whole of the thumb hole is closed



Figure 2.350: The whole of the back hole is closed

b- The half of the thumb hole is closed:



Figure 2.351: The half of the back hole is closed

c- The whole of the fourth, fifth and sixth holes are closed



Figure 2.352: The whole of the fourth, fifth and sixth holes are closed

In this picture one can realize that the performer closes the second hole besides the upper three holes. However, as the third hole is open this situation makes no difference in sound. What is crucial in this position is the upper three holes (the fourth, fifth and sixth holes) are closed and the third hole is open. Whether the first and second hole is open or closed in this position makes no difference in sound. In other words when the fourth, fifth and sixth holes are closed we hear the sound coming out of the third hole.

d- The fifth and sixth holes are closed and the half of the fourth hole is closed.



Figure 2.353: The fifth and sixth holes and the half of the fourth hole are closed.

2.4.3.2 Şuri Positions

Ney players hold the instrument in an oblique direction and blow air into it. This oblique direction is diagonal to the right side of the player's chest. This is called as the normal position:



Figure 2.354: Normal position

Besides the finger positions (the holes being whole, 1/2, 1/3 and 2/3 closed) performers also change their head and lip positions in order to control the intonation.

“While blowing into the *ney* in the normal position, if the performer turns his/her head and lip position to right, pitch slightly gets sharper. This position is called as the *şuri* position. If the performer turns his/her head and lip position to left, pitch slightly gets flatter. This position is called as the *ters şuri* position” (Erguner 2002: 82).

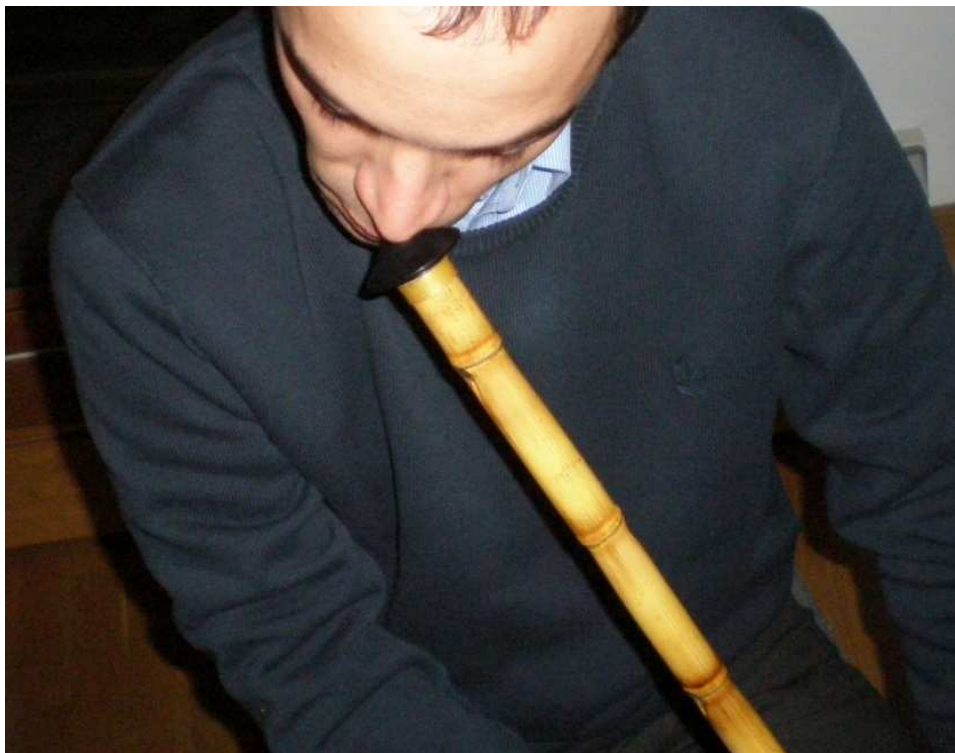


Figure 2.355: *Şuri* position



Figure 2.356: *Ters Şuri* position

2.4.4 Ney Types

There are 13 different ney types. Also the *nisfiyes* of these 13 types exist (Erguner 2002: 52). *Nisfiye* means the octave higher- half size of a *ney* type.

2.4.4.1 Ney Transpositions and the Idea of *Rast*

Rast makam is the fundamental *makam* in the Turkish music theory. *Rast* as a musical note corresponds to D in western music notation. However as I explained above, Turkish music uses a notation system which is transposed perfect fourth above. Then for a Turkish Music performer *rast* corresponds to G. Since *rast maquam* is the fundamental *maquam* of theory, *rast* note is the main note of *ney* playing. It is the lowest note of *ney*'s actual register. (Nevertheless, there is another octave, called as the *dem* register, below the actual register. This *dem* register can be seen as a register with pedal tones. The details of *dem* register will be explained in the Ney Registers section below). According to *ney* players the lowest note of all *ney* types are called as *rast* and notated as G.

2.4.4.2 Two Steps of Transposition

When a composer transposes a passage for *ney*, one should go over two different transpositions. First he transposes up a fourth. This is transposing western notation to the Turkish notation system. Then he transposes according to the *ney* type. However, if one transposes according to the *rast* note -which is G- rather than C, one would automatically skip the first step.

According to a *ney* player G (*rast*) is the main note of all *ney* types. However the sounding results are different in all *ney* types. For example when a *ney* player plays *rast* on his *kız ney* this would correspond to A4 on the piano. In another words *kız ney* is a *ney* in A. However, the parts that are presented to a *ney* player should be transposed from the sounding version to G, the *rast* note, not to C. For example,



Figure 2.357: A short passage for transposition

If this short passage above was transposed to *mansur ney*, it would remain the same because *mansur ney* is a *ney* in G, its *rast* note corresponds to G4 on the piano. If the same passage was transposed to *kız ney*, it would be:



Figure 2.358: The passage in figure 356 transposed to *kız ney*

2.4.4.3 Rast Notes of Different Ney Types

The western music correspondences of *rast* notes of different *ney* types can be seen in the figure 2.358 below. The *ney* types that their *rast* notes correspond to an accidental note, are classified as the *mabeyn* (intermediate) neys.

Kız

Kız- Mansur
intermediate

Mansur

Mansur-Şah
intermediate

Şah

Dik Şah

Davud

Davud-Bolahenk
intermediate

Bolahenk

Bolahenk-Süpürde
intermediate

Süpürde

Müstahsen

Yıldız

Figure 2.359: *Rast* notes of different *ney* types

The western music correspondences of *rast* notes of the *nusfiyes* are shown in the following figure.

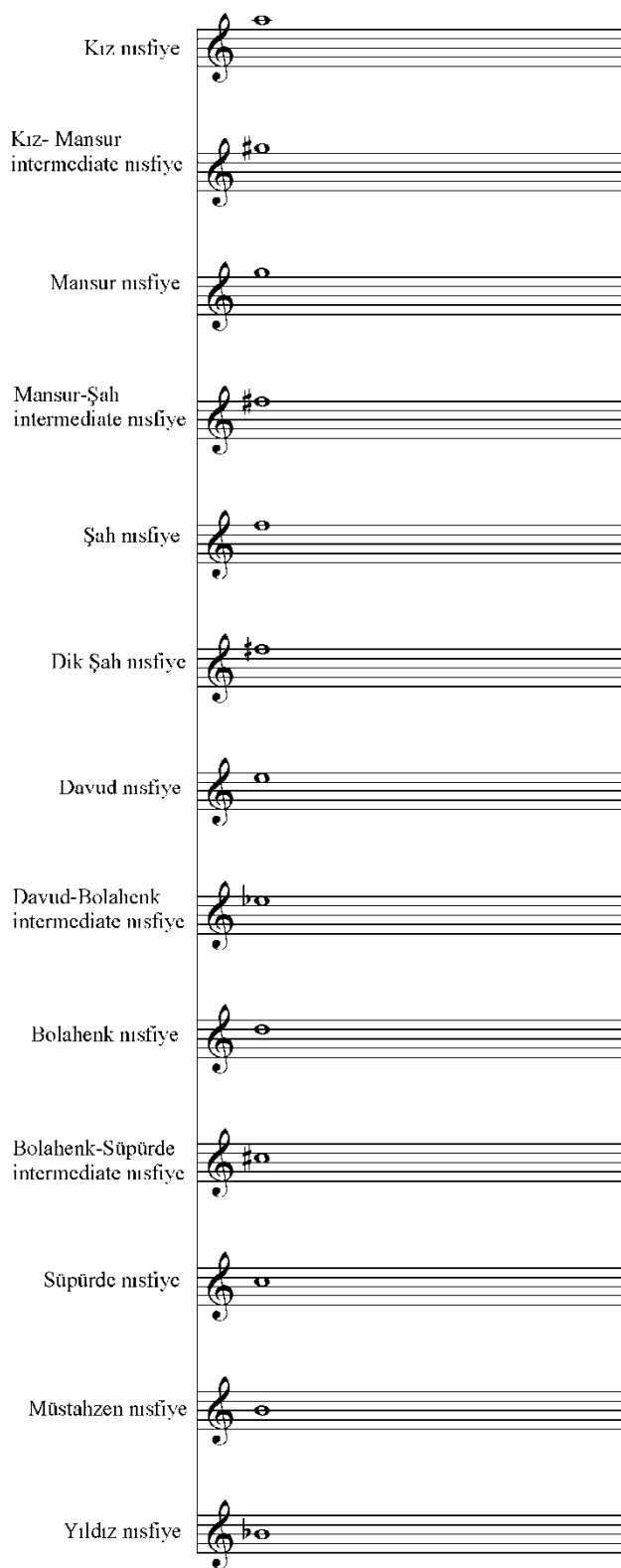


Figure 2.360: *Rast* notes of the *nusfiyes* of different *ney* types

However, not all of these types are frequently used. The *ney* types below *mansur* and above *bolahenk nusfiye* are very rarely performed mainly for the reason that the instruments' lengths and sound ranges get beyond practical usage.

For this reason in this work we concentrate on four types of modes which are commonly used. These are: *mansur*, *kız*, *süpürde nusfiye* and *bolahenk nusfiye*. A standard *mansur ney* is approximately 80 cm, *kız ney* is 71 cm, *süpürde* is 58 cm, *bolahenk ney* is 52 cm (Erguner 2002: 51)

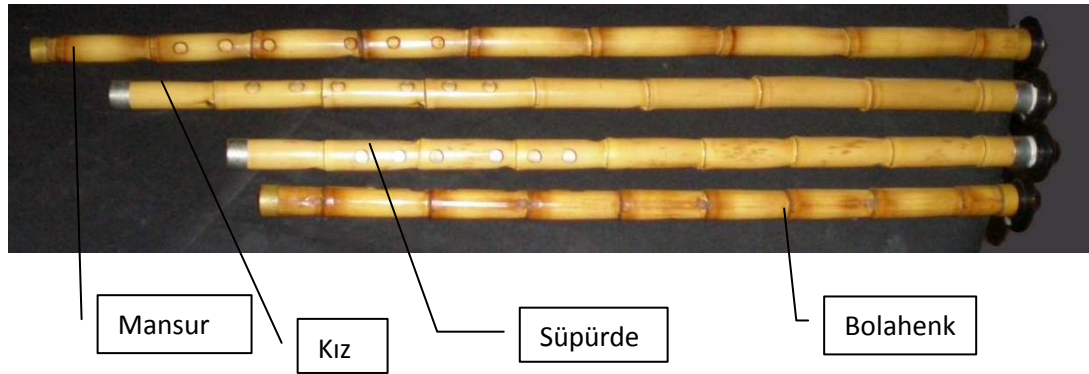


Figure 2.361: *Mansur, kız, süpürde and bolahenk neys*

Since the *süpürde* and *bolahenk neys* are almost never used, in the common terminologic usage *süpürde* means *süpürde nusfiye* and *bolahenk* means *bolahenk nusfiye*, thus from now in the following sections I will also be using this common terminology.

Here's the list of the western music correspondences of *rast* notes of these *ney* types:

- 1- *Mansur*: No transposition required

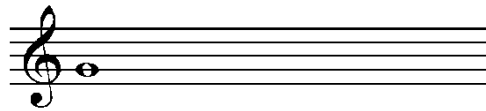


Figure 2.362: *Rast* note of *Mansur*

- 2- *Kız*: Requires transposition down a major second

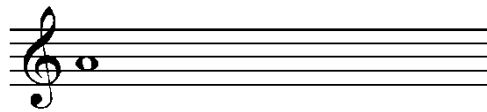


Figure 2.363: *Rast* note of *kız*

3- *Süpiürde*: Requires transposition down a perfect fourth

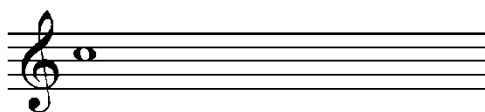


Figure 2.364: *Rast* note of *süpiürde*

4- *Bolahenk*: Requires transposition down a perfect fifth

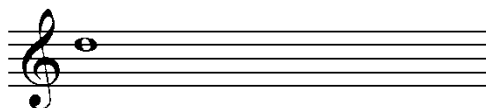


Figure 2.365: *Rast* notes of *bolahenk*

2.4.5 Ney Range

Each *ney* type has almost the same range characteristics. *Ney*, in general, has three octaves. Considering that the *rast* position is notated as G for all *ney* types, the written range for all *ney* types is:

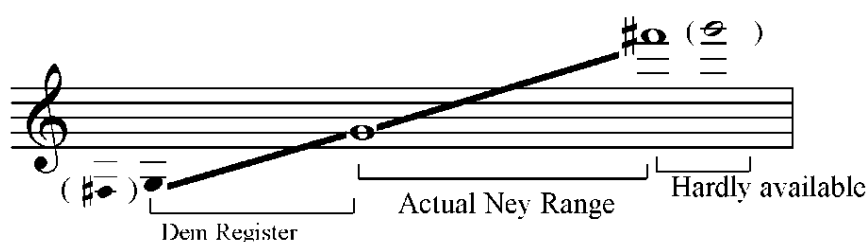


Figure 2.366: The overall sound range of *ney*

The *rast* note of *mansur ney* corresponds to the G4 of the western music notation. This figure above that generalizes the written range for all *ney* types is actually the sounding range of *mansur ney*. Therefore all the explanations below until the “*Ney Type and Their Transpositions Section*” can also be seen as the analyzes of the characteristics of the *mansur ney*.

2.4.5.1 Registers of Ney

The range of *ney* is divided into five different registers:

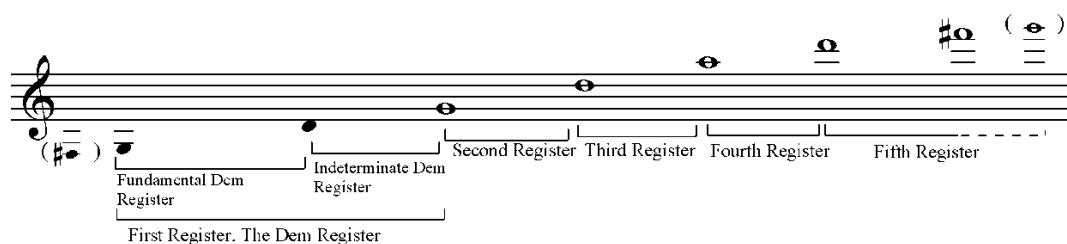


Figure 2.367: Different sound registers of *ney* range

The *dem* register can be seen as a register with pedal tones. Dynamic control is harder compared to the other registers and usually low dynamic levels- *pianissimo*, *piano*, *mezzopiano*- are produced. Dynamics above *mezzoforte*'s and especially *sforzando*, dynamics are very hard to achieve. Also the fast passages, trills and tremolos are not practical in the whole *dem* register but especially in the indeterminate *dem* register because most of the notes in this register are played by using the back whole controlled by the thumb.

2.4.5.1a Fundamental Positions of the *Dem* Register

In this section, the notes of the *dem* register and their relation to the *ney* positions will be explained. Here, I would like to state that the # signs used in these explanations are used as Turkish music *bakiye* sharp's rather than the -100 cent higher pitch- indication of western music.

These eight positions analyzed below are called as fundamental positions, because they produce the fundamental notes of all other notes in the other registers than the *dem* register. In other words all the notes that belong to the actual *ney* range are the harmonics of the fundamental notes of the *dem* register.

- 1- First Position: First position of *ney* is the position that all the holes are closed. Below, the different placements of the finger on the first hole of *ney* is shown.

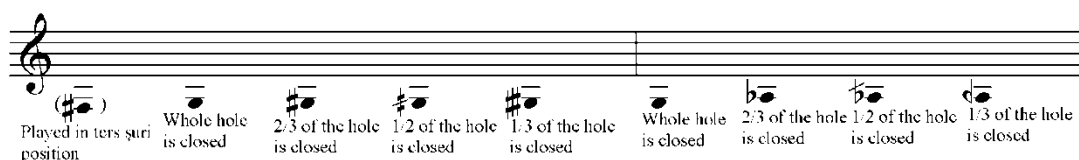


Figure 2.368: First fundamental position of the *dem* register

- 2- Second Position: Second position of *ney* is the position that the first hole is open and all others are closed. Below, the different placements of the finger on the second hole of *ney*, is shown.

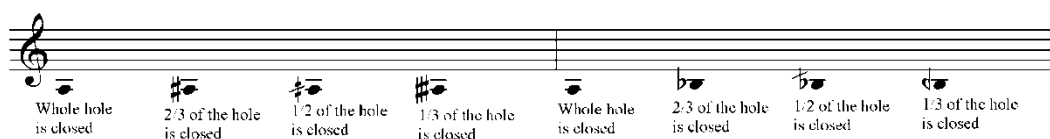


Figure 2.369: Second fundamental position of the *dem* register

Since the players can achieve the A#/Bb note and its versions by using the third and the fourth positions, in the second position (in most cases) only the note A is used.

- 3- Third Position: Third position of *ney* is the position that the first and the second holes are open and all others are closed. Below, the different placements of the finger on the third hole of *ney* is shown.



Figure 2.370: Third fundamental position of the *dem* register

- 4- Fourth Position: Fourth position of *ney* is the position that the first, second and the third holes are open and all others are closed. Below, the different placements of the finger on the fourth hole of *ney* is shown.

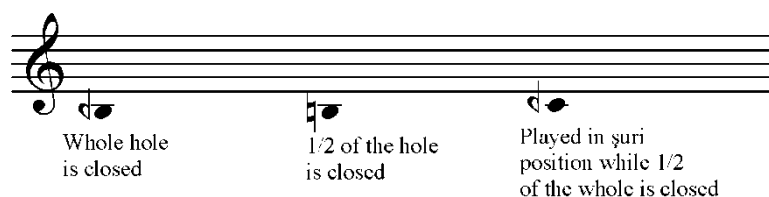


Figure 2.371: Fourth fundamental position of the *dem* register

- 5- Fifth Position: Fifth position of *ney* is the position that the first, second, third and the fourth holes are open and all others are closed. Below, the different placements of the finger on the fifth hole of *ney* is shown. In most cases this position is used only to produce C since the sixth position can achieve the C#/Db and its versions.

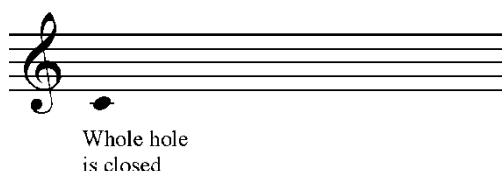


Figure 2.372: Fifth fundamental position of the *dem* register

- 6- Sixth Position: Sixth position of *ney* is the position that the first, second, third, fourth and the fifth holes are open and all others are closed. Below, the different placements of the finger on the sixth hole of *ney* is shown.

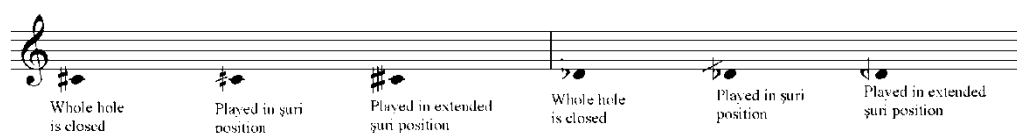


Figure 2.373: Sixth fundamental position of the *dem* register

- 7- Seventh Position: Notes in the seventh and eighth positions are in the indeterminate *dem* register. Performance on these positions is much harder compared to other positions, thus fast passages, trills and tremolos are not available. Seventh position of *ney* is the position that only the back hole is closed while all the six holes on the front side of the *ney* are open. Below, the different placements of the finger on the back hole of *ney* is shown.

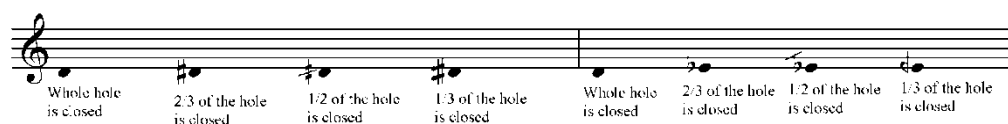


Figure 2.374: Seventh fundamental position of the *dem* register

- 8- Eighth Position: In the eighth position of *ney* all the holes are open. There are three main notes can be played in this position. However, performers can achieve different versions of F#/Gb by extending the *suri* position.

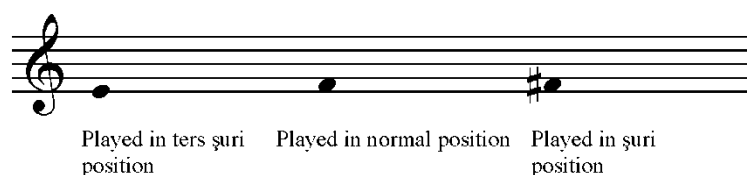


Figure 2.375: Eighth fundamental position of the *dem* register

This F# is the last note of the *dem* register. If we continue to follow the notes in the *ney* range, after this F# we reach to G, which is the *rast* note of *ney* as explained above. If we call the- whole hole is closed- positions as main notes, the main notes of these eight positions in the *dem* register will be as below:

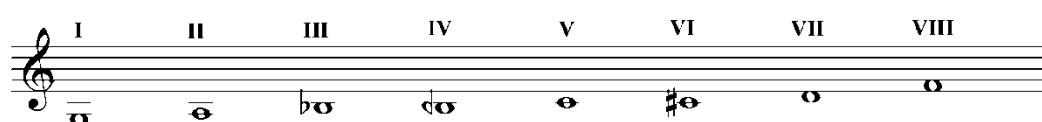


Figure 2.376: Main notes of these eight fundamental positions

2.4.5.1b Harmonics of the *Dem* Register

All the notes above the *dem* register are the harmonics of the notes in the *dem* register. These harmonics are produced by the overblowing of the notes in the *dem* register. For example, *rast* note can be seen as a harmonic note which is produced by the overblowing of the G3 note in the *dem* register. In order to understand how the notes in the actual register are played, one should examine the harmonics produced by each position of *ney*. Below is given the harmonics of each position along with audio samples. These listening examples are performed on Mansur *ney*. Since the mechanism does not change, other *ney* types would give same results.

In the following examples the roman numerals that are placed above the staff indicates the positions that are explained in the “Positions of Dem Register” above.

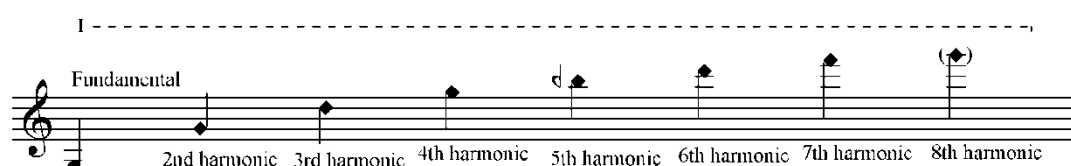


Figure 2.377: First Position Harmonics (CD5, track 1)

As it is heard in the listening example the eighth harmonic is not available and even the seventh harmonic sounds very intense and hard to play. The other important point about these higher harmonics is the difficulty to control their intonation which is especially problematic about the seventh harmonic. Since these harmonics are directly derived from the overtone series of the fundamental pitch, the seventh harmonic appears to be a remarkably low (in terms of intonation) note. In order to achieve this F6, a performer would prefer to play the sixth harmonic of the third position rather than the seventh harmonic of the first position shown above. On the other hand these seventh harmonics might attract the attention of composers who employ further microtonal considerations in their music.

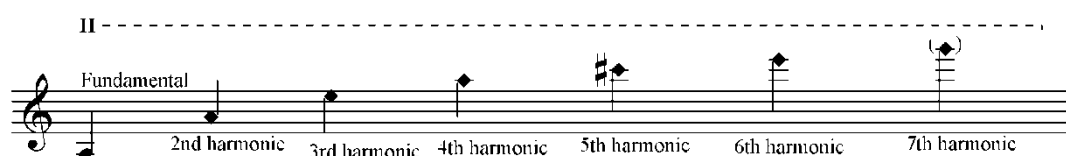


Figure 2.378: Second Position Harmonics (CD5, track 2)

As it is heard in the listening example the seventh harmonic, which is again the same note as the first position's eighth harmonic, is not available and even the sixth harmonic sounds intense.

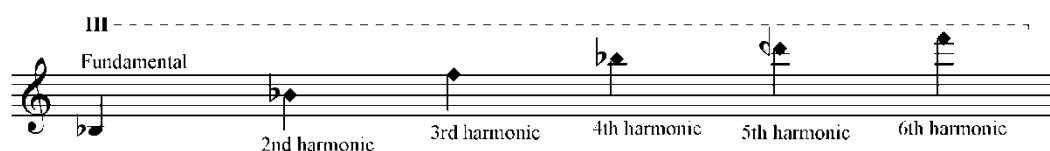


Figure 2.379: Third Position Harmonics (CD5, track 3)

Only six partials of this position are available and again the last sixth harmonic is an intense note since it is at the end of *ney*'s range. As it is stated above, this sixth harmonic sounds very different than the seventh harmonic of the first position.

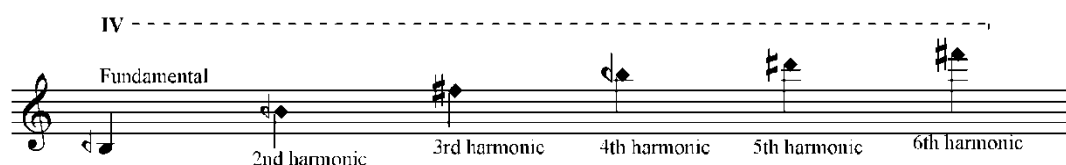


Figure 2.380: Fourth Position Harmonics (CD5, track 4)

The sixth harmonic of the fourth position is the highest note of the *ney* range. Here, the fundamental of the fourth position points out an important issue about intonation and microtones. This note is 1/9 of a tone lower note than the B3 on the piano. Therefore, all the harmonics of this fundamental are different than the western intonation. As it is stated in the “Positions of Dem Register Section”, in order to achieve the piano’s B3, the performer closes the half of this hole. Then, one can achieve the harmonics of that note.

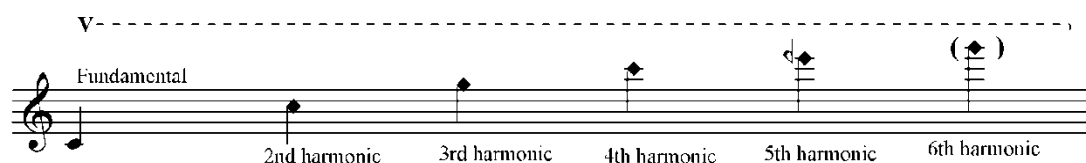


Figure 2.381: Fifth Position Harmonics (CD5, track 5)

Again the sixth harmonic of this position is not available since it is out of the *ney*’s range. Similar observations can be made for the sixth and the seventh position harmonics:

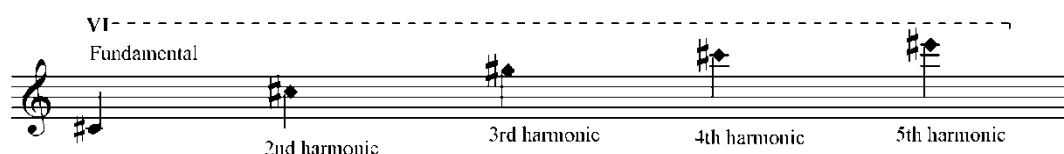


Figure 2.382: Sixth Fundamental Position Harmonics (CD5, track 6)

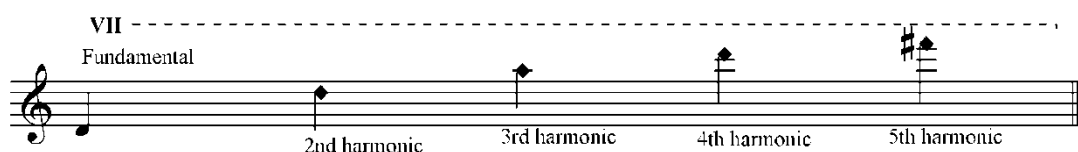


Figure 2.383: Seventh Position Harmonics (CD5, track 7)

Since the eighth position is mainly used as a transition between the *dem* register and the second register the harmonics of this position are mostly maintained from other positions:

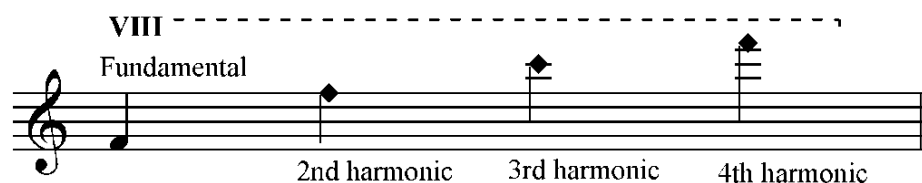


Figure 2.384: Eighth Position Harmonics

Up till now, we have examined the harmonics of the main notes of the fundamental positions. Obviously, the harmonics of the other notes of these fundamental positions are available. For example, the harmonics of the, 2/3 of the hole closed finger position, in the first fundamental position is shown below:

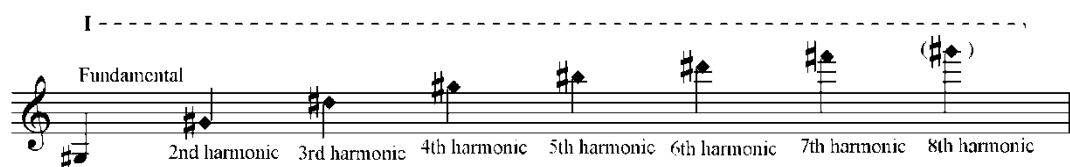


Figure 2.385: The harmonics of the 2/3 of the hole closed finger position

As another example we can go over the harmonics of the, extended *şuri* position, in the sixth fundamental position:

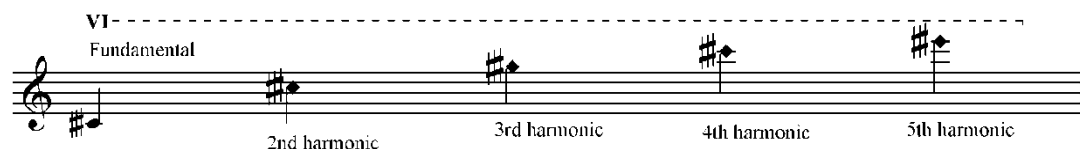


Figure 2.386: The harmonics of the extended *şuri* position

By considering the principles of overtone series, composers can determine the harmonics of all the other finger and *şuri* positions in all fundamental positions. Finger positions, harmonics and usage of *şuri* positions give the opportunity to play one single note from different positions. Understanding all this information is essential for composers to comprehend the mechanism of *ney* playing.

For example D6 can be played at least four different positions:

- 1- Sixth harmonic of the first position
- 2- Fourth harmonic of the seventh position
- 3- Fifth harmonic of the third position when the third hole is half closed

4- Fourth harmonic of sixth position in extended *şuri* position.

These possibilities can be even more varied if the composers consider the different positions and harmonics on the other *ney* types.

Another important issue is about the notation of these harmonics. Harmonics in *ney* playing is not a special effect, it is actually the only way to produce notes above the *dem* register. Therefore, different note heads to indicate harmonics should only be used when composers would like to have specific notes in specific positions. The following example demonstrates such case:

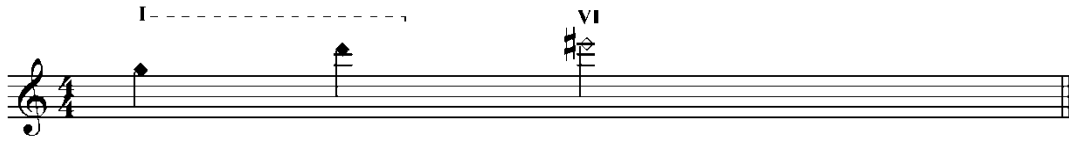


Figure 2.387: Notation of the harmonics

In this example the notation indicates that the composer specifically wants the G5 to be played as the fourth harmonic of G3, D6 as the sixth harmonic of G3 and F#6 as the fifth harmonic of C#3.

2.4.5.2 Actual Ney Range

Actual *ney* range starts from the *rast* note and goes up to F#6.

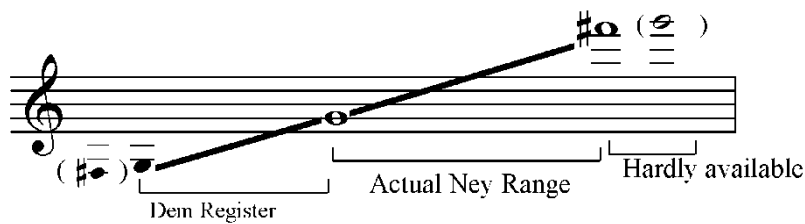


Figure 2.388: The overall *ney* range

In the actual *ney* range, the dynamic control, agility and articulation are natural to performers. As it is heard in the listening examples of the “Harmonics” section, the dynamic range gets more intense towards the higher register. Ney has a wider dynamic range compared to other Turkish Music instruments such as *kemençe*. Especially in its highest register, *ney* can get loud compared to other Turkish music instruments.

The listening examples below, demonstrates the general dynamic range of *ney* and concentrates the differences in sound quality between the actual *ney* range and the *dem* register.

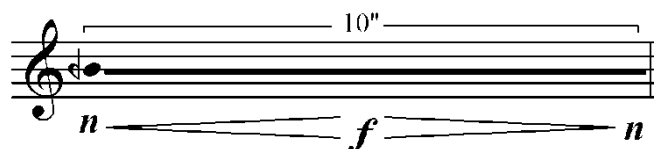


Figure 2.389: Dynamic range of *ney* (CD 5, track 8)

As it is heard in the example, *ney* can perfectly perform a balanced crescendo from *neinte* to forte and a decrescendo from forte back to *niente*.

Next example compares the differences between strong accent and loud dynamic in the actual range and the *dem* register. To perform a strong accent in the *dem* register is unnatural and the strong dynamics are hard to control. Besides, these experiments on dynamics in this example the gradual change from normal sound to breath sound during the decrescendo is demonstrated. The breath sound is indicated by the small circle above the staff.

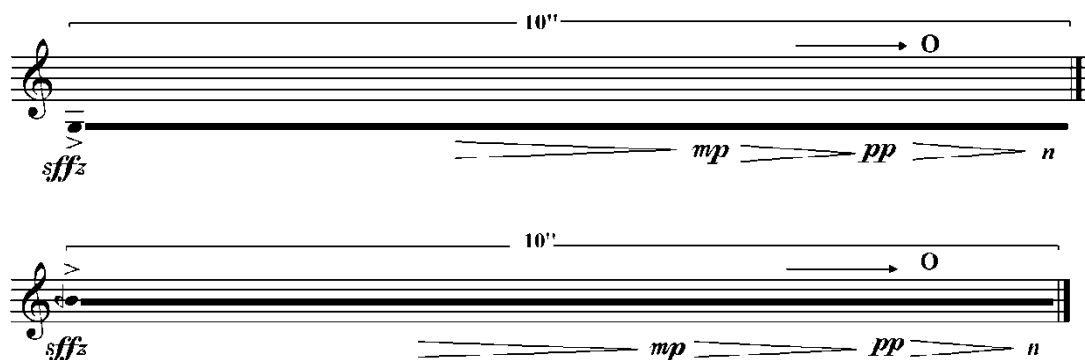


Figure 2.390: Dynamics in different registers (CD 5, track 9)

2.4.5.2a Registers of the Actual Ney Range

The actual ney range is divided into four different registers.

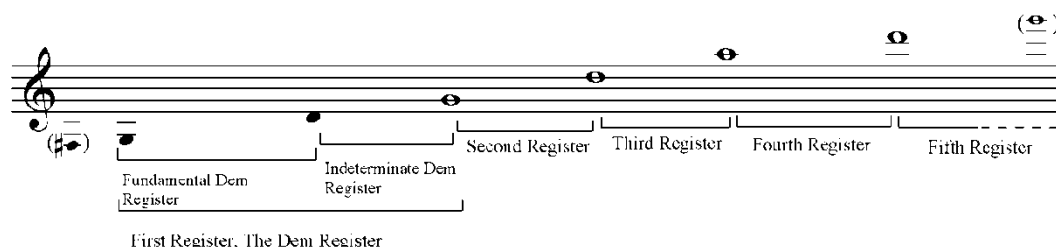


Figure 2.391: Different registers of the actual *ney* range

These registers are determined by the different levels of overblowing. Second register contains notes that are second harmonics of different positions. Similarly, the third register contains third harmonics; fourth register contains fourth harmonics and fifth register contains fifth harmonics.

Since the second register is right above the *dem* register, to play louder dynamics like *forte*, *fortissimo* are harder compared to the higher registers. Also the strong accents like *sforzando* might be considered as less effective. However, for a professional *ney* player all different kinds of dynamics are available in this register. The sound quality in this register has dept and richness. Towards the higher registers the louder dynamics get stronger, but the sound quality

In the third register, low dynamics like *pianissimo*, *piano* start get harder to perform but perfectly possible for a professional player. Louder dynamics and strong accents are perfectly effective. Even though the sound is more intense compared to the second register it still preserves the richness of the *ney* sound.

In the fourth register the louder dynamics are natural to play and effective but the soft dynamics are very hard to perform. Sound quality loses its dept, gets thinner and intense.

In the fifth register any dynamic under *forte* is very hard to control. The notes above F6 in this registers are very hard to control. The sound in this register is loud and thin without any dept.

The next example demonstrates the different characteristics of different registers. This example is performed on *mansur ney* which is the only *ney* type that does not

require any transposition. In other words, the *rast* of *mansur ney* corresponds to G in western notation

♩ = 60

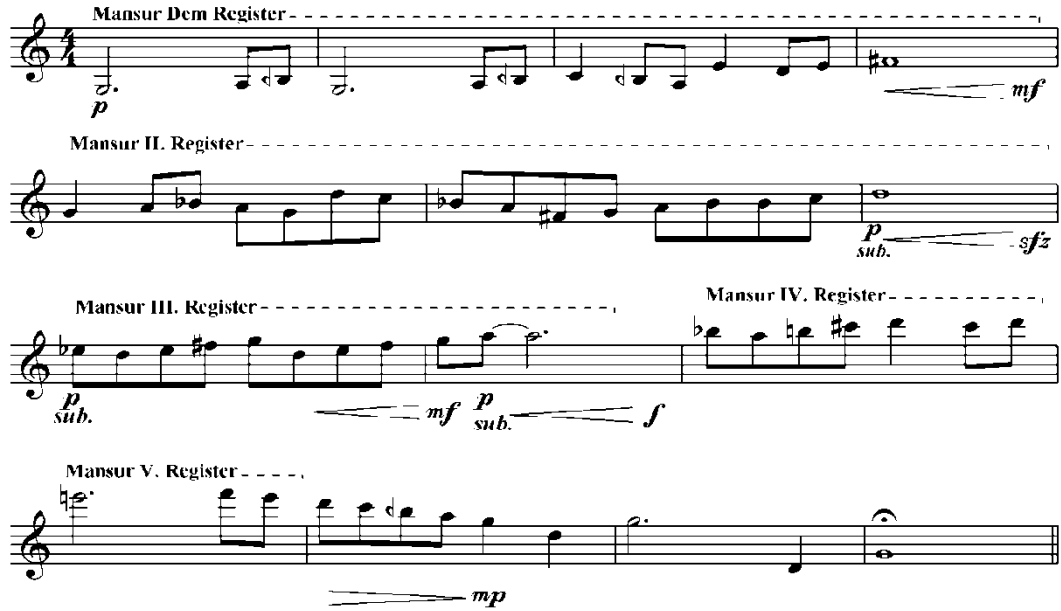


Figure 2.392: Different registers on *mansur ney* (CD 5, track 10)

2.4.6 Characteristics of Different Ney Types

As *mansur ney* is a non-transposed instrument its characteristics are analyzed in the previous section. In the following section *kız*, *süprüde* and *bolahenk neys* are analyzed.

2.4.6.1 Kız Ney

2.4.6.1a Transposition and the Range

The *rast* note of the *kız ney* corresponds to the A4 of the western notation. Therefore the sounding range of the *kız ney* is:

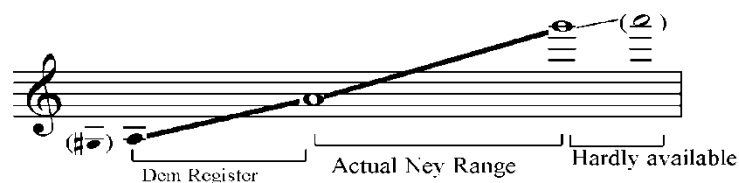


Figure 2.393: Overall range of *kız ney*

2.4.6.1b Registers of *Kız Ney*

In this case, the registers of the *kız ney* range are:

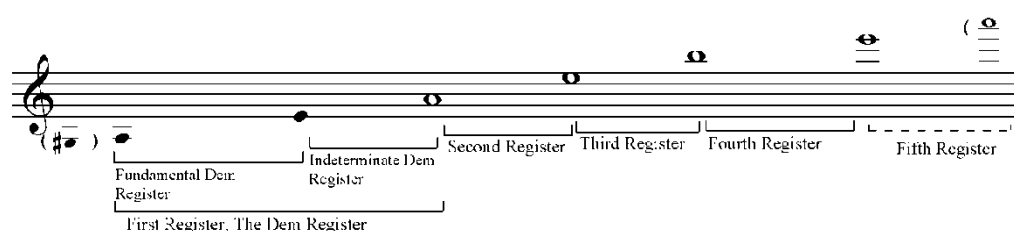


Figure 2.394: Different registers of *kız ney* range

The characteristics of the different registers in the *kız ney* range is very similar to the characteristics of *mansur ney* as it is demonstrated in the example below.



Figure 2.395: Different registers on *kız ney* (CD 5, track 11)

As it is heard in the listening example the relations of different *ney* registers to each other are very similar to *mansur ney*. However, there two main differences of the overall sound of the *kız* and *mansur neys*. The first difference is that the control of

the on the notes in the *kız ney*'s fifth register are harder that the fifth register of the *mansur ney*. The second difference is that the overall sound of the *kız ney* does not have the dept as the *mansur ney* has. This is especially evident in the difference of the *dem* registers of both *ney* types.

2.4.6.1c Fundamental Positions of the *Kız Ney*

All the notes in these fundamental positions are familiar to *ney* players. In order to decide which passage is more appropriate for which *ney* type, composers should also consider the transposed (to western notation) versions of these notes. Below is given the eight fundamental positions of *kız ney* in transposed versions.

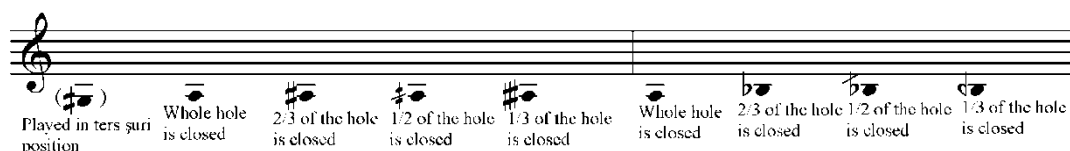


Figure 2.396: First fundamental position of the *dem* register on *kız ney*

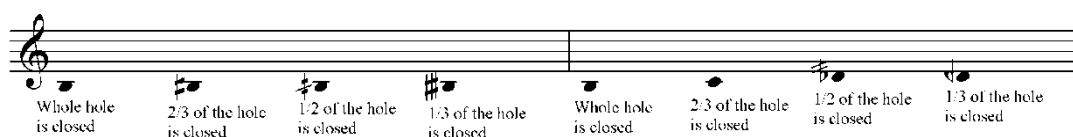


Figure 2.397: Second fundamental position of the *dem* register on *kız ney*

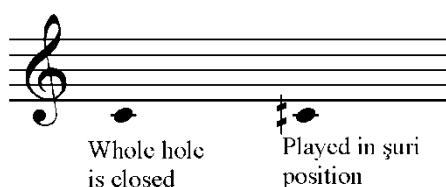


Figure 2.398: Third fundamental position of the *dem* register on *kız ney*

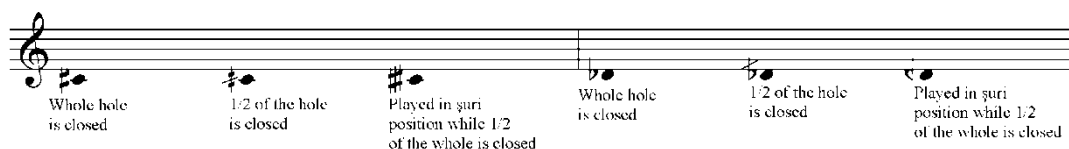


Figure 2.399: Fourth fundamental position of the *dem* register on *kız ney*

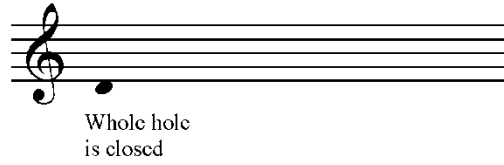


Figure 2.400: Fifth fundamental position of the *dem* register on *kız ney*

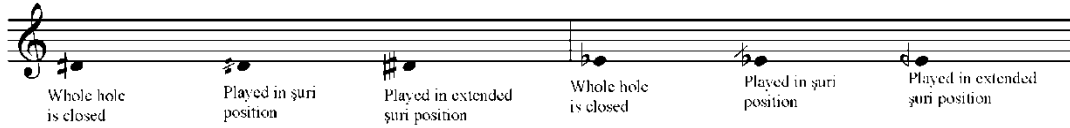


Figure 2.401: Sixth fundamental position of the *dem* register on *kız ney*

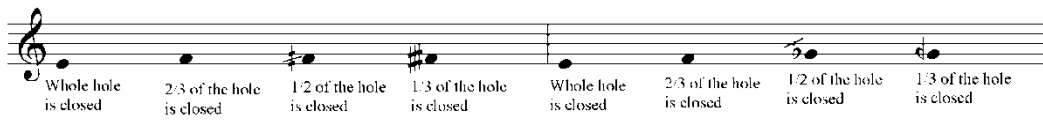


Figure 2.402: Seventh fundamental position of the *dem* register on *kız ney*

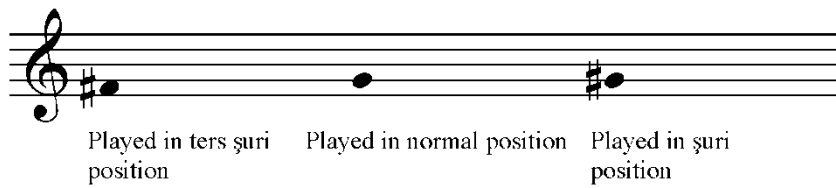


Figure 2.403: Eighth fundamental position of the *dem* register on *kız ney*

The main notes of these fundamental positions in *kız ney* are:

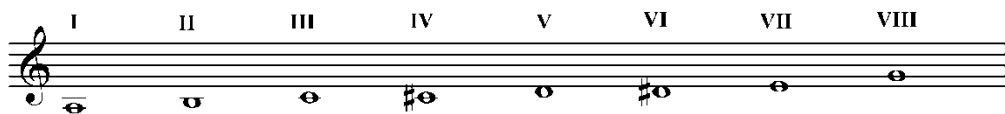


Figure 2.404: The main notes of the fundamental positions on *kız ney*

2.4.6.2 Süpürde Ney

2.4.6.2a Transposition and Range

The *rast* note of *süpürde ney* corresponds to the C5 of the western notation. The sounding range of the *süpürde ney* is:

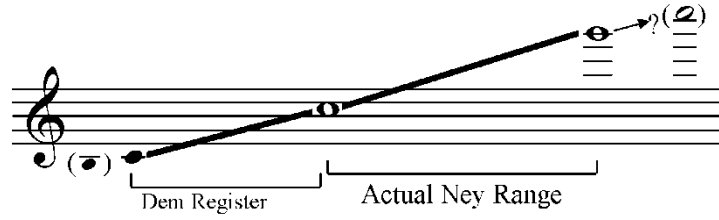


Figure 2.405: Overall range of *süpürde ney*

2.4.6.2b Registers of *Süpürde Ney*

The registers of *süpürde ney* range:

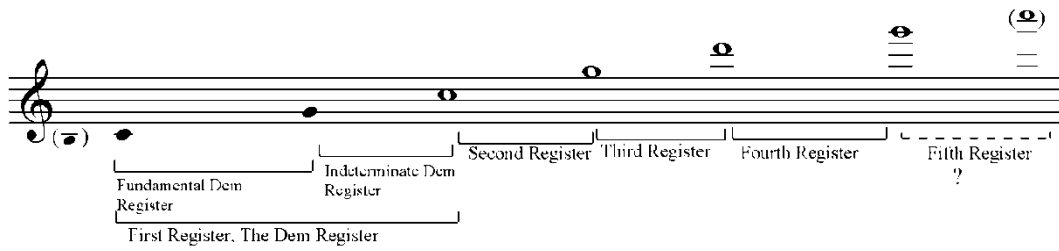


Figure 2.406: Different registers of *süpürde ney* range

The notes in the fifth register are not available in the *süpürde ney*'s range. As the length of the instruments get shorter -a standard *mansur ney* is approximately 80 cm, *kız ney* is 71 cm, *süpürde* is 58 cm, *bolahenk ney* is 52 cm (Erguner 2002:51)- their control on the fifth register gets harder. However, one should realize that *süpürde ney* can play G6 which is not available in the *mansur* and *kız neys*. The following example demonstrates the characteristics of these different registers.



Figure 2.407: Different registers on *sûpürde ney* (CD 5, track 12)

Even in the fourth register the sound gets thinner and intense. Dynamics under *forte* would be hard to perform in this register.

2.4.6.2c Fundamental Positions of the *Sûpürde Ney*

Below is given the notes in the eight fundamental positions of *sûpürde ney* in transposed versions.

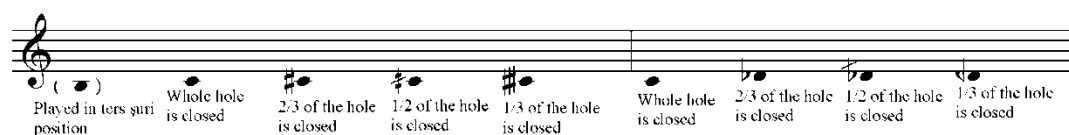


Figure 2.408: First fundamental position of the *dem* register on *sûpürde ney*

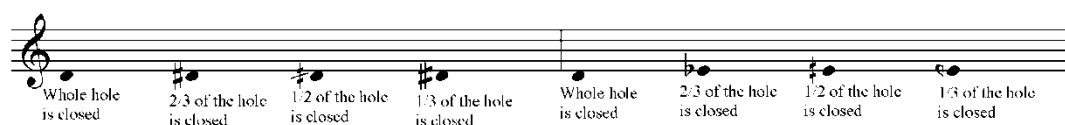


Figure 2.409: Second fundamental position of the *dem* register on *sûpürde ney*

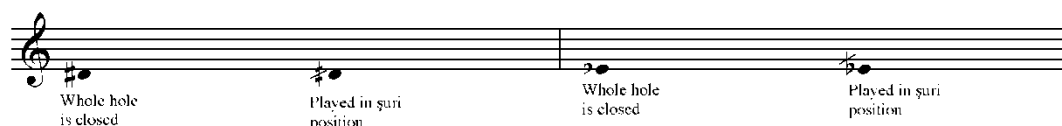


Figure 2.410: Third fundamental position of the *dem* register on *sûpürde ney*

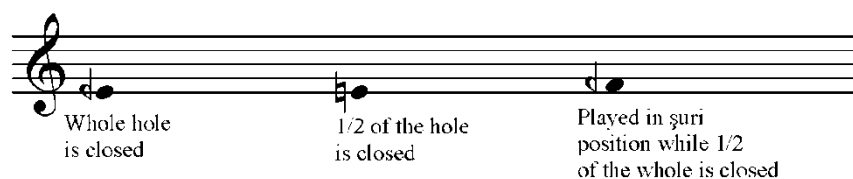


Figure 2.411: Fourth fundamental position of the *dem* register on *süpürde ney*

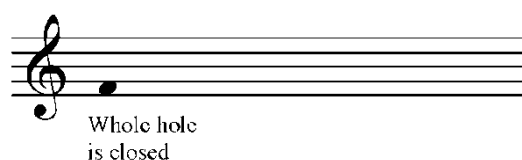


Figure 2.412: Fifth fundamental position of the *dem* register on *süpürde ney*

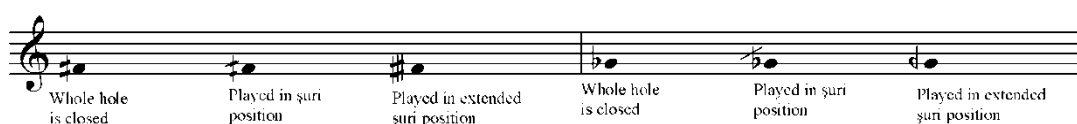


Figure 2.413: Sixth fundamental position of the *dem* register on *süpürde ney*



Figure 2.414: Seventh fundamental position of the *dem* register on *süpürde ney*

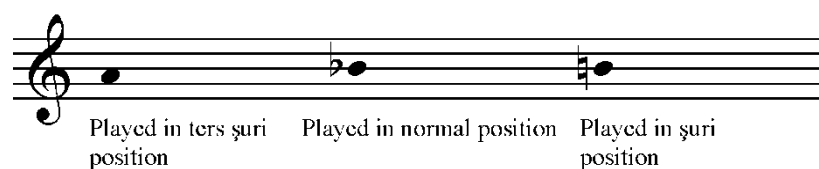


Figure 2.415: Eighth fundamental position of the *dem* register on *süpürde ney*

The main notes of these fundamental positions in *süpürde ney* are:



Figure 2.416: Main notes of the fundamental positions on *süpürde ney*

2.4.6.3 Bolahenk Ney

The *rast* note of *bolahenk ney* corresponds to the D5 of the western notation. The sounding range of the *bolahenk ney* is:

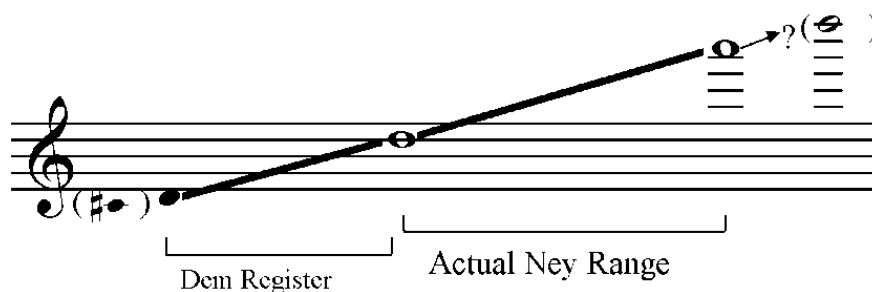


Figure 2.417: Overall range of *bolahenk ney*

2.4.6.3a The Registers of *Bolahenk Ney* Range:

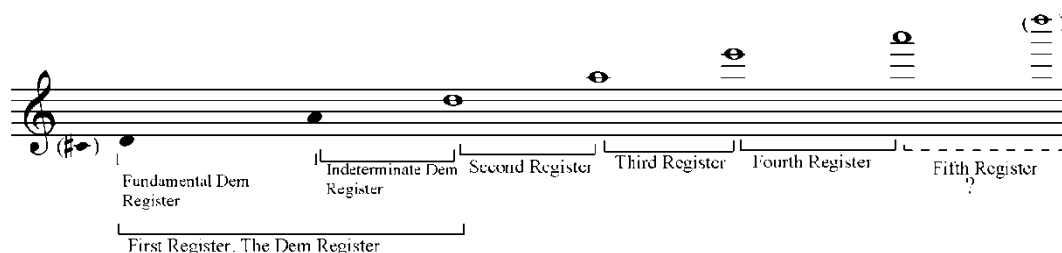


Figure 2.418: Different registers of *bolahenk ney* range

Similar to the *süpürde ney* the fifth register is also not available in the *bolahenk ney*'s range. However, A6 can be produced on *bolahenk ney*, which is not available in other three *ney* types. Example 6 demonstrates the registers of *bolahenk ney* range



Figure 2.419: Different registers on *bolahenk ney* (CD 5, track 13)

As it is heard in the example the highest notes of the fourth register gets thinner and also louder compared to other *ney* types

2.4.6.3b Fundamental Positions of the *Bolahenk Ney*

Below is given the notes in the eight fundamental positions of *bolahenk ney* in transposed versions.

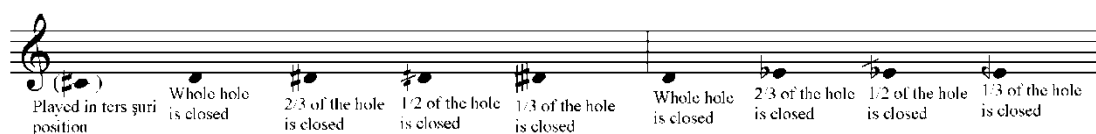


Figure 2.420: First fundamental position of the *dem* register on *bolahenk ney*

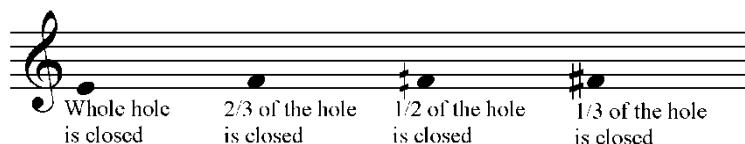


Figure 2.421: Second fundamental position of the *dem* register on *bolahenk ney*

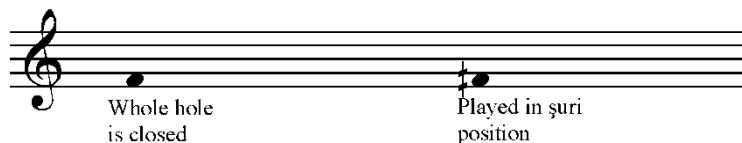


Figure 2.422: Third fundamental position of the *dem* register on *bolahenk ney*

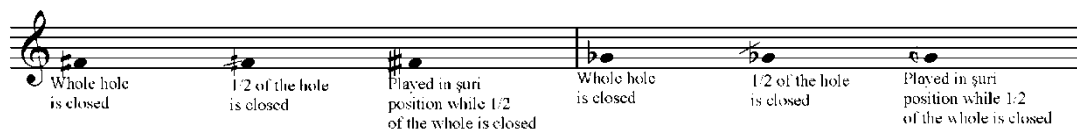


Figure 2.423: Fourth fundamental position of the *dem* register on *bolahenk ney*

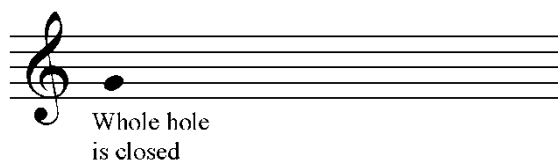


Figure 2.424: Fifth fundamental position of the *dem* register on *bolahenk ney*

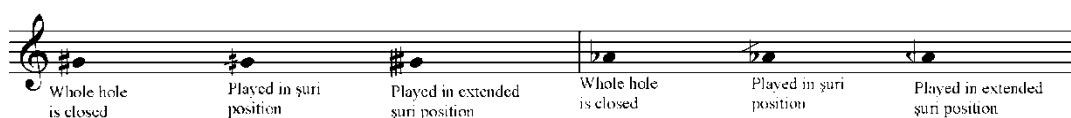


Figure 2.425: Sixth fundamental position of the *dem* register on *bolahenk ney*



Figure 2.426: Seventh fundamental position of the *dem* register on *bolahenk ney*

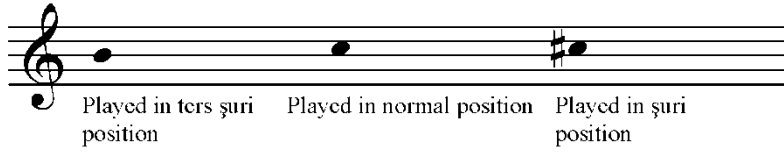


Figure 2.427: Eighth fundamental position of the *dem* register on *bolahenk ney*

The main notes of these fundamental positions in *bolahenk ney* are:

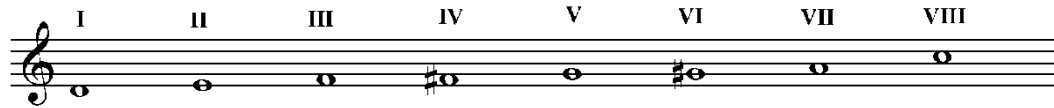


Figure 2.428: Main notes of the fundamental positions on *bolahenk ney*

2.4.6.4 Total Range of *Mansur, Kız, Süpürde, Bolahenk Neys*

After these analyzes on individual *ney* types, composers should also consider the total range of these four *ney* types. This range starts from *mansur ney*'s first fundamental note to the *bolahenk ney*'s highest note:



Figure 2.429: Total range of *mansur, kız, süpürde, bolahenk neys*

The highest notes in this overall range, especially notes between D6 to G6 can be played by all four *ney* types. By giving a reasonable time to switch *neys*, this range can be used in one single part, like the example below:

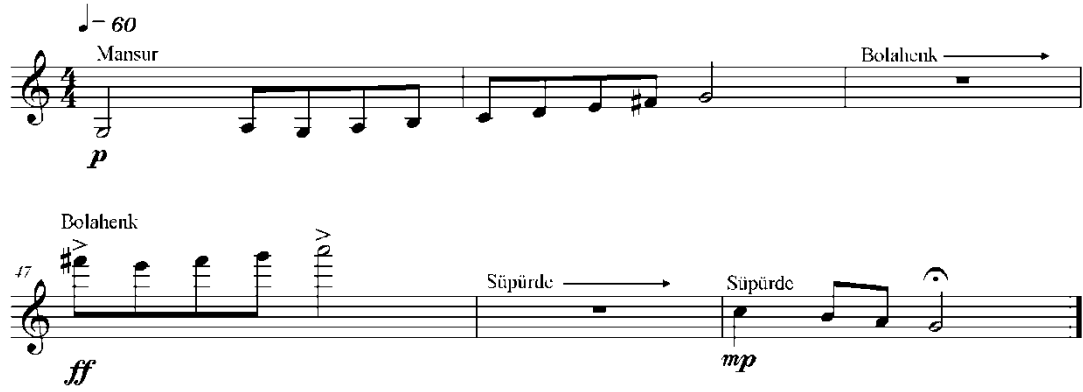


Figure 2.430: The notation of switching *neys*

2.4.7 Ney Techniques

2.4.7.1 Agility

In the actual range of any ney type, professional ney players can easily play fast passages including wide leaps. As it is stated above, only in the *dem* register the agility is very limited. The following examples shown from figures 431 to 442 are all performed on *mansur ney*.



Figure 2.431: Agility on *ney* (CD 5, track 14)

2.4.7.2 Legato Playing

Legato playing is the most natural and usual way to perform a passage for *ney* players. When a passage notated without any specific indications to a *ney* player, like the passage shown in figure 2.431, his/her interpretation would be to play it legato.



Figure 2.432: A passage without slurs

As we've analyzed above in the "Fundamental Positions" section, by using different finger positions on the holes and using *şuri* positions players can easily slide through

one pitch to another. Therefore, players naturally prefer to use this facility rather than to separate notes from each other. Because of the same reason, especially in stepwise passages it is very common to play glissandos in order to pass on to the next note in the passage. In *ney* performances, glissando can be seen as an exaggerated version of legato or even as *legatissimo*. Here's an example of a passage performed by using glissandos in terms of *legatissimo*.

♩ = 50



Figure 2.433: *Legatissimo* (CD 5, track 15)

However, these *legatissimo* glissandos are mostly effective when they are used in an interval of major or minor second, or between smaller microtonal intervals. For intervals wider than a second, glissandos are more effective between the notes of the first and the middle notes of a *ney* register. This situation is exemplified in the second measure of the example in figure 2.432, the glissando between A and C. As the second register of *mansur ney* starts from D and end on C# these notes are both placed in the middle of this register. For example if it were C# rather than C in the first measure of this example, this glissando would be much harder to perform and sound less effective. For example a glissando between D and Bb would be totally unavailable since the notes belong to different registers. This issue will be discussed again in the “Glissando” section.

The following example demonstrates a similar passage performed as legato.

♩ = 60



Figure 2.434: *Legato* under very long slurs (CD 5, track 16)

Since *legato* playing is natural to *ney* players, they prefer to play longer slurs. In other words they tend to play one musical sentence in one breath. When a musical sentence is divided into more than one slur, the last note of the slur is played as

staccato or cut off as if is a breath mark, in order to take another breath for the next slur. Different versions of such case are exemplified in the below figure.



Figure 2.435: *Legato* under long slurs (CD 5, track 17)



Figure 2.436: *Legato* under short slurs (CD 5, track 18)



Figure 2.437: *Legato* under very short slurs (CD 5, track 19)

2.4.7.3 Articulations

2.4.7.3a *Tenuto* and *Staccato*

As it is heard in the example shown in figure 2.463, especially as the slurs get shorter the continuity of the passage is often interrupted. In order to achieve continuity, longer slurs should be preferred. In the next example, same passage can be heard as *tenuto*. In *ney* playing each note under *tenuto* sign are played with separate breaths.

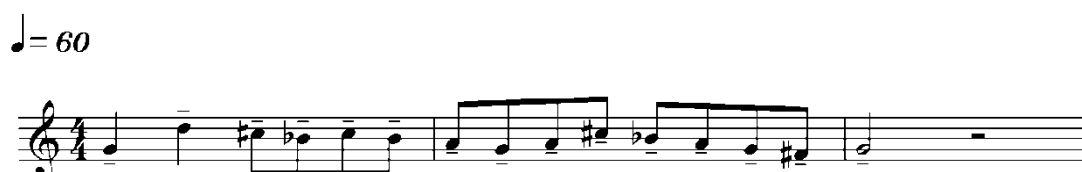


Figure 2.438: *Tenuto* (CD 5, track 20)

In the example shown in 2.438 the same passage is played as *staccato*. Each note under *staccato* sign is played with separate breaths. These breaths are shorter than *tenuto*.

♩ = 60



Figure 2.439: *Staccato* (CD 5, track 21)

Ney players hold the instrument in an oblique way to their body and blow air into the instrument. This position does not let them to use *tonguing*. Therefore, *staccato* is controlled by cutting off the breath into the instrument which might be considered as less effective compared to flute or other woodwinds. However, a professional *ney* player can successfully perform the differences between *legato*, *tenuto*, *staccato* and *staccatissimo*.

♩ = 60



Figure 2.440: A passage with *legato*, *tenuto*, *staccato* and *staccatissimo*
(CD 5, track 22)

Since, the lower registers especially the *dem* register of *ney* requires stronger breathing, *staccato* passages especially the *staccatissimo* passages lose their effect. It would be more realistic not to use *staccatissimo* in the *dem* register.

Also a similar technique to the “soft toungeing” of flute playing (Adler 2002: 172) can also be performed on *ney*. This technique is basically playing *tenutos* and *staccatos* under slurs. In order to perform this technique player applies accents within a single breath rather than playing each note in a new breath (as in the regular *tenuto* or *staccato* playing). It would be more appropriate to apply this technique in longer slurs as in the next example.

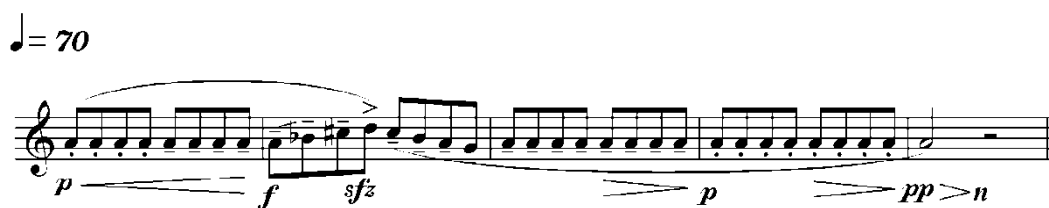


Figure 2.441: Soft tonguing (CD 5, track 23)

2.4.7.3b Marcato and Martellato

Marcato and *martellato* techniques are performed by the same principles as *staccato* and *staccatissimo* on ney. These accents are only effective starting from the second register. This characteristic is evident in the example below.

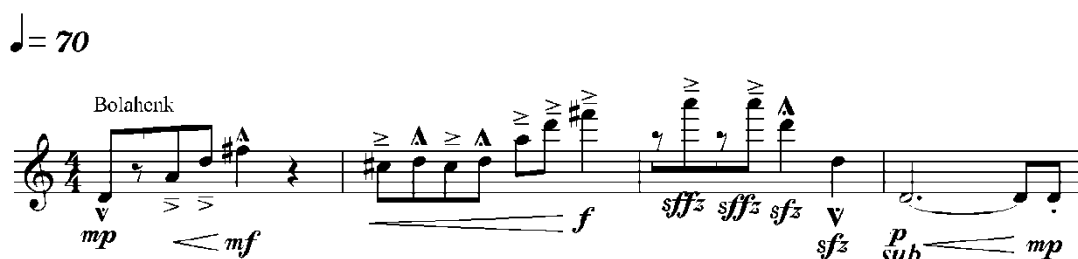


Figure 2.442: Marcato (CD 5, track 24)

Martellato is a technique which is even harder to handle. As one can hear in the following example, it loses its effect even under the third register.

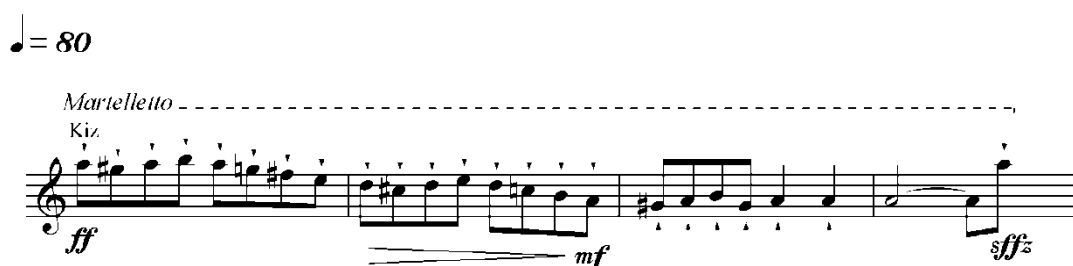


Figure 2.443: Martellato (CD 5, track 25)

When a similar passage is transposed to the first and the *dem* register of *ney*, the result will be a quiet staccato passage

♩ = 80



Figure 2.444: *Martellato* in the low registers (CD 5, track 26)

2.4.7.4 Trills and Tremolos

Here's the list of the most important determinations concerning trill and tremolo techniques on *ney*

- 1- These techniques are only available for the main notes of -whole holes are closed- finger positions. 2/3, 1/2, 1/3 finger positions and the şuri positions are not available in the usage of trill and tremolo techniques.
- 2- Trills and tremolos that include D#/Eb and G# (except the G#5 which is the third harmonic of the sitxht position)/Ab on mansur ney, F/E# and A# (except the A#5 which is the third harmonic of the sitxht position)/Bb and on kız ney, G#/Ab and C#/Db (except the C#6 which is the third harmonic of the sitxht position) and on süpürde ney, A#/Bb and D# (except the C#6 which is the third harmonic of the sixth position)/Eb and on *bolahenk ney* are not available because they can only be played from the first positions of these neys when the 2/3 of the hole is closed.
- 3- Trills and tremolos that include notes in the seventh and eighth position of the *dem* register are not available. For example:



Figure 2.445: Unavailable trills and tremolos

- 4- Tremolos that are between the first three positions and the sixth, seventh and eighth position are not available because of the fingerings of those positions are very different than each other for example:

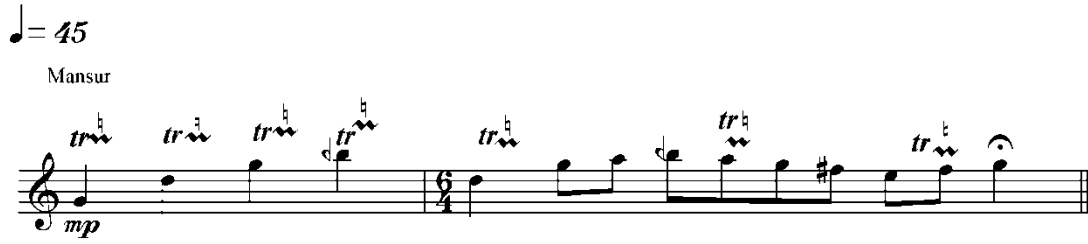


Figure 2.450: A passage with trills (CD 5, track 28)

2.4.7.5 Vibrato

Ney players can control different types of vibrato according to the indications in the notation. Playing a passage with or without vibrato are both normal situations to a professional *ney* player. Vibrato on *ney* is created by the rapid movement of the lips on the *başpare*. *Molto vibrato* is easier to perform and more idiomatic *mansur* and *kız neys* rather than the *süpürde* and *bolahenk neys*. In notation, *n.v.* means *non vibrato*, *vib.* means *vibrato* and *m.v.* means *molto vibrato*.

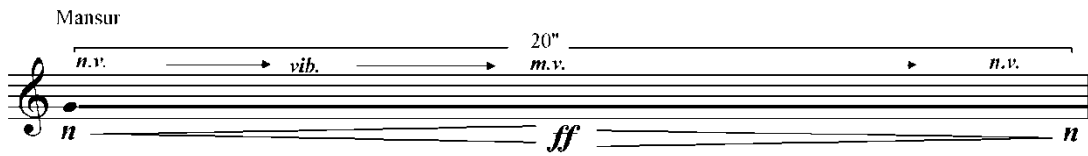


Figure 2.451: Vibrato on *mansur* ney (CD 5, track 29)

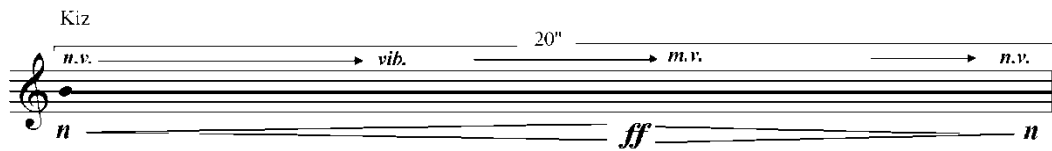


Figure 2.452: Vibrato on *kız* ney (CD 5, track 30)

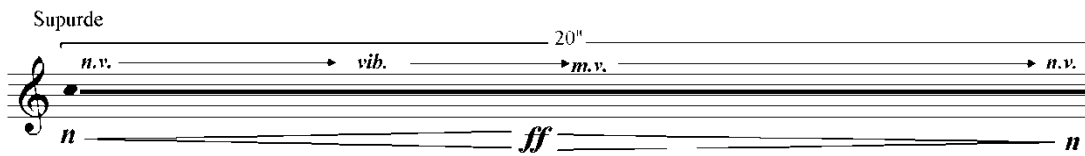


Figure 2.453: Vibrato on *süpürde* ney (CD 5, track 31)

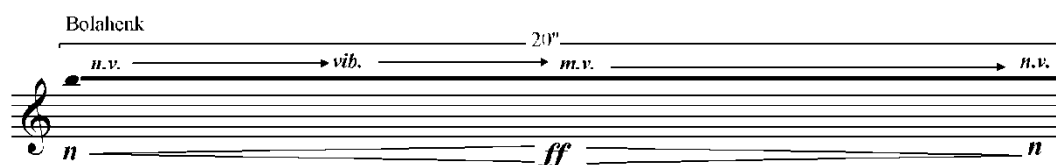


Figure 2.454: Vibrato on *bolahenk nney* (CD 5, track 32)

2.4.7.6 Glissando

Only, the glissandos that are smaller than major thirds are available. As it is mentioned in the “*Legato*” section, minor third (or augmented second) glissandos are only available between the notes of the first and the middle notes of a *nney* register, for example on *mansur nney* a glissando between G4 and Bb 4 is available since both notes are placed at the beginning of the second register, however a glissando between the Bb4 and C#5 is unavailable since C# is the last note of the second register. Minor and major second glissandos are almost always available. Unlike the problems with the trills, glissandos that include 2/3, 1/2, 1/3 finger positions and *şuri* positions are available. For example a trill between G4 and G#4 on *mansur nney* is not available but a glissando between those notes is perfectly available. In all the cases that a glissando is available between two notes it is available in both ascending and descending directions. The following examples shown in figures 2.454, 455, 456, 457 demonstrates glissandos of different registers on *bolahenk nney*. All of these examples are performed at fifty beats per minute.



Figure 2.455: Glissando in different registers (CD 5, track 33)



Figure 2.456: Glissando in different registers (CD 5, track 34)



Figure 2.457: Glissando in different registers (CD 5, track 35)

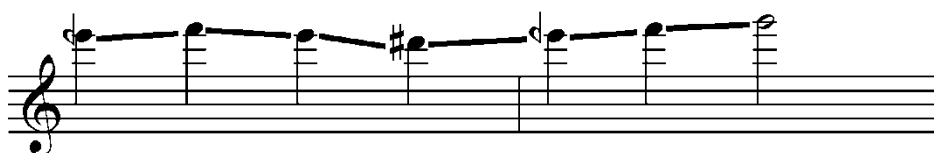


Figure 2.458: Glissando in different registers (CD 5, track 36)

In order to perform larger glissandos, *ney* players can use fingered glissando techniques. This technique can be performed without any problem on every register.



Figure 2.459: Fingered glissando (CD 5, track 37)

Ney players can also gradually move from one harmonic of a fundamental note to another. Especially, in slow tempos these gradual changes can be heard. This technique might be considered as a harmonic glissando on *ney*. For the notation of this technique, I propose to use an arrow from the first harmonic note towards the next and indicate the fundamental position by roman numerals. One might also indicate the partial number (3rd harmonic, sixth harmonic, fundamental, etc.) of the harmonic notes being used in this technique.

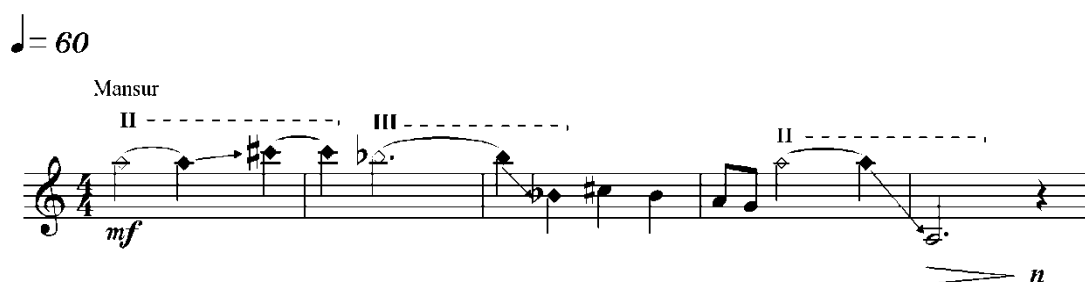


Figure 2.460: Harmonic glissando (CD 5, track 38)

2.4.7.7 Flutter Tonguing

As it is mentioned above in the “*Legato*” section, *ney* is played by blowing air into the instrument in a oblique direction and this position does not let the performer to use tonguing. Because of the same reason flutter tonguing is, which is a common technique for wind instruments, is not available on *ney*.

2.4.7.8 Breathe Tones

Ney players can use extra breathing in their playing. This can be considered as an individual technique. The first two registers are more appropriate for this technique. While playing the upper registers it is not possible distinguish different types of breathing. The passage shown in figure 2.460 exemplifies breathe tones that is played by using extra breathing. This technique is indicated by the circle above the staff. At the end of the example, the breath tone gradually turns back to normal blowing that is indicated by *ordinario*.

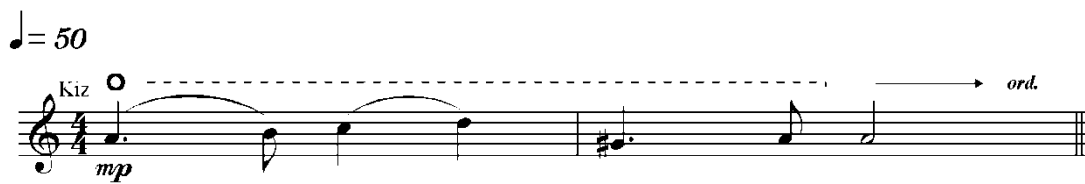


Figure 2.461: Breathe tones (CD 5, track 39)

In the following example, there is passage that employs breathe tones and harmonic glissando together.

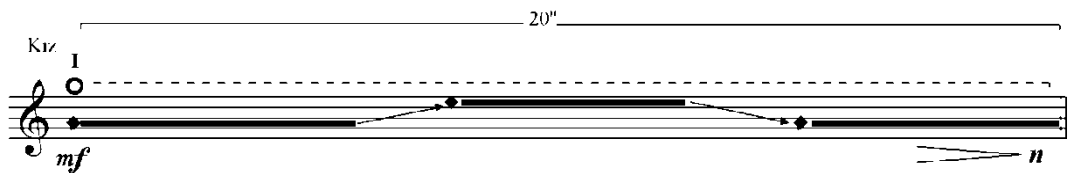


Figure 2.462: Breathe tones and harmonic glissando (CD 5, track 40)

2.4.7.9 Hortlatma

Hortlatma is a unique *ney* technique. This technique is basically achieved by using short, sudden and strong breathing. Just like the breath tones, this technique is most effective in the first two registers. As a result of using this kind of breathing the octave of every note comes out simultaneously that gives the characteristic sound to this technique. While playing *hortlatma*, players also use a special kind of vibrato

that is done by the rapid movement of the thumb on the back hole of *ney*. However this vibrato can only be applied to one note and its octaves and this note is E on mansur *ney* (F# on *kız ney*, A on *süpiürde ney* and B on *bolahenk ney*). One can hear this special vibrato on the next example, at the two different octaves of E.

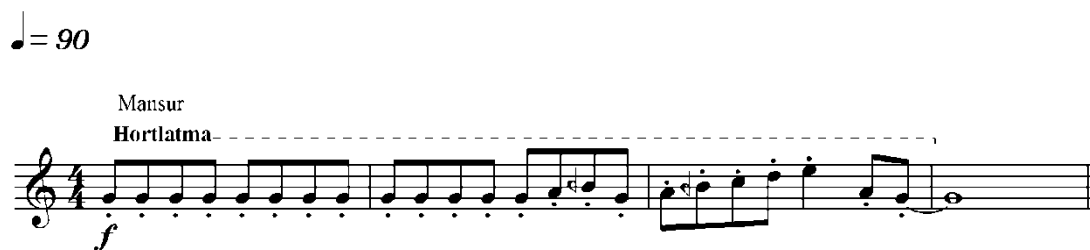


Figure 2.463: Hortlatma (CD 5, track 41)

Hortlatma is not effective and very difficult to perform in the dem register.

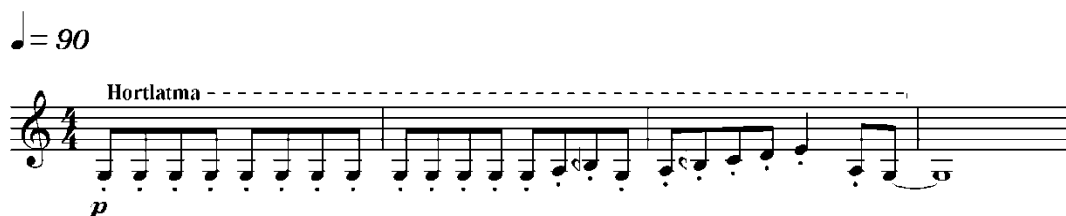


Figure 2.464: *Hortlatma* in dem register

2.4.7.10 Simultaneous Singing

While blowing into the *ney*, a *ney* player can also sing at the same time which creates a remarkable effect. This technique is only available in the first two registers.

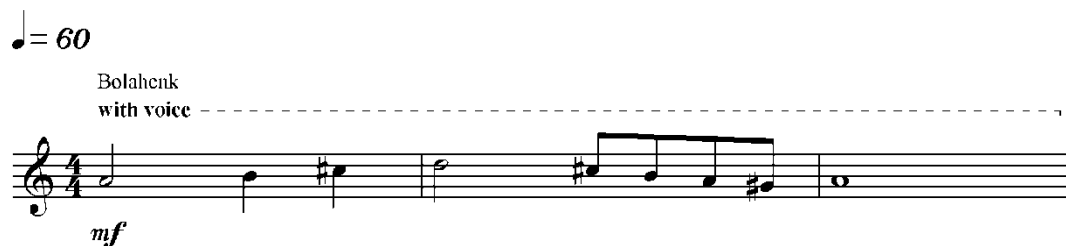


Figure 2.465: Simultaneous singing (CD 5, track 42)

2.4.7.11 Playing without *başpare*

When *ney* is played without *başpare*, the sound quality changes and loses its depth and the control on the high registers get harder. Especially intonation problems are very likely to occur. In the below example most of the notes are played almost a half step sharper than written. Without *başpare* the fourth and fifth registers become unavailable or extremely hard to play.



Figure 2.466: *Senza başpare* (CD 5, track 43)

2.4.7.12 Microtones

All pitches that are mentioned in the fundamental positions of four different *ney* types (*mansur*, *kız*, *süpürde*, *bolahenk*) belong to the Turkish music system. Even though, a *ney* player is educated to hear those notes in relation to *makam* music, a professional player perfectly knows how to play those pitches individually and can play them in passages that have no connection with *makam* music.



Figure 2.467: Specified microtones in a passage (CD 5, track 44)

It is clear that the B's in the first measure and the Eb's in the second measure and the Eb in the third measure are different. Also playing glissando between two microtonally different notes are perfectly available on *ney*.

♩ = 50



Figure 2.468: Glissando between microtones (CD 5, track 45)

Other kinds of microtones, such as quarter notes, are available on *ney* by using different finger positions and *şuri* positions. The only obstacle for their performances is the player's unfamiliarity with those pitches. In order to get different microtonal notes performed, composers should individually work with the performers in order to explain what they exactly want.

2.4.7.13 Chromatic Playing

As it is mentioned above *ney* players are able to play passages that have no connection to *makam* music. Therefore any kind of chromatic passage is available on *ney*:

♩ = 60



Figure 2.469: Chromatic Playing

2.4.7.14 Hole clicks

This effect can be seen as a similar effect to key clicks on other woodwinds. Since there are no keys on *ney*, the player hits the holes with his/her finger tips. The result is a silent effect and dynamics above *piano* should not be used. In this technique the pitch definition is indeterminate and usually sounds a minor second above than written. Hole clicks can be notated as below:

♩ = 50

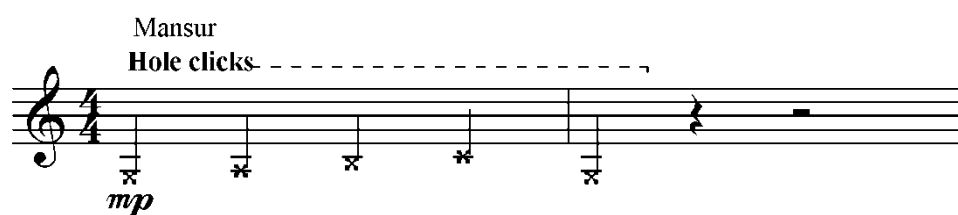


Figure 2.470: Hole clicks (CD 5, track 46)

3. CONCLUSION AND RECOMMENDATIONS

In this dissertation the examinations on applying the contemporary techniques to *kemençe*, *ud*, *kanun*, *ney* pursued along with the research on the characteristics of these instruments. The results of this work will be analyzed in two different categories:

- 1- General Observations
- 2- Problems

3.1 General Observations

3.1.1 Observations on the Interpretation of Written Music

- a- *Kemençe*, *Ud*, *Kanun* and *Ney* players are not trained and accustomed to interpret musical expression through the indications of notation.
- b- They are not familiar with the notations of the musical symbols such as *crescendo*, *marcato*, *sul ponticello* or many others.
- c- The techniques that are particular to these instruments – such as *hortlatma* on *ney*, *fiske* on *kanun* – are generally not indicated in musical scores.
- d- During the examinations of this dissertation, musicians studied the techniques and the notation that I've proposed in the etudes and the “hat” pieces. As a result of this process musicians improved to recognize the notation and interpret the written expressions. Therefore the etudes and pieces that have been presented in this thesis can be seen as a prototype for the enrollment of contemporary techniques in the education system of Turkish music.
- e- Turkish music sounds a perfect fourth below than it is written. However, musicians are accustomed to read western music notation directly without any transposition.
- f- Even though the sharp, flat, natural and other microtonal symbols are transferred to Turkish music notation system from the western system they are used in different determinations. In other words, same symbols indicate different functions in western and Turkish music. However this situation

inclines to confusion more on the, western or educated according to western system, composers' rather than Turkish music performers. Turkish music performers are aware of the problem and know the microtonal differences between Turkish and Western music. Composers who intend to write for these instruments should study these microtonal differences and the confusion generated by separate notation systems.

- g- In traditional Turkish music a single melodic line is performed by an ensemble in heterophony as each member of the ensemble interprets the melodic line with different ornaments. Therefore, musicians are used to interpret written music along with unwritten stylistic ornaments. However musicians, especially who had conservatory training, can omit these ornaments in their performances. This situation gives the opportunity to the composer to ask the performer to play a passage without or with improvised ornamentation. In order to ask the performer to use improvisatory ornamentation “*ad. libitum*” indication can be used.

3.1.2 Observations on Performers' Attitudes towards Novelities

In Turkish education system the Western and Turkish Music conservatories are completely separate institutions with almost no encounters to each other. Partly because of this situation Turkish Music conservatories are introverted institutions that mostly focus on traditional studies. However, even though I've worked with conservatory lecturers in this study, the musicians approach towards innovations was just the opposite of one would expect. They are willing to explore the further characteristics of their instruments besides unfamiliar musical methods and expressions.

3.2 Problems

3.2.1 Observations on Ensemble Playing

- a- Musicians are not experienced to perform in ensembles that they play individual lines with the other musicians.
- b- They are inexperienced not only to construct a unified ensemble sound, but also to perform the rhythms accurately in a situation that they play different lines from the other members

3.2.2 Constitutional Problems

- a- *Kemençe* strings are not produced in Turkey. Musicians are rather using cello or violin strings. This situation causes intonation problems
- b- In *kanun*, the numbers of levers in each string are not standardized. This situation causes intonation problems when they play with different instruments.

3.3 Recommendations

- 1- Courses on western notation system should be a part of the conservatory curriculum.
- 2- Courses that include interpretation of detailed musical indications should be a part of the conservatory curriculum.
- 3- Transpositions and the microtonal indications of Turkish music system should be discussed and revised academically
- 4- Constitutional problems of *kemençe* and *kanun* should be discussed and revised academically
- 5- Composers should be supported and encouraged to write music for Turkish music instruments idiomatically.

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APPENDIX

Hat (Kemence)

Onur Türkmen
(2007)

$\text{♩} = 60$

h.v. SP *ord.* ST *mp*

6 *pizz.* *arco* *p* *sfz* *sub.* *p* *sfz* *sub.*

12 *mf* *n* *n* *h.v.* *f* *sfz* *sfz* *ST* *n* *mf* *n*

17 *c.l.t.* *p* *n* *ST* *ord.* *SP* *h.v.* *n*

21 *ord.* *mf* *n* *mf* *n* *n* *ff* *n*

24 *(n.v.)* *mp* *n* *mf* *n* *mf* *n*

28 *mf* *n* *n* *mf* *n*

31 *SP* *mf* *SP* *n*

Figure A.1: Hat, Solo Kemeçe (CD 6, track 1)

Hat Ud

Onur Türkmen
(2008)

Scordatura $\text{♩} = 60$

1 mp n ff pp n

5 sfz sfz sfz sfz sfz sfz sfz n sub. p ff pp n gliss. sfz

9 sfz p n pp p ff

11 n ff sfz sfz p sub. ff

13 sfz sfz mp p n ff n mf n f n mf n p n

18 mp vib. vib. (n.v.) vib. (Sol'de nihavend)

21 vib. PH. Tempo I XII vib. vib. vib.

26 XII

Figure A.2: *Hat*, Solo *Ud* (CD 6, track 2)

Onur Türkmen
(2008)

Figure A.3: *Hat*, Solo *Kanun* (CD 6, track 3)

Hat
(Ney)

Onur Türkmen
(2007)

♩ = 60

Mansur

ord.

IV

II

IV

II

n

mf

n

n

mf

n

f

p

6

ord.

m.v.

sfz

mf

n

n

mf

n

9

gliss.

sfz

mf

VII

pp

n

13

m.v.

ord.

with voice / aynı anda söyleycek

sfz

p

sub.

f

n

mf

17

n

p

p

mf

p

sub.

3

sfz

p

n

20

sfz

p

n

ff

p

ff

Hortlatma

23

ff

p

ff

Hortlatma

Hortlatma

25

ff

n

p

mp

ff

n

mf

sfz

28

gliss.

n

sfz

31

pp

ord.

Tempo I

35

ff

gliss.

37

n

n

mf

n

ord.

n

mf

n

p

n

p

n

Figure A.4: Hat, Solo Ney (CD 6, track 4)

Onur Türkmen
(2008)

Figure A.5: *Hat, Kemençe-Ney Duo* (CD 6, Track 5)

Onur Türkmen
(2008)

Figure A.6: *Hat, Kemençe-Kanun Duo* (CD 6, track 6)

3

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

finger playing

SP

rit.

ord. pizz

p

Tempo I

arco

tremolo

rit.

n

tremolo

rit.

n

Figure A.6 (continued): *Hat, Kemençe-Kanun Duo* (CD 6, track 6)

Onur Türkmen
(2008)

Figure A.7: *Hat, Kemençe-Ud Duo* (CD 6, track 7)

Hat
(Ney-Kanun)

Onur Türkmen
(2008)

♩ = 60
(Segah in B)
Mansur

System 1: Ney (Soprano) and Kanun (Piano). Ney part includes dynamics: *fp*, *ffz*, *f*, *p*, *f*, *n*. Kanun part includes *Two hand tremolo* and dynamics: *fp*, *fp*, *fp*, *fp*, *fp*, *fp*, *fp*, *fp*, *fp*, *fp*, *n*.

System 2: Ney part includes dynamics: *ffz*, *f*, *mp*, *p*, *SP*, *mf*. Kanun part includes dynamics: *n*, *f*, *n*.

System 3: Ney part includes dynamics: *n*, *ord.*, *IV*, *ffz*, *f*, *fp*, *f*. Kanun part includes dynamics: *n*, *fp*, *fp*, *fp*, *fp*, *fp*, *fp*, *fp*.

System 4: Ney part includes dynamics: *mp*, *n*, *sfz*, *sfz*, *mp*, *p*. Kanun part includes dynamics: *fp*, *fp*, *n*.

Figure A.8, Hat, Ney-Kanun Duo

The musical score is divided into four systems, each with a measure number in a box at the beginning of the first staff.

- System 1 (Measures 17-20):** The first staff (treble clef) contains a melody with notes G#4, A4, B4, C5, D5, E5, F#5, G#5, A5, B5, C6, D6, E6, F#6, G#6, A6, B6, C7, D7, E7, F#7, G#7, A7, B7, C8, D8, E8, F#8, G#8, A8, B8, C9, D9, E9, F#9, G#9, A9, B9, C10, D10, E10, F#10, G#10, A10, B10, C11, D11, E11, F#11, G#11, A11, B11, C12, D12, E12, F#12, G#12, A12, B12, C13, D13, E13, F#13, G#13, A13, B13, C14, D14, E14, F#14, G#14, A14, B14, C15, D15, E15, F#15, G#15, A15, B15, C16, D16, E16, F#16, G#16, A16, B16, C17, D17, E17, F#17, G#17, A17, B17, C18, D18, E18, F#18, G#18, A18, B18, C19, D19, E19, F#19, G#19, A19, B19, C20, D20, E20, F#20, G#20, A20, B20, C21, D21, E21, F#21, G#21, A21, B21, C22, D22, E22, F#22, G#22, A22, B22, C23, D23, E23, F#23, G#23, A23, B23, C24, D24, E24, F#24, G#24, A24, B24, C25, D25, E25, F#25, G#25, A25, B25, C26, D26, E26, F#26, G#26, A26, B26, C27, D27, E27, F#27, G#27, A27, B27, C28, D28, E28, F#28, G#28, A28, B28, C29, D29, E29, F#29, G#29, A29, B29, C30, D30, E30, F#30, G#30, A30, B30, C31, D31, E31, F#31, G#31, A31, B31, C32, D32, E32, F#32, G#32, A32, B32, C33, D33, E33, F#33, G#33, A33, B33, C34, D34, E34, F#34, G#34, A34, B34, C35, D35, E35, F#35, G#35, A35, B35, C36, D36, E36, F#36, G#36, A36, B36, C37, D37, E37, F#37, G#37, A37, B37, C38, D38, E38, F#38, G#38, A38, B38, C39, D39, E39, F#39, G#39, A39, B39, C40, D40, E40, F#40, G#40, A40, B40, C41, D41, E41, F#41, G#41, A41, B41, C42, D42, E42, F#42, G#42, A42, B42, C43, D43, E43, F#43, G#43, A43, B43, C44, D44, E44, F#44, G#44, A44, B44, C45, D45, E45, F#45, G#45, A45, B45, C46, D46, E46, F#46, G#46, A46, B46, C47, D47, E47, F#47, G#47, A47, B47, C48, D48, E48, F#48, G#48, A48, B48, C49, D49, E49, F#49, G#49, A49, B49, C50, D50, E50, F#50, G#50, A50, B50, C51, D51, E51, F#51, G#51, A51, B51, C52, D52, E52, F#52, G#52, A52, B52, C53, D53, E53, F#53, G#53, A53, B53, C54, D54, E54, F#54, G#54, A54, B54, C55, D55, E55, F#55, G#55, A55, B55, C56, D56, E56, F#56, G#56, A56, B56, C57, D57, E57, F#57, G#57, A57, B57, C58, D58, E58, F#58, G#58, A58, B58, C59, D59, E59, F#59, G#59, A59, B59, C60, D60, E60, F#60, G#60, A60, B60, C61, D61, E61, F#61, G#61, A61, B61, C62, D62, E62, F#62, G#62, A62, B62, C63, D63, E63, F#63, G#63, A63, B63, C64, D64, E64, F#64, G#64, A64, B64, C65, D65, E65, F#65, G#65, A65, B65, C66, D66, E66, F#66, G#66, A66, B66, C67, D67, E67, F#67, G#67, A67, B67, C68, D68, E68, F#68, G#68, A68, B68, C69, D69, E69, F#69, G#69, A69, B69, C70, D70, E70, F#70, G#70, A70, B70, C71, D71, E71, F#71, G#71, A71, B71, C72, D72, E72, F#72, G#72, A72, B72, C73, D73, E73, F#73, G#73, A73, B73, C74, D74, E74, F#74, G#74, A74, B74, C75, D75, E75, F#75, G#75, A75, B75, C76, D76, E76, F#76, G#76, A76, B76, C77, D77, E77, F#77, G#77, A77, B77, C78, D78, E78, F#78, G#78, A78, B78, C79, D79, E79, F#79, G#79, A79, B79, C80, D80, E80, F#80, G#80, A80, B80, C81, D81, E81, F#81, G#81, A81, B81, C82, D82, E82, F#82, G#82, A82, B82, C83, D83, E83, F#83, G#83, A83, B83, C84, D84, E84, F#84, G#84, A84, B84, C85, D85, E85, F#85, G#85, A85, B85, C86, D86, E86, F#86, G#86, A86, B86, C87, D87, E87, F#87, G#87, A87, B87, C88, D88, E88, F#88, G#88, A88, B88, C89, D89, E89, F#89, G#89, A89, B89, C90, D90, E90, F#90, G#90, A90, B90, C91, D91, E91, F#91, G#91, A91, B91, C92, D92, E92, F#92, G#92, A92, B92, C93, D93, E93, F#93, G#93, A93, B93, C94, D94, E94, F#94, G#94, A94, B94, C95, D95, E95, F#95, G#95, A95, B95, C96, D96, E96, F#96, G#96, A96, B96, C97, D97, E97, F#97, G#97, A97, B97, C98, D98, E98, F#98, G#98, A98, B98, C99, D99, E99, F#99, G#99, A99, B99, C100, D100, E100, F#100, G#100, A100, B100, C101, D101, E101, F#101, G#101, A101, B101, C102, D102, E102, F#102, G#102, A102, B102, C103, D103, E103, F#103, G#103, A103, B103, C104, D104, E104, F#104, G#104, A104, B104, C105, D105, E105, F#105, G#105, A105, B105, C106, D106, E106, F#106, G#106, A106, B106, C107, D107, E107, F#107, G#107, A107, B107, C108, D108, E108, F#108, G#108, A108, B108, C109, D109, E109, F#109, G#109, A109, B109, C110, D110, E110, F#110, G#110, A110, B110, C111, D111, E111, F#111, G#111, A111, B111, C112, D112, E112, F#112, G#112, A112, B112, C113, D113, E113, F#113, G#113, A113, B113, C114, D114, E114, F#114, G#114, A114, B114, C115, D115, E115, F#115, G#115, A115, B115, C116, D116, E116, F#116, G#116, A116, B116, C117, D117, E117, F#117, G#117, A117, B117, C118, D118, E118, F#118, G#118, A118, B118, C119, D119, E119, F#119, G#119, A119, B119, C120, D120, E120, F#120, G#120, A120, B120, C121, D121, E121, F#121, G#121, A121, B121, C122, D122, E122, F#122, G#122, A122, B122, C123, D123, E123, F#123, G#123, A123, B123, C124, D124, E124, F#124, G#124, A124, B124, C125, D125, E125, F#125, G#125, A125, B125, C126, D126, E126, F#126, G#126, A126, B126, C127, D127, E127, F#127, G#127, A127, B127, C128, D128, E128, F#128, G#128, A128, B128, C129, D129, E129, F#129, G#129, A129, B129, C130, D130, E130, F#130, G#130, A130, B130, C131, D131, E131, F#131, G#131, A131, B131, C132, D132, E132, F#132, G#132, A132, B132, C133, D133, E133, F#133, G#133, A133, B133, C134, D134, E134, F#134, G#134, A134, B134, C135, D135, E135, F#135, G#135, A135, B135, C136, D136, E136, F#136, G#136, A136, B136, C137, D137, E137, F#137, G#137, A137, B137, C138, D138, E138, F#138, G#138, A138, B138, C139, D139, E139, F#139, G#139, A139, B139, C140, D140, E140, F#140, G#140, A140, B140, C141, D141, E141, F#141, G#141, A141, B141, C142, D142, E142, F#142, G#142, A142, B142, C143, D143, E143, F#143, G#143, A143, B143, C144, D144, E144, F#144, G#144, A144, B144, C145, D145, E145, F#145, G#145, A145, B145, C146, D146, E146, F#146, G#146, A146, B146, C147, D147, E147, F#147, G#147, A147, B147, C148, D148, E148, F#148, G#148, A148, B148, C149, D149, E149, F#149, G#149, A149, B149, C150, D150, E150, F#150, G#150, A150, B150, C151, D151, E151, F#151, G#151, A151, B151, C152, D152, E152, F#152, G#152, A152, B152, C153, D153, E153, F#153, G#153, A153, B153, C154, D154, E154, F#154, G#154, A154, 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A245, B245, C246, D246, E246, F#246, G#246, A246, B246, C247, D247, E247, F#247, G#247, A247, B247, C248, D248, E248, F#248, G#248, A248, B248, C249, D249, E249, F#249, G#249, A249, B249, C250, D250, E250, F#250, G#250, A250, B250, C251, D251, E251, F#251, G#251, A251, B251, C252, D252, E252, F#252, G#252, A252, B252, C253, D253, E253, F#253, G#253, A253, B253, C254, D254, E254, F#254, G#254, A254, B254, C255, D255, E255, F#255, G#255, A255, B255, C256, D256, E256, F#256, G#256, A256, B256, C257, D257, E257, F#257, G#257, A257, B257, C258, D258, E258, F#258, G#258, A258, B258, C259, D259, E259, F#259, G#259, A259, B259, C260, D260, E260, F#260, G#260, A260, B260, C261, D261, E261, F#261, G#261, A261, B261, C262, D262, E262, F#262, G#262, A262, B262, C263, D263, E263, F#263, G#263, A263, B263, C264, D264, E264, F#264, G#264, A264, B264, C265, D265, E265, F#265, G#265, A265, B265, C266, D266, E266, F#266, G#266, A266, B266, C267, D267, E267, F#267, G#267, A267, B267, C268, D268, E268, F#268, G#268, A268, B268, C269, D269, E269, F#269, G#269, A269, B269, C270, D270, E270, F#270, G#270, A270, B270, C271, D271, E271, F#271, G#271, A271, B271, C272, D272, E272, F#272, G#272, A272, B272, C273, D273, E273, F#273, G#273, A273, B273, C274, D274, E274, F#274, G#274, A274, B274, C275, D275, E275, F#275, G#275, A275, B275, C276, D276, E276, F#276, G#276, A276, B276, C277, D277, E277, F#277, G#277, A277, B277, C278, D278, E278, F#278, G#278, A278, B278, C279, D279, E279, F#279, G#279, A279, B279, C280, D280, E280, F#280, G#280, A280, B280, C281, D281, E281, F#281, G#281, A281, B281, C282, D282, E282, F#282, G#282, A282, B282, C283, D283, E283, F#283, G#283, A283, B283, C284, D284, E284, F#284, G#284, A284, B284, C285, D285, E285, F#285, G#285, A285, B285, C286, D286, E286, F#286, G#286, A286, B286, C287, D287, E287, F#287, G#287, A287, B287, C288, D288, E288, F#288, G#288, A288, B288, C289, D289, E289, F#289, G#289, A289, B289, C290, D290, E290, F#290, G#290, A290, B290, C291, D291, E291, F#291, G#291, A291, B291, C292, D292, E292, F#292, G#292, A292, B292, C293, D293, E293, F#293, G#293, A293, B293, C294, D294, E294, F#294, G#294, A294, B294, C295, D295, E295, F#295, G#295, A295, B295, C296, D296, E296, F#296, G#296, A296, B296, C297, D297, E297, F#297, G#297, A297, B297, C298, D298, E298, F#298, G#298, A298, B298, C299, D299, E299, F#299, G#299, A299, B299, C300, D300, E300, F#300, G#300, A300, B300, C301, D301, E301, F#301, G#301, A301, B301, C302, D302, E302, F#302, G#302, A302, B302, C303, D303, E303, F#303, G#303, A303, B303, C304, D304, E304, F#304, G#304, A304, B304, C305, D305, E305, F#305, G#305, A305, B305, C306, D306, E306, F#306, G#306, A306, B306, C307, D307, E307, F#307, G#307, A307, B307, C308, D308, E308, F#308, G#308, A308, B308, C309, D309, E309, F#309, G#309, A309, B309, C310, D310, E310, F#310, G#310, A310, B310, C311, D311, E311, F#311, G#311, A311, B311, C312, D312, E312, F#312, G#312, A312, B312, C313, D313, E313, F#313, G#313, A313, B313, C314, D314, E314, F#314, G#314, A314, B314, C315, D315, E315, F#315, G#315, A315, B315, C316, D316, E316, F#316, G#316, A316, B316, C317, D317, E317, F#317, G#317, A317, B317, C318, D318, E318, F#318, G#318, A318, B318, C319, D319, E319, F#319, G#319, A319, B319, C320, D320, E320, F#320, G#320, A320, B320, C321, D321, E321, F#321, G#321, A321, B321, C322, D322, E322, F#322, G#322, A322, B322, C323, D323, E323, F#323, G#323, A323, B323, C324, D324, E324, F#324, G#324, A324, B324, C325, D325, E325, F#325, G#325, A325, B325, C326, D326, E326, F#326, G#326, A326, B326, C327, D327, E327, F#327, G#327, A327, B327, C328, D328, E328, F#328, G#328, A328, B328, C329, D329, E329, F#329, G#329, A329, B329, C330, D330, E330, F#330, G#330, A330, B330, C331, D331, E331, F#331, G#331, A331, B331, C332, D332, E332, F#332, G#332, A332, B332, C333, D333, E333, F#333, G#333, A333, B333, C334, D334, E334, F#334, G#334, A334, B334, C335, D335, E335, F#335, G#335, A335, B335, C336, D336, E336, F#336, G#336, A336, B336, C337, D337, E337, F#337, G#337, A337, B337, C338, D338, E338, F#338, G#338, A338, B338, C339, D339, E339, F#339, G#339, A339, B339, C340, D340, E340, F#340, G#340, A340, B340, C341, D341, E341, F#341, G#341, A341, B341, C342, D342, E342, F#342, G#342, A342, B342, C343, D343, E343, F#343, G#343, A343, B343, C344, D344, E344, F#344, G#344, A344, B344, C345, D345, E345, F#345, G#345, A345, B345, C346, D346, E346, F#346, G#346, A346, B346, C347, D347, E347, F#347, G#347, A347, B347, C348, D348, E348, F#348, G#348, A348, B348, C349, D349, E349, F#349, G#349, A349, B349, C350, D350, E350, F#350, G#350, A350, B350, C351, D351, E351, F#351, G#351, A351, B351, C352, D352, E352, F#352, G#352, A352, B352, C353, D353, E353, F#353, G#353, A353, B353, C354, D354, E354, F#354, G#354, A354, B354, C355,

Hat (Ney-Ud)

Onur Türkmen
(2008)

$\text{♩} = 60$ (Nisabur in B)
Mansur

molto vib.

mp *f* *p* *n* *n* *fffz*

Scordatura: ⑥ up a minor second from C# to D

n *f* *n* *gliss.* *fffz*

5 *non vib.* *molto vib.* *fffz*

n *mp* *f* *p* *n* *n* *fffz*

n *f* *n* *③ VII* *mf* *n*

9 *molto vib.* *non vib.* (Nihavend in G) *fffz* *mp* *f* *p* *n* *n*

n *f* *fffz*

13 *fffz mp sub.* *fffz f* *n* *mp* *f* *fffz*

f *p* *n* *fffz*

17 *mp sub.* *fffz* (Nisabur in B) *p*

mp *mf* *f* *pp sub.* *fffz* *mf*

Figure A.9: Hat, Ney-Ud Duo

24 (Nihavend in G) (Buselik in A)

mf *p* sub. *mf* *f* *sfz* *n* *mp*

25 (Nisabur in B)

10²

p *f* *p* *f* *p* *sfz*

29

n *p* *n*

p

Figure A.9 (continued): *Hat, Ney-Ud Duo*

Seordatura for ud:
5th string transposed min 2
up to 6th string
transposed min 2 up to D

Hat (Kanun-Ud)

Onur Türkmen
(2008)

♩ = 50

(Rast in G)

use only one finger - - - - -

XII

Ud

Kanun

sfz *mp* *mf* *p*

3

(Buselik in B)

mp

B \flat
G \sharp

9

(Rast in G)

(Saba in F \sharp)

B \flat
G \sharp
F \sharp

use only one finger -
(Zirguleli hicaz in E)

D \sharp

p *mp* *p*

11

p

Figure A.10: Hat, Kanun- Ud Duo (CD 6, track 8)

Hat

(Ney-Kemençe-Kanun)

♩ = 60
Mansur
(Buselik in A)

Onur Türkmen
(2008)

(Buselik in A)

Ney

Kemençe

Kanun

(Saba in A)

(Sagah in B)

(Saba in A)

(Buselik in A)

(Saba in A)

(Buselik in A)

Figure A.11: Hat, Ney-Kemençe-Kanun Trio (CD6, track 9)

Figure A.11 (continued) shows a musical score for a Hat, Ney-Kemençe-Kanun Trio. The score is divided into two systems. The first system (measures 26-32) features a melody in the top staff with dynamics *p*, *n*, *SP*, and *p*. The second system (measures 33-39) continues the melody with dynamics *n*, *SP*, and *SP*. The bottom staff provides harmonic support with various chords and single notes.

Figure A.11 (continued): *Hat, Ney-Kemençe-Kanun* Trio (CD6, track 9)

Figure A.12 shows a musical score for a Hat, Ney-Kemençe-Ud Trio. The score is divided into two systems. The first system (measures 1-9) features a melody in the top staff with dynamics *mf*, *mp*, and *p*. The second system (measures 10-18) continues the melody with dynamics *mf*, *mp*, and *p*. The bottom staff provides harmonic support with various chords and single notes.

Figure A.12: *Hat, Ney-Kemençe-Ud* Trio

10 (Nihavend in G) (Hüseynî in A) *f* *SP* *ord.*

15 (Buselik in A) (Hüseynî in A) *SP* *mf*

18 *SP* *ord.*

22 *SP* *ord.*

26 (Buselik in A) (Zirgüleli hicaz in F) (Rast in G) (Nihavend in G)

Figure A.12 (continued): *Hat, Ney-Kemençe-Ud* Trio

32 (Hüseynî in A) (Nihavend in G) (Hicaz in G)

36 (Zirgüleli hicaz in E) *f* *molto vibrato* *f* *f*

40 (Buselik in A) *mp* *mp* *mf* *mf*

48 *mf*

52 (Hüseynî in A) *tr* *tr* *tr* *tr*

Figure A.12 (continued): Hat, Ney-Kemençe-Ud Trio

Hat

(Ney- Ud- Kanun)

Onur Türkmen
(2008)

♩ = 60 (Hazzam in B)
Mansur

Ney

Ud

Kanun

p *mf* *n* *ST* *mf* *p* *sub.* *n*

mp *mf*

• molto vib.

ST *n* *p* *vib.* *f* *sfz* *• SP* *ord.* *mf* *ord.* *mf* *ST* *SP* *f* *sfz*

mp *mf* *f* *sfz* *mf* *f* *mp* *ppp*

Figure A.14: Hat, Ney-Ud-Kanun Trio

Onur Türkmen
(2008)

Figure A.15: *Hat: Ney-Kemençe-Ud-Kanun* Quartet I

The musical score is presented in four systems, each containing four staves. The notation includes various musical symbols such as notes, rests, and dynamic markings. The first system (measures 21-24) features a 'Beldahenk' section with dynamics ranging from *mp* to *mf*. The second system (measures 25-28) includes a 'Mansa' section with dynamics from *pp* to *f*. The third system (measures 29-32) continues the piece with dynamics from *p* to *mp*. The fourth system (measures 33-36) concludes the section with dynamics from *p* to *mp*. The score is written in a 4/4 time signature and includes various musical notations such as slurs, ties, and articulation marks.

Figure A.15 (continued): Hat: Ney-Kemençe-Ud-Kanun Quartet I

Hat Quartet II

(Ney-Kemençe-Ud-Kanun)

Onur Türkmen
(2009)

♩ = 60

Mansur

Ney

Kemençe

Ud

Kanun

12

20"

Free improvisation
by only using the given pitch

Free improvisation
by only using the given pitch

Free improvisation
by only using the given pitch

Free improvisation
by only using the given pitch

Figure A.16: Hat: Ney-Kemençe-Ud-Kanun Quartet II (CD 6, track 10)

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