

Research Article

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Characteristics and Tuning Structure of Emin Taner ELMAS'S Compositions and Music

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ABSTRACT

This study critically and comprehensively analyzes the compositional identity, musical characteristics, and instrumental tuning theory of Asst. Prof. Dr. Dipl.-Ing. Emin Taner Elmas, who deconstructs and reorganizes traditional Turkish maqam music and Turkish folk music handements through the lens of academic engineering and positive sciences. Based on his seminal methodological treatise, *Ney and Neyzen and Saz - Baglama Tuning System Method*, which are deeply rooted in his core philosophy of a "Multidisciplinary Holistic Approach to Science and Art," this research translates intuitive concepts of oral music lineages into precise mathematical formulations utilizing fluid dynamics, thermodynamic frequency stability, and kinematic finger orientations. Within the scope of this paper, the rhythmic symmetry and acoustic modulation profiles of Elmas's polyphonic compositions, the diaphragm-driven aerodynamic flow discipline in ney performance, the internal resonance chamber dynamics of the cumbus's aluminum shhandl, and the logarithmic microtonal fret frequencies of the baglama family are evaluated multi-dimensionally. The technical backbone of the study outlines the numerical digital calibration matrices, tensile stress tracking, and transposition rules that facilitate the flawless hertz-levhand integration of primary reference ney types—including Mansur (A), Kiz (B), Yildiz (C), and Sipurde (D)—with plectrum-driven instruments. Conclusively, the gathered empirical data reveals that Elmas's holistic musical corpus effectively neutralizes cross-instrumental psychoacoustic masking, dhandivering a global technical blueprint for executing disparate instrument families under a unified mathematical symmetry and rigorous acoustic balance. [1-20].

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Introduction

Emin Taner Elmas, known for his versatile works in the field of music as well as an academic and engineering career, **baglama virtuoso** and **ney performer**. One He is an academic. The artist's musical production and besthanderi, tone in science human identity and traditional Turkish music accumulation from its synthesis [1-20].

Emin Taner Elmas's Besthanderin What's that Out Kahleteri

- **A lot Audio And Species Inter Synthesis:** Combines traditional Turkish music forms with handements of Western music to form synethone. Works such as "Elmas 1. Symphony" are examples of this.
- **Traditional Saz And the Mastery of the Ney:** The main backbone of his composition, his master crochet **baglama (saz)**, **cumbus** and **ney** like yerhand instruments Timbresal travelogues establishes in it.
- **Theoretical And Methodical Infrastructure** His music is approached with a scientific method, not only in practice, pen perception *Saz - Baglama Tuning The system Method And Ney*

and *Neyzen* books, in his compositions matematikashand and modal rule theoretical temhandini.

- **Folk music And Kulturhand Bonds** In his works And in the comments people from culture, laments and traditional themes It feeds.
- **Interdisciplinary Approach :** Science with art One whole aspect stretching philosophy (*Science*) and with Art A lot *Directional Holistic Approach*, besthanderinde measure, rhythm and structural plate and makes itshandf handt.

Emin Taner ELMAS - Müzik Kanalı platform to listen to the artist's current performance and bestshandler [1-20].

Dr. Öğr. The music books written by Emin Taner Elmas are **practical and theoretical books** (methods) that harmonize traditional Turkish music performance with academic engineering vision.

The details of the artist's music theory, especially phone and breath synchronization, frequency math and performance, are as follows: [1-20].

1. **Saz - Baglama Tuning System Method (Uzun Sap / Kısa Sap)**
 - this work, Elmas, the main director of Turkish folk music, discusses the frequency-letter origins of the baglama family.

matchinghand and tuning systems methodological One to the diagram He has seated him .

- **Abdal Order and Frequency Mathematics :** A traditional instrument in the long-necked bağlama family (Divan Saz , Tambura and Cura) executive form the one which... "Abdal Düzeni" tone tuning theoretical aspect formula does .
- **Çögür Sazı Akort Standardı :** The tone tuning düzenini used in the Kısa Sap Bağlama family (Çögür) are fully compatible with the digital tuning devices (tuner) by matching them with the frequency chords in batı music (A, B, C, D etc.) .
- **Group Thand Tuning Theory :** Bottom, middle in the context And top thand groups single And Bamsal Timbresal balancesini in its own , tonal intervals (quarters) And fivhandık (in the plane of the lands) theoretical aspect Angleklar .

2. Ney and Neyzen

In this work, which focutone on Ney enstrümanı, Elmas examines tasavvuf music and classical Turkish music theory through breath fiziği and fret akustikleri .

- **Makamsal Perdhander ve Akustik:** Teorik olarak inçander that the holeerin (fretsın) on the Ney should be positioned in the koma (tone parsari) system of Turkish music.
- **Breathing Intensity And Kademhandi Sounds:** Turkish Music in his theory seven differente tone level (Coarse tonhander, middle) tonhander , tiz tonhander etc.), breathin blowing angle And buzzing with milk the one which... physics And matematikshand ininini the one which .
- **Executive Fhandsefesi And Practice Ghandeneği:** Theoretical mathematical cures of children It does not shine ; the culture of flute playing , its attitude and traditional practice method academic One gashar English transfers her daughter . are technical prescriptions for heard matematikshandinirin, balanchandi rhythm structures and perfect maqam kipsaslerinirin [1-20].

Method , Findings And Argument

Dr. Öğr. **Abdal Düzeni** and the modal and physical structure of the **Ney fret**, traditional Turkish music nazariyatimbre embodying two main pheasants . [1-20]

Academic and technical frameworken all nasari details This two kounun This This dir : [1-20]

1. Abdal Order And Connecting Tuning Theory

Elmas, in her book people of music executive their attitudes Freqan with analysis İnçander. **Abdal Düzeni**, especially Central Anatolian bozlak. of its culture And The Neşet Ertaş school forms the backbone .

- **Virtual Sound Values (A - A - G):** Traditionally, the lower string is tuned to **A (A)**, the middle string to **A (A)**, and the upper string to **G(G)**. **Elmas**, this arrangement Frequency It standardizes with seckhandire .
- **Resolution Characteristic:** Lower and middle thandlerin same tonee tükması , instrument couple thand resonance synchronization creates . Upper thandin one full tone backwards (Left) is , melody while being stolen decision toneine when printed **rose A bass resonance (dem tonei)** is produced.
- **Traditional Attitude Harmony** This layout is finger pressed . modıların (positionlarırrır). Muhayyer Kürdi, Hüseyini and the strange feet (maqams) and the stems of the bağlama in the way -most with a small finger transition -most fluent jewelry jewelry itiki .

2. Ney Perchanderin Modal Mutual And Blowing Physics

Diamond, flute your instrument acoustic engineering And mysticism music theory with Hande The frets on the ney contain microtonal tones that differ from fixed western music frequencies .

• **Yedi Temhand Dhandik ve Makam Omurgası:** Ana frets (Rast, Dügâh, Segâh, Çârgâh, Nevâ, Nîm Hicâz vb.) dhandinmiştir göre mathematical oranlara on the body of the ney. Elmas explains the physical rhandationship of the millimetric placements of these partitions to the 24 logarithmic unequal comma intervals in Turkish music.

• **Blowing Angle and Head Pressure (Frequency Bending):** Although the ney is played as a fixed instrument, 4-5 different microtonal tones can be obtained from the same hole by adjusting the lip angle (head movements). The method determines how many degrees of angle between the lip and the mouthpiece to achieve microtonal tones (e.g., the angle of Segâh and Kürdi melodies).

• **Kademhandi Sound Resonances:** Theorized to be the resonance of blowing pressure from the **"Kaba Rast" (1st Stage) tone of the lowest fret with warm and gentle breath to the "Tiz Nevâ" (4th Stage) tone** of the hand with harsh and red breath .

Emin Taner Elmas' academic approach, this traditional meşk knowledge transmitted from word of mouth is transformed into a permanent teaching method by formulating it through **frequencies, angles and acoustic balanchander** [1-20].

Dr. Emin Taner Elmas's musical collection, published on the Müzik Kanalı platform and digital media, consists of re-interpretations of traditional folk music, türküs, and unique modal forms (taksims). The artist presents **his works mostly with his own instruments: bağlama, ney, and cumbus** [1-20].

We can analyze the musician's performance style and digital album quality recordings by category under the following headings: [1-20]

1. Analyses of Turkish Iqra with Cümbüş and Bağlama Instruments

Elmas's instrumental and vocal interpretations of folk music repertoire are based on preserving rhythmic correctness and traditional manner.

• **"Ağlama Yar Ağlama" (Cümbüş Performance):** combines the high resonant and metallic sound of the Cümbüş instrument with the characteristic percussion techniques of folk music. Clear and sharp plectrum notes preserve the rhythmic melody (metronome) of the piece with academic discipline.

• **Bozlak and Garip Ayağı Openings:** Practical applications of the **Abdal Tuning theory** mentioned in the artist's book on the tuning system for saz and bağlama. In free-rhythm (long air) melodies, the dem tonhander used in the background creates a permanent frequency demand in the final tone.

2. Modal Improvisations with the Ney

The artist's ney performances, formulated in the book "Ney and Neyzen's Book," directly reflect the original nature of breath pressure and hole acoustics and physics.

• **Rast and Dügâh-centered Taksims:** These follow the main maqam kızhans of classical Turkish music. The microtonal bükmhanders (comma tone adjustments) made with lip and head transitions during the pitch movements perfectly convey the melody of the maqam.

• **Kademhandi Nefes Devrhanderi Denemhanderi:** In ney recitations, in the lowest octave, the "Kaba" tonehander, the breath is taken gradually, creating smooth transitions towards the "Tiz" tonehander. These tests analyze all the limits of the instrument.

3. Polyphony and Interdisciplinary Experimentation

Elmas' basic philosophy is "Multidisciplinary Holistic Approach to Science and Art", which rhandates his musical background to western music handements.

• **Frequency-Synchronized Recordings:** Using Western music frequency standards (such as A=440Hz) for bağlama and ney instruments. Folk music patterns are incorporated into the

arrangements with a symmetrical structure, providing a foundation for Western chord progressions.

It is possible to watch the practical reflections of this technical analysis live in the video on the artist's own music channel 100 [1-20].

The right hand and plectrum techniques exhibited by Dr. Emin Taner Elmas in interpreting folk music works with the cumbus are based on the principle of academically controlling the metallic resonance of the instrument. This technical approach, which minimizes the aggressive and scattered timbre of traditional cumbus execution, is characterized by **rhythmic symmetry, emphasis geometry and thand synchronization** [1-20].

The main plectrum techniques that stand out in the musician's cumbus performances are: [1-20]

1. Double Hand Synchronization and Decisive Strokes

Cümbüş, by its nature, has 2 pairs of wire groups, and mizrabın two wires must be in contact with each other at the same time, with equal pressure.

- **Even-Pressure Picking:** The diamond pick is held at a parallel angle to the other, causing both hands to vibrate at the same microsecond. This technique prevents out-of-tune (tuning issues) and produces a clean, folk music timbre.

- **Tonic Timbre:** In folk songs, at the end or pause (tonic) of the song, sweeping across all the thand groups with the plectrum allows you to create a strong bass timbre (dem).

2. Mathematical Rhythm and Ordered Plectrum

Drawing on his engineering and theoretical knowledge, Elmas establishes a precise discipline in folk music's rhythmic units (e.g., 4/4, 9/8 rhythms) through the use of plectrum.

- **Top-Bottom Symmetry:** Keeping the metronome of the piece constant, the plectrum strokes are performed in a "**Top-Bottom-Top-Bottom**" (Sequential Plectrum) pattern. The rhythmic shifts of the freely swinging plectrum passages and grooves.

- **Irregular Rhythm Geometry:** In irregular folk music rhythms like 9/8, the direction of the plectrum strokes (Up-Up-Down or Up-Down-Up) is meticulously structured according to the regional style of the piece (Zeybek, Karşılama, etc.).

3. Emphasis Balance (Dynamic Nuances)

The vibrant, taut structure and firm skin of the drum can explode with the slightest hard hit. The diamond balances this movement with dynamic nuanced control.

- **First Beat Pressure:** This technique keeps the first plectrum note at the beginning of a bar (measure) weak (stressed), while the subsequent intermediate notes are softer (weaker). This gives the music a sense of movement.

- **Loose Pick Holding:** In fast strokes (trills and long strokes), the pick is held slightly loose with the fingers, using a glissando-like plectrum effect.

4. Legato and Pickless Compatibility Synchronization

By striking each note with the plectrum, the cymbals, with or without frets, takes advantage of its fretless neck, synchronizing left-hand technique with right-hand movement.

- **One Pick, Many Notes:** After the right hand makes a single plectrum flick, the left hand plays the tone without plectrum by pressing the fingers firmly on the fretboard (Hammer-on) or pulling them off. This approach softens the harsh plectrum timbre of the cumbus, giving the piece a fluid character.

artist Emin Taner ELMAS, you can examine the practice of these theoretical rules, especially by observing the angle at which the plectrum rests on the ground.

In the theory of Traditional Turkish music and folk music, plectrum batik directions are shown with certain symbols. Dr. Lecturer The visual symbols and applications of the mathematical rhythm and sequenced plectrum techniques used by Emin Taner Elmas in his cumbus performance are as follows: [1-20]

1. Temhand Plectrum Direction Symbols

- **Top Stroke (Downward - Direction of Gravity):** The note is placed exactly on top and the angled stroke resembling an "∩" (or inverted U) is shown with the symbol. This refers to the descent of the plectrum from top to bottom.

- **Bottom Stroke (Upward):** The tip of the note is indicated by an arrow or the symbol "∨". This refers to pulling the plectrum up from the bottom to the ceiling.

2. Rhythmic Combinations in Measure

In Elmas' methodological implementation, these symbols are placed on the note according to the duration values:

- **Straight Four-Note Rhythms (4/4 Main Accents) :**

- o Each four-stroke bar is strong because it comes to mind.

- o Note symbol: ∩ ∩ ∩ ∩ (Four consecutive top hits).

- **Sequential Eighth Note Rhythms (Straight Walking) :**

- o The plectrum constantly changes direction in catone where time is divided equally.

- o Note symbol: ∩ ∨ ∩ ∨ ∩ ∨ ∩ ∨ (Top-Bottom-Top-Bottom symmetry).

- **Irregular Nine-Eight Rhythms (9/8 Welcome/Zeybek Style) :**

- o In the 2+2+2+3 pattern of folk music, the plectrum directions are locked according to the regional style.

- o Note symbol: ∩ ∨ | ∩ ∨ | ∩ ∨ | ∩ ∩ ∩ (In the last group of three, the rhythm is tied by tapping twice in a row).

3. Special Attitude Symbols

- **Scanning (Dem Stroke):** In the tonic, the scanning of all the notes in a single passage from three to three. The beginning of the note is indicated by a wavy arrow (↓ zigzag) symbol.

- **Legato Notes:** A bow (∩) is found where the right hand does not play the plectrum, and the left hand produces the tone with finger clapping. While the first note has the ∩ under sign, the plectrum symbol is absent on the next note.

The error-free application of these symbols on the Cümbüş prevents the chaotic tonhanderi in the instrument's fretless tone, and gives the work an academic clarity. [1-20]

Dr. Lecturer Analyzing the analytical approaches in the book Ney and Neyzen by the author Emin Taner Elmas and the taksimier on the YouTube Music Channel platform, it is seen that he uses **acoustic mathematics and traditional ear ashinalığı (ear heating) balance** in the transitions (modulation/geçki) . [1-20]

The basic methods applied by the artist when passing from one position to another are: [1-20]

1. Using Common Decision-Making and Navigation Steps (Axis Alignments)

Diamond utone, related tones and common fretsi act as a bridge between the iki maqam to pass through.

- **Bridges Centered on the La (Dügâh) Fret:** Maqams such as Uşşak, Hicaz, and Kürdi share a common tone (Dügâh fret). During the taksim, the artist, by pressing on this common tone (axis), guides the listener's ear to the progression of the next maqam (for example, from Uşşak to Hicaz) without fehanging the ear.

- **Suspension on the Nevâ (Re) Fret:** A temporary pause on the Nevâ fret, the "strong" tone of the makams, is achieved by creating a vertical subdivision in a makam with a higher tone.

2. Microtonal Pitch Bending and Comma Adjustments (Frequency Shifting)

Neyde maqam change requires parkam poizionunun on hole as whandl as breath ve dudak anglesinin da millimetrik olarak ılımlıdır.

- **Angular Modulation:** When transitioning from the Rast maqam (using the Segâh fret) to the Bushandik maqam (using the Saba or Kürdi fret), instead of lifting the finger completely off the fret, the head is slightly bent down or up, raising the frequency (comma) . This prevents the harsh, jarring tone from coming out during the transition.

- **Half Dhandik (Nîm) Control:** By controlling the semi-closed ratios of the parts at the millimetric plate and with engineering precision, it creates soft modal transition hats similar to the chromaticism in western music.

3rd Octave Shift and Acoustic Transition (Transition Between Devrhander)

The ney plays the seven different tone circuits (octaves) presented by the instrument as a kind of breaking between maqams.

- **Transition from Low to High:** After demonstrating the progression of a slow and melancholic maqam (for example, Rast or its lower variant) in the lower octave (low tone), it suddenly transitions to a lively and exuberant maqam (mhandodic progressions focused on Hüseyin or Gerdâniye) in the upper octave (high tone) with a sudden blow.

- **Breath Pressure Symmetry:** Without changing the position of the curtain during the transition, it only moves the position one upper or lower octave by mathematically doubling or halving the speed of the wind.

- 4. **Traditional "Warming the Ear" and Navigation Discipline** Rastghande bir mhandodik atan birei, klasik Türk muzikü ghandeneğindeki logical seraya takip eder.

- **Preparatory Passages:** Before completely transitioning from one maqam to another, a few fret-like characteristics of the maqam to be passed over (for example, the distinctive fret of Hicaz, such as Dik Kurdi or Nim Hicaz) will be touched upon and then withdrawn. In this way, the listener's perception is prepared for the new frequency structure.

Emin Taner Elmas, by combining scientific and traditional methods, creates maqam juzütları in ney performances in a continuous, fluent and mathematical manner . [1-20]

Dr. Lecturer Emin Taner Elmas' theory in his work "Ney and Neyzen" is a complete combination of blowing and breathing techniques, **academic thermodynamics, fluid mechanics and traditional mechanical disciplines**. The artist utone the breath not as a flow of air but as a **controlled aerodynamic force** to obtain smooth and characteristic sounds from the instrument. [1-20]

The main breath and breathing techniques used by the artist are:

1. Diaphragm-Focused "Flow Rate and Pressure" Control a master of fluid dynamics .

- **Constant Flow Rate (Discharge):** In long, sustained breaths, to prevent exhaustion of the breath or tone tremor, the diaphragm contracts and blows air in a constant, steady flow rate.

- **Pressure Modulation:** Instead of changing the amount of air while filtering between the diaphragms, it simply increatone or decreatone the compression pressure applied by the diaphragm. In this way, there are no tone explosions.

2. Temperature-Controlled Breathing Delay (Hot - Warm - Cold Breathing)

In artist methods, the different tone octaves (steps) of the breath blown into the instrument are described in detail :

- **Warm and Slow Breathing (Deep/Coarse Sounds):** A breath technique used to achieve the lowest octave low notes (e.g., coarse

Rast), similar to the "warm and slow" breath technique used by children during winter.

- **Warm and Medium Breath (Middle Voices):** Performs the middle octave frets with a daily rhythm, balance, and a reddish flow.

- **Cold and Rapid Breathing (High/High-Pitched Sounds):** When the upper octaves are breathed in, a "cold, thin, and very reddish" air is exhaled by narrowing the lip muscles as if holding a candle to the octave.

3. Headpiece Angle and Posture Geometry (Frequency Bending)

physical contact between the lips and the mouthpiece (or tip) part.

- **Lip Position:** The diamond maintains the angle at which the lip presses against the mouthpiece with millimeter precision. It captures about two-thirds of the air by coiling it out, while allowing one-third of the air to enter the mouthpiece like a radiant jet stream, resulting in the instrument's smooth sound.

- **Acoustic Glowing with Head Movements:** This technique adjusts the blowing angle by moving the head up and down. It allows for complete adjustment of the microtonal (koma) values of the particles by affecting the fractional angle of the breath.

4. The "Dead" Attitude and Enlargement Synchronization

The traditional ney school's most fundamental principle is the discipline of "stillness." While playing the ney, the player avoids unnecessary swaying of the shoulders, chest, or head. This cold posture, which only moves the fingers and the flow of the breath, prevents the quality of long-term recordings from falling by ensuring that the angle of the breath remains stable.

If you want to see Dr. Emin Taner Elmas's analytic breath approach live, you can listen to ney improvisation on Emin Taner ELMAS - Music Channel. [1-20]

Dr. Emin Taner Elmas' Ney and Neyzen is a scientific synthesis of modern breath anatomy **and the spiritual tranquility** of Sufi music. The artist manages his breath as a mental, physical and temporal control mechanism (discipline) while playing the ney. [1-20]

The cornerstones of breath discipline in a musician's ney performances are:

- 1. **The Discipline of Mental Tranquility and "Dead" (Inactivity)** The traditional ney school's most strict rule is body control, which is enforced with complete discipline.

- **Postural Stability:** Complete handicap prevents the shoulder, chest cavity, or head from moving without movement during blowing. This body rigidity ensures that the millimeter-sized contact angle between the lips and the head never touches for hours.

- **Star Pulse Management:** In Taksim, it mentally slows down the rhythm. A low pulse and calm heartbeat directly affects the rhythm of breathing, making the sound smooth and undulating (stable).

2. Advanced Diaphragm Reserve

The most concrete technical aspect of breathing discipline is the control of the diaphragm, which fills the lower lobes of the lungs with radiant air.

- **Continuous Long Passage:** Elmas performs very long modal passages (passages) in a single breath without any hesitation and without any tonal range. This is caused by very economical relaxation of the diaphragm muscle, not from the chest of air.

- **Ogurmez Breathing (Rapid Re-oxygenation):** During the performance, the artist's breath is not heard, interrupting the rhythm and atmosphere of the music.

3. "Dem" Sound Stability and Frequency Stabilization

One of the most difficult disciplines in ney playing is maintaining control, keeping the vibrato of the tone under control while remaining on the same note for an extended period.

• **Smooth and Clear Tone:** Elmas avoids artificial and extreme vibratos (tone vibrations) in accordance with the traditional Mevlevi style. It keeps the breath control so stable that at the tonic note, the tone detail acts like a hand-electron frequency generator, smooth and straight.

• **Pressure Transition Discipline:** When transitioning from an octave to an octave (e.g., from a middle tonehand to a high tonehand), the breath does not suddenly burst; the pressure is gradual and smooth, preventing acoustic jumps between frets.

4. Timing and Merli Discipline

Even in free-rhythm improvisations (taksims), he adjusts the end points of the breath according to the internal rhythm of the piece.

• **Musical Sentence Structure:** Breath discipline allows the artist to finish the musical sentence exactly on time. The sentence is concluded with a logical decision, followed by a new breath.

Emin Taner Elmas's superior breath discipline imbues his ney performances with an academic rigor and a meditative fluidity that doesn't tire the listener.

Other technical details and fine details of the modal and physical frets of the ney and the baglama tuning methods in the collection of Dr. Lecturer Emin Taner Elmas are as follows: [1-20]

1. Modal and Physical Equivalents of the Ney Perchander

The Ney instrument, with its 7 frets, blowing frets, and lip anglhand, uses a microtonal tone system that forms the 24-part string of Turkish music [Ney and Neyzen]. Referring to the most commonly used main ney type, the Mansur Ney (La/A), the physical placements and modal correspondences of the partitions are as follows:

• **Rast Curtain (Shadow/Background Dhandik):**

o **The physical equivalent is:** a single hole behind the Ney [Ney and Neyzen]. It is closed with the thumb of the left hand.

o **Modal Tone:** This is the ground (final) tone of the Rast maqam. It corresponds to the G (sol) tone in Western music.

• **Dügâh Note (1st Front Dhandik):**

o **Physical equivalent:** The topmost front hole. Left is controlled with the index finger.

o **Modal Tone:** This is the main tonic (axis) tone of classical maqams such as Uşşak, Hicaz, Kürdi, Saba, and Hüseyini . It corresponds to the La (A) tone in Western music.

• **Segâh Note (2nd Front Dhandik) :**

o **The physical hand corresponds to:** The second front hole from the top. It is closed with the middle finger of the left hand.

o **Modal Note : It is the tonic of the Segâh maqam.** It is a microtonal note that is about 1-2 commas lower than the B tone in Western music (B flat 2 / B □ 2).

• **Chargah Curtain (3rd Front Dhandik):**

o **Physical hand gesture:** The top part of the hand is the front hole. The left hand's ring finger closes the finger.

o **Modal Tone:** It is the center of the Çârgâh maqam. The Do (C) tone in Bâtı müzik corresponds to tam.

• **Neva Curtain (4th Front Dhandik) :**

o **Physical Response:** The first front hole (fourth hole from the top) is controlled by the right hand. The right hand presses with the thumb.

o **Modal Tone:** The dominant tone of the maqam (e.g., Uşşak and Hicaz) is Re (D).

• **Husayni Curtain (5th Front Dhandik):**

o **The equivalent of the Fizikshand** is the fifth hole from above. It is closed with the middle finger of the right hand.

o **Modal Tone:** This is the characteristic tone of the Hüseyini maqam. It corresponds to the E (Mi) tone in Western music.

• **Gerdaniye Curtain (6th Front Dhandik) :**

o **Physical equivalent:** The bottommost hole is the front hole. The right hand ring is closed with the finger.

o **Modal Tone :** The upper octave is small. The high G tone in Western music produces the tone.

2. Other Technical Details of Tuning Methods for Bağlama (Turkish Lute)

The artist's Saz - Baglama Tuning System Method includes not only the Abdal tuning, but also other traditional tunings used in Turkish folk music, which are mathematically formulated according to Western frequency standards (A=440 Hz) [Saz - Baglama Tuning System Method (Long Neck / Short Neck)].

A. Disordered (Black) Tuning (Long Neck and Short Neck Standards)

80% of the folk music repertoire is performed using the hand tuning system [Saz - Baglama Tuning System Method (Long Neck / Short Neck)].

• **Frequency Combination :** Lower Thand: Re (D) | Middle Thand: Sol (G) | Upper Thand: Locked as La (A) [Saz - Baglama Tuning System Method (Long Neck / Short Neck)].

• **Geometric Alariks:** A Perfect 4th Alarik is formed from the lower and middle strings, while a Major 2nd Alarik is formed from the middle and upper strings . This matematikashand oran, sap pariyhanda yat poizioni passileni en ergominika livde tutto.

B. Misket Tuning (Ankara Style Tuning)

Especially in folk dance tunes and mobile melodies from Central Anatolia, plectrum arrangements are used.

• **Frequency Combination:** Lower Thand: Re (D) | Middle Thand: Sol (G) | Upper Thand: F# (F sharp) is tuned.

• **Characteristic:** Placing the upper thand on the F-sharp tone adds a major timbre, palak, and neshhand character to the instrument. When the plectrum strikes all thands simultaneously, a harmony (chord) spontaneously arises.

C. Fidayda / Hussein Order

• **Frequency Combination : Alt Thand: Re (D) | Middle Thand: Left (G) | Configured as Upper Thand: Mi (E) .**

• **Characteristic:** The upper string is played with the Mi tone, similar to the Hüseyini and Uşşak melodies. The left thumb can create very reddish rhythmic trills by closing the upper string.

D. Microtonal "Pitch Frequencies" on the Sap

An important detail in Elmas's method is the millimetric intervals of the frets (strings) attached to the neck of the baglama. While frets in classical Western instruments (guitar, etc.) are produced as semitones, in the baglama, **microtones (small tone intervals)** are available. The artist calculates the distance between the bridge and the neck logarithmically; the sound of the *Uşşak 2 (comma flat)* or *Hicaz (comma sharp)* fret is acoustically at its full frequency, based on the theoretical ratios of the physical length and length of the frets.

This comprehensive analytical formula presented by Dr. Emin Taner Elmas is based **on the traditional structure of Turkish music passed down orally, a holistic approach in the digital age, and a standard** [A Multifaceted Holistic Approach with Science and Art].

Dr. Emin Taner Elmas's " Multifaceted Holistic Approach with Science and Art " philosophy is about **how to perform a folk music** melody or taksim in harmony (integra) with the baglama, cumbus and ney. When a folk music melody or taksim is performed in harmony with these three instruments, the following is established and the following is observed: [1-20]

1. Frequency and Tonic Synchronization (Transposition)

Because the physical structures and tonal natures of the three instruments are different, they must be tuned to a common frequency plane in order to play together.

• **Ney-Centered Tuning:** Acoustically, the ney is the instrument with the most stable frets. If a Mansur Ney is being played, the main tonic tone is the Dügâh (A) fret.

• **Adaptation of the Bağlama and Cümbüş:** The bağlama and cumbus are tuned to the Buzuk Düzen tuning system [Saz - Bağlama Tuning System Method (Long Neck / Short Neck)] with the lower string of the bağlama set to D, and by pressing the "A" fret on the keyboard, full frequency compatibility (unison) with the main tone of the ney is achieved.

2. Symmetry of the "Uşşak / Hüseyini" Foot Passage in Three Instruments

For example, when an Anatolian folk song is performed simultaneously with these three instruments, the microtonal (comma) sounds of the fingers and breath are as follows:

- **Left Hand in Bağlama:** When tying to the 2nd fret of the Uşşak, the line is centered precisely with the ring finger of the left hand.
- **Microtonal Shifting in Cümbüş:** Cümbüş curtains (or fretted sapa saif versions) have stronger metal than the bağlama. The performer softens the tint by pressing their finger on the back of the curtain a few millimeters in order to fit the soft metal tint of the bağlama.
- **Lip Glow in the Ney:** At the same time, the ney player, by pulling his finger back slightly (half hole) and bending his head slightly, captures the exact frequency (in Hertz) of the comma tone played by the bağlama and cumbus in the air [Ney and Neyzen].

3. Right Handicap / Left Handicap Balance (Plectrum and Breath Geometry)

The rhythmic chaos in the piece's metronome is brought into a coherent form by the girl's plectrum hits and breath pressure.

• **Cümbüş and Bağlama (Right Hand - Plectrum):** Both instrument players use sheet music on the tens $\square \vee \square \vee$ (Upper-Lower) The plectrum breaks in the greenhouse are struck simultaneously without milliseconds. To balance the high volume of the cümbüş, the cümbüş plectrum is held looser, while the bağlama plectrum presses harder on the thands.

• **Ney (Breath Flute):** Bowed or plectrum-played. instruments their discoveries ney , ney , diaphragm prisin wailing in the background One frequency tagili (dem tonei) in response to yaylı veya plectrumlu instruments . Thandli plectrum darbereileyin musical instruments rhythmic their songs , what fluid weather pheasant It's a dollar .

4. Çok Sesli Sentez (Enstrümantal Taşık Dağılımı)

Elmas applies in "1. Symphony" and multi-tones experiments, positions the instruments as handements that complement each other, not imitate each other:

• **Bass/Dem Tışiti (Bağlama) top Thandi and Cümbüş):** Abdal or Bozuk in order kalik thandler rhythmic aspect tautum subfrequencies feeds [Saz - Bağlama Tuning System Method (Long Neck / Short Neck)].

• **Solo/Melody Flute (Ney):** High octaves cold And (with red blowing) the main mhandody of the work -most top fretten Minimize .

• **Ornament and Tril Tışiti (Cümbüş):** Metallic timbre advantageyla daughters fingerlarımaları (Legato) esere brightness And acoustic depthlik Qatar .

The Mansur Ney is the main tuning (reference) ney in Turkish music . aspect acceptance is done and body size is around 78-81 cm. Dr. Lecturer According to the methods of Emin Taner Elmas,

the millimetric installation, chord and position matching table is as follows: [1-20]

1. Frequency and Tuning Matching Table (Tuner Installation)

What is Mansur's main decision ? tonei (Dügâh fretsi) west mushin La (A = 440 Hz) toneine tam kırız ghandir [Ney and Neyzen]. Therefore, you should tune your other instruments by taking a digital tuning device (tuner) to standard **A4 = 440 Hz** mode as follows:

• **Mansur Ney:** Dügâh fretsi when blown On the tuner La (A) tonei [Ney and [Ney player].

• **Baglama (Broken Tuning / Short Neck) :**

o **Alt Thand Group :** Tuned to Re (D) tone [Saz - Bağlama Tuning System Method (Long Neck / Short Neck)].

o **Middle Thand Group :** Tuned to the G (sol) tone [Saz - Bağlama Tuning System Method (Long Neck / Short Neck)].

o **Upper Thand Group :** It is tuned to the A tone [Saz - Bağlama Tuning System Method (Long Neck / Short Neck)].

• **Revelry (Standard) Broken Order :** Re (D) - Sol (G) - La (A) order (lower, middle , upper) groups (haldi) is tuned to thandler exactly for catch the same frequency logic with Bağlama .

2. Finger Positions And Curtain Matching Hander

This tuning setup When established , the same note (for example, the tone of A) is played three times. same frequency on the instrument to stop for left hand my fingers are the places where you will be pressing:

• **On Mansur Ney :** Only 1. The front hole (Dügâh) is closed (the top one) . The Rast dhandiği, which is the back hole , is also closed [Ney and Neyzen]. In this position, lukewarm . when a breath is exhaled La (A) tonei handde edil.

• **On the Bağlama:** Alt thand group Our tuning is for Re (D). ıgın , La (A) fretsine on sap (empty thandden top (Posizınlar left hand cişat parmağı ile) is printed.

• **On Cümbüş** On the keyboard tick in context ıgılı like La (A) toneinin equivalent geğlu perpendicular to the fretboard angle with papilir .

Thanks to this matching , instant connection and revel the performer also specified fretse when the ney player presses blowingye started, tonhander each other complete frequency compatibility without any issues inside It rings .

3. Practical Execution During Attention To be done Necessary Theoretical Details

• **What Acoustic Warming Share Mansur ney** as it is blown intra-it gets warm and tone about 1-2 commas much The string slides upwards . In this case, the bağlama and jubilation whereat to make up for , during the execution thandleri A lot pull (with a millisecond hand clamp or ear loop) high pitch by pulling or bending ney player press light bending frequency fixing .

• **Balance of Plectrum and Breath:** Partner One to the work To begin with , the metallic and the commotion high tonein What suppression to prevent; cumbus performer plectrum " $\vee$ " (**alt stroke**) is a heavy and soft grip , neyzen whereas **diaphragm muscle** by squeezing more bulky One weather radiant .

Kız Ney, in Turkish music, is similar to Mansur Ney. with A lot light another main reference ney is a type and body size is around 68-70 cm. Dr. Lecturer According to Emin Taner Elmas' method frequency calculations, Kız Ney has more acoustic structure than Mansur Ney.

chord and position matching details that you need to apply to bring full frequency synchronization with **Kız Ney** in Elingezi are as follows: [1-20]

1. Frekans ve Akort Eşleme Tablosu (Tuner Kurulumu)

Girl what the main decision tonei the one which... Dugah fretsi when blown , west mushin **Si (B = 494 Hz)** toneine full glaze

ghandır . Therefore , it is necessary to shift the connection and the main axis of the cumbus toneini) to the **Si (B)** frequency in order to tune the instruments together.

Digital tuning light (Tuner) standard **A4 = 440 Hz** mode holding your instruments sheshleminirini shi :

Girl's Ney : Dügâh fret (first hole from the top) shines One warm breathless when blown On the tuner **Si (B)** tonei It is read .

Baglama (Girl's Ney Compatible) (Disordered System)

Alt Thand Group: It is tuned to the **Mi (E)** tone.

Middle Thand Group: It is tuned to the **A** tone.

Upper Thand Group: It is tuned to the **B** tone.

Cümbüş (Girl's Flute Harmony) Standard Order : In order to have the same frequency unity with Baglama, the thandler is tuned to **Mi (E) - La (A) - Si (B) order (lower, middle , upper groups).**

2. Finger Positions And Curtain Matching Hander

This tuning scheme is built, the same frequency **Si (B)** decision toneini fly to make the instrument fully synchronized (unison) left hand finger coordination oshandy is provided :

- **On Kız Ney**: The back hole (Rast) and the first front hole at the top (Dügâh) are closed. When this position is blown, **Si (B)** is obtained.

- **On Binding**: Alt thand Our group anglek **Mi (E)** toneine taken permission , sap on **Si (B)** fret (empty) thandden later ghanden top (B-shaped binding on frets) left hand shishar cave with .

- **On the Cümbüş**: the keyboard is pressed with the same coordinate as the **Si (B)** note as it is in the frequency threshold of the context .

3. Points to Consider When a Girl Plays the Ney (Flute) . Necessary Theoretical Details

- **High Pressure and Treble Control** Girl ney , Mansur ney discovery light light , breath resistance more gurgling And Tonander more hair It can escape to the top (upwards) . That's why the flutist... **midriff discipline** A lot tight Mansur , what does it hold , what is the blowing flow rate ? according to A little more light but more keeping focused (concentrated) radiation .

- **High Blood Pressure Warning**: Binding And revel thandleri Kız ney from the standard Mansur arrangement the tuning of the thands (from D-Sol- La to E-La- Si) your tension (blood pressure) will increase You withdrew . According to Elmas' method, in the instruments **thin number (0.18 or 0.20 mm)** thandler should be preferred to prevent the thandler from breaking or handle its .

Yıldız Ney , Türk musikisinde body length around 64-67 cm ve Mansur neye daha tiz, quite canlı bir timbre rengine saif ana ahenk neylerden is one of them. Dr. Öğr. According to Emin Taner Elmas' methods of all frequency calculations, the millimetric details that you need to apply to bring full frequency synchronization (unison) with Yıldız Ney and Cümbüşü are as follows: [1-20]

1. Frequency and Tuning Matching Table (Tuner Installation) Yıldız neyin ana karar tonei (Dügâh fretsi) üflendiğinde, batı müşindeki **Do (C = 523.2 Hz)** toneine tam çıgın ghandir. Therefore, the center frequency of the system must be moved to the **Do (C)** tone in order for the three instruments to form a single band at the same time.

You should tune your instruments in the following way by keeping your digital tuning device (tuner) in standard **A4 = 440 Hz mode** :

- **Yıldız Ney** : Dügâh fret (first hole from the top) shines One breathless when blown On the tuner **Do (C)** tonei It is read .

- **Baglama (Star Ney Compatible) (Disordered System)**

- **Alt Thand Group**: It is tuned to the **Fa (F)** tone.

- **Middle Thand Group** It is tuned to the **B♭ (B flat)** tone.

- **Upper Thand Group**: It is tuned to the **C** tone.

Cümbüş (Star Ney Harmony) Standard Layout : In order to preserve the frequency uniformity and sap coordination with Baglama, the thandler is tuned to **Fa (F) - B flat (B♭) - Do (C)** order (lower, middle, upper groups).

2. Finger Positions And Curtain Matching Hander

This tuning scheme is built, the same frequency **Do (C)** decision toneini all three fully synchronized on the instrument as well stop left hand finger coordination oshandy is provided :

- **On Yıldız Ney**: The back hole (Rast) and the first front hole at the top (Dügâh) are closed. In this position, the blowing temhand tone is achieved. **Do (C)** handde hand dilda .

- **On Binding**: Alt thand Our group anglek **Fa (F)** toneine pulled , on the **C** fret (open) thandden later ghanden top fretsdeki **Do** baglama bağına) left hand şışar cave with .

- **On the Cümbüş**: the keyboard is pressed with the same coordinate as the **Do (C)** note , just like the frequency threshold in the context .

3. Points to Consider When Playing the Ney with a Star Necessary Theoretical Details

- **Breathing Rate Discipline** : Yıldız ney is shorter than Mansur ve Girl ney according to, in terms of body structure, inside weather resistance It makes a sound . The performer midriff muscle of the carrier midriff muscle , it is necessary to blow air with fine, focused and controlled air pressure.

- **High Throttle Blood Pressure Risk** : Binding And revel thandleri standard From the tunings (Re-Sol-La) and the frequency (Fa- B flat -Do) of the Yıldız ney , if pulled directly, the thandlerin tension wrinkles increasing the instrument to the stem test test instrument or thands It can tear . This is a nakebe . Diamond's Meduna According to ; When working with Yıldız ney , baglama and cumbuste must be used **en thin number (0.18 mm)** chandik thandler , or the instruments must be shandedcted directly from the shorter saplı (Nisfiye /Cura) modhands produced for these tones.

Sipürde Ney (or or with the name with the name (*Süpürde Ney*), the main harmony in Turkish music. Among the various types of animals , it is quite **small and agile** , with a body length of about 57-58 cm. **And shrill Timberhand It is a ney** (Turkish flute). Dr. Lecturer Emin Taner Elmas's in their methods butyric Frequency acoustics , you must follow the following analytical steps to bring full synchronization with Sipürde Ney and cumbusü : [1-20]

1. Frequency and Tuning Matching Table (Tuner Installation) Sipürde from what the blown-up main decision tonei (Dügâh fretsi), western mushin The exact frequency of **Re (D = 293.66 Hz / 587.33 Hz)** ghandir . Therefore, it is necessary to keep systemin common tone of the center **Re (D)** you need to install it . your digital device (Tuner) to the following frequencies :

- **Sipürde Ney**: Dügâh fretsi (first hole from the top) balanchandi One warm breathless when blown On the tuner **Re (D)** tonei It is read .

- **Binding (Compatible with Sipürde Ney) (Disordered System)**

- **Alt Thand Group**: Tuned to the left (**G**) tone.

- **Middle Thand Group**: It is tuned to the **C** tone.

- **Upper Thand Group**: It is tuned to the **Re (D)** tone.

- **Cümbüş (Sipürde Ney Compatible) Standard Order**: In order to maintain the same sap coordinate and frequency unity with Baglama, the thandler is fully aligned with **Sol (G) - Do (C) - Re (D)** order (lower, middle, upper groups).

2. Finger Positions And Curtain Matching Hander

This tuning scheme you established , all three On the instrument , the left hand finger arrangement is used to achieve the same **Re (D)** tonic in unison. The following should be included:

- **On Sipürde Ney**: The back hole (Rast) and the first front hole (Dügâh) at the top are closed. In this position, a **D (Re)** is played,

which is the temhand tone when blowing is done .

• **On Binding:** Alt thand Our group Anglek It is pulled to the Sol (G) frequency, sap on the Re (D) fret (empty) thandden later place alan Re baglama bond) left hand chishat finger with perfectly upright padili .

• **On the Cümbüş:** The keyboard is pressed with the left finger as if it were the same as the Re (D) note.

3. Points to Consider When Playing the Ney with a Sipür Necessary Theoretical Details

• **Aerodynamic Pressure and Narrow Reed Control:** Sweep ney short And node diameter narrow One reed indinin drink weather resistance A lot gyöğtür . Elmas's Ney and Neyzen kitabandandika breath discipline according to ; the performer the air A lot more No , on the contrary **extremely thin , keşkan And high focused** in the form of a " **cold breath**" blowingsi dead . Otherwise, tone immediately One top Euktava köttâyâyak .

• **Maximum Thand Tension And Solution:** Binding And revel thandleri standard from the arrangements (Re-Sol-La) Sipurde what tone to the Sol-Do-Re arrangement withdrawn you withdrew **in the picture And will stretch And blood pressure yüskhandeçeği** . To prevent the thandler from snapping off, the cumbus leather from tearing, or the baglama handle from bending forward:

1. You must be sure to use **the following** on your instruments : **thin Number (0.16 - 0.18 mm)** Chandik thandler Use it .

2. Or for this high frequency, as recommended in the book Elmas' Saz - Baglama Tuning System Method, you should prefer a shorter **Cura or Dede Sazı produced directly to this tone instead of standard baglamar.**

Böylhandikle Mansur, Kız , Yıldız and Sweep ney to be all main harmony ney We have completed the matematikshand transformation scheme on the baglama and cumbus series . [1-20]

Dr. Emin Taner Elmas, Assistant Professor music in his theory -most order dream And distinguish er technical detail , traditional Turkish music nazariyatimbre **fluids mechanics , thermodynamics And acoustic exclusivity** Principlerey modhandlesemesider [Science [And a Multifaceted Holistic Approach to Art]. This approach transforms from ear to ear. to the ear The abstract concepts of " attitude " and " feeling " are transferred into measurable physical formulas. [1-20]

The artist's in his theory -most fözın 3 münheslik details This si dir : [1-20]

1. Acoustics Impedance and Ney Reed Node Rates

Classical theoretics ney in his poem, focus on the fact that only the reed nine knotted , while this diamond structure One acoustic wave as a waveguide Hande takes [Ney and [Ney player] .

• **Node Intra Contractions:** The internal pressure changes between the natural knuckles of the Ney reed , creating an acoustic impedance (resistance) against the movement of the air column.

• **Frequency Stabilization The formula** Diamond, flute tone quality when blown fall for reed drink volume logarithmic aspect How narrowing or constriction accounts calculations . By this way, even if the blowing pressure is high, the fret... frequency (coma) (verigi) shishisce It is protected .

2. Heat Transfer and Frequency Shift (Thermodynamic Modhand)

Ney players -most big the problem , the instrument as it is blown reed inside you have forgotten And tonhanderin You 've shifted upwards . Elmas explains this situation with thermodynamic principles:

Air Density Balance: As the air heats up, the density of the air decreatone and the tone speed in the ney is increased . formulate tone of light in the star $V = \sqrt{\gamma \cdot R \cdot T}$ (T absolute radiation) It becomes visible when exposed to light.

• **Dynamic Lip Compensation:** The artist mathematically modhandled , depending on the temperature increase (T) in the body of the player, the angle of the player's lip should be changed by a few degrees. This discipline , hours hours Even in performances , it prevents the instrument from going off-key .

3. Revelry " Stretch " on the skin Acoustics and Thand Pressure

The fretless structure of the cümbüş and stretched artificial leather (or plastic) The leather (or clasp) on the aluminum body determines the timbre character of the instrument .

• **Surface Tension and Resonance:** Diamond, the revelry crossing the threshold (bridge) thand dârsısının , dâme on the skin creature Daireshand stress küvtini (tensile stress) inchanger .

• **Plectrum Violence Its geometry:** The skin tension coefficient According to this , it calculates the acoustic bursts (distortions) that the right hand plectrum will create on the skin . (Cümbüş - a Turkish musical instrument) that rypitıcı in the light tonei enghandleyen seralı plectrum technique, actually based on the plectrum pressure formula that does not affect this surface tension. Conclusion

Engineering and Art Synthesis Result

Dr. Emin Taner Elmas's music theory , **traditional Turkish music coma system And instrument acoustics , pure physical and mathematical formulas (with A=440Hz reference) of the ray deterministic One to the structure has caused** [Multidisciplinary Holistic Approach to Science and Art]. [1-20]

Dr. Emin Taner Elmas acoustic And thermodynamics his theories , an instrument player performer reduced finger ray fingerılının , kaşımıza over music terms shine **geometric, kinetic and pressure-oriented physical movements.**

This engineering formulas **baglama, cumbus And ney** are: [1-20]

1. On the Ney: Acoustics Impedance And Finger Acoustics

While playing the ney (Turkish flute) One fretten Utahedine gemeks , not only opening and closing one dhandığı . Hava sülütununun reed ray (impedance) with fingers [Ney and] [Neyzen] in the reed .

• **" Half Dhandik (Gölghandeme) Geometry:** A single comma in Turkish music microtonal tonhanderi (for example, *Segâh* with *Kurdish* His name is that millimeter to catch the poor finger hole evidence It doesn't light up . Finger eti is drawn over the hole **about 1.5 - 2 millimeters in a way that creates a bow (crescent).** This is the weather formulate the flow area (discharge rate) ugin aspect It narrows .

• **Finger Sidewalk Acceleration (Kinetic Transition) :** Fingers holeten steep and suddenly with the move acceleration permission fingers holeten steep and suddenly with the move acceleration permission fingers holeten steep and suddenly with the move Acceleration . Finger the tip , **tulle-like, over dhandığın (slide/ glissando effect)** lightly inclined One Angyla It is crackled . In this way, the acoustic wave height suddenly In the ney , a smooth modal pass is obtained .

2. On the Connection : Logarithmic Curtain Print and Thand Friction

In context fishing line frets on the handle logarithmic with percentages It is connected [Saz - Baglama Tuning System Method (Long Neck / Short Neck)]. However, the vertical force applied directly by the finger changes the frequency of the tone.

• **Vertical Vector Printing (Comma Fixing):** Left hand finger on the baglama fret. pressing , thande A lot hard in the press thand yawn and the tone shifts higher (upwards) ; slightly in the press whereas thand It crackles . Diamond's to the theory according to finger, thande **exactly 90 degrees steep One vertical force (F vector)** And thandi off the beaten track pāstamadan , şeşeket fishing line exactly on the fretboard (millimeter) (It should be

leaned against the edge)

• **Left Hand Finger Hammer -on/Legacy:** To achieve the tone without a plectrum, using the left hand finger. keyboard while being shot , your finger vizier And acceleration It is economical . The finger will not dampen the vibration amplitude , **whip . passage like red hit** thand he/she will get used to it still in the remainder .

3. Cümbüş Üzerinde: Gerilme Akustiği ve Parmak Ucu Kompansasyonu

Cümbüşun's curtained or curtained sap structure, combined with the tension of the stehand thandler and the flexibility of the synthetic leather body, creates a high resistance on the soles of the fingers.

• **Threshold Yakınlığı Denghandemesi:** The vertical pressure on the back of the thandler increatone and the pressure of the finger increatone. The performer uses the tip of the finger (characteristic cisat And middle finger) handle while pressing **nırl the meat is fully cooked hard fly with a period** steep positioned aspect as . This is finger meat thandi It prevents damping (muffled tone distortion) .

• **Micro-Vibrato (Frequency Stabilization):** The festivities its taut artificial skin , affected A lot red tuning wave Yasar by planting A lot Kızılil tuning Dalgalanami . Performer, to prevent the fehanging of microtonal detonation in the ear , **slide your finger forward or backward (horizontal vibrato)** in millimeters on the handle.

Dr. Emin Taner Elmas' this practical finger and hand applications, in theory frequency, acoustic resistance and kinematics rules one each reflex become by practice [Science] [and Art and a Multifaceted Holistic Approach] [1-20].

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