

THE MATZAAR AND ALIQUOT TONE SCALES

By H. Barnard

Those who remember my article published in EMI Vol. III #1¹, or can easily find it, will need no introduction into the Kayenian Empire. For those for whom this is all too long ago, a brief explanation follows: the Kayenian Empire is an imaginary country of about 2 million sq. km. and 22 million inhabitants. During the 2500 years of its existence this empire has developed a rich culture of which music is an important part. To play this music the Kayenians use the tuning according to Shoureek: a just 19-tone system. One of the exceptions to this is the subject of this article.

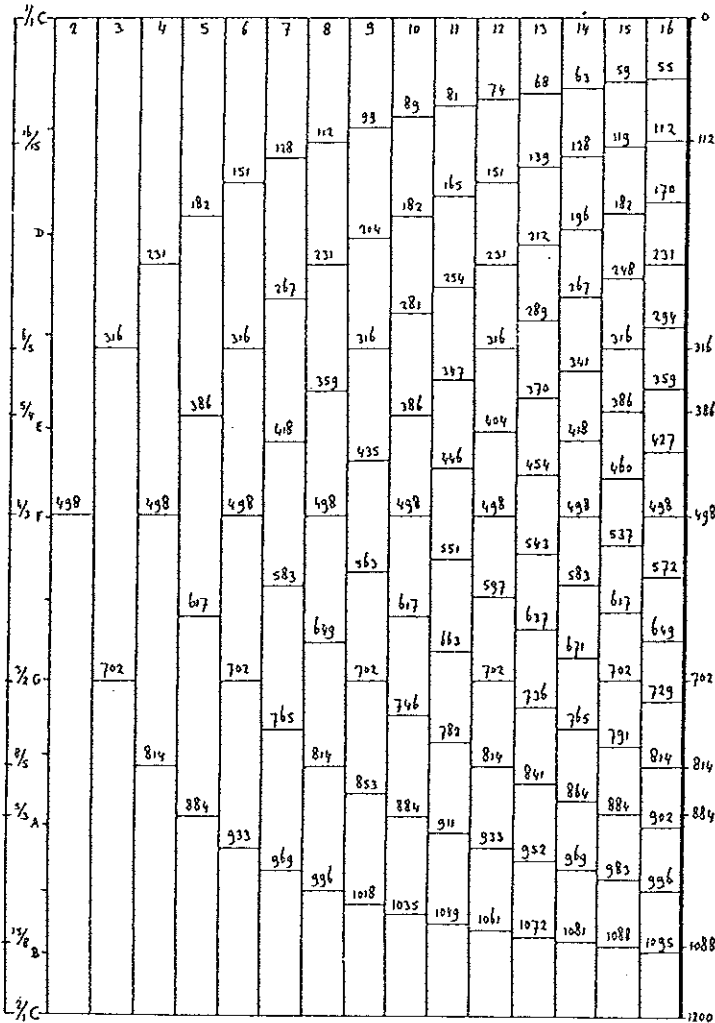
Because nothing can be imported from an imaginary country, I had to build the instruments to play Kayenian music myself (or, via the Vvk-foundation², ask others to do this for me). Articles about these instruments have been

published in various magazines.^{1,3,4}

One day, a friend, called Matz, asked me to develop a special instrument for him -- an instrument he could play during the free-style jazz performances he used to give. While doing the dishes, I invented the matzaar: a kind of electric guitar with the frets at equal distances. After some calculations, I decided that a division of the octave into twelve equal parts (equal in distance, that is) would be the most suitable. This way, the fourths and fifths would be just. To assimilate the calculations and later the building of this instrument into the Kayenian Empire, I named the tuning of the matzaar after a famous Kayenian composer: Intooseel.

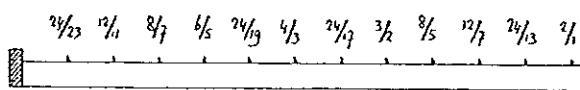
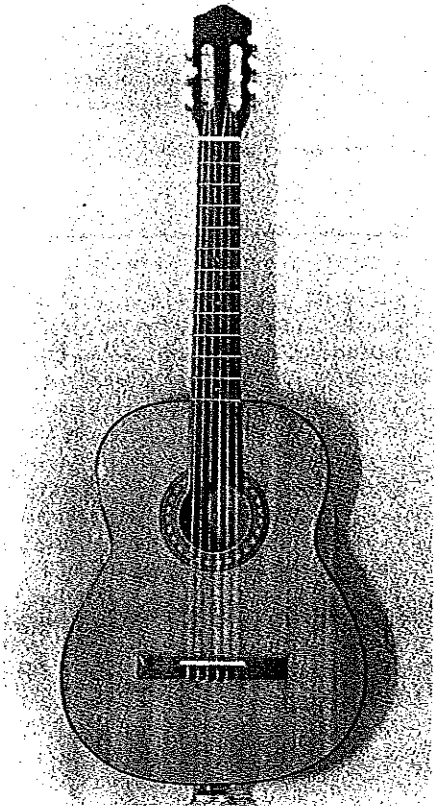
Years later, I read an article in an American magazine describing the tuning I invented⁵. The author, Michael Sloper, calls the tuning "aliquot" (after the Latin term for dividing into equal parts) and names arguments for the existence of aliquot tonescales both in historical and ethnological tuning systems. Besides the division of the octave in twelve equal parts (aliquot-12) he discusses the aliquot-13, the aliquot-24 and the aliquot-60 tuning.

Because my friend (and his matzaar) moved to Great Britain, and because there can be no electrical instruments in the Kayenian Empire, I decided to change one of my



LEFT:
Aliquot tone scales 2 through 16, with values expressed in cents. The graphic scaling corresponds to fretboard spacing (thus, the chart is not scaled for uniform interval sizes). For comparison, basic just intervals and 12-equal appear on the left.

RIGHT: The MATZAAR, with its Aliquot 12 fret spacing shown below.



guitars into a matzaar. I removed the frets, filled the slots with plastic wood and smoothed the finger-board with sandpaper. Then I made new slots at the new locations, varnished the finger-board and glued new frets in place. After a second varnishing, I put up a new set of strings and tuned them fourths apart. This method is quick and effective and can be recommended to anybody experimenting with tunings. After the matzaar, I rebuilt another guitar to play a modified version of the just 19-tone Shoureek-tuning^{6,7}.

In the table that follows, the intervals for aliquot-2 through aliquot-16 can be found, expressed in cents (hundredths of a semitone). On the left the tones of the C-major scale are given, and alongside them are basic just intervals expressed as ratios. The same intervals can be found on the extreme right, written in cents.

If you have any questions or remarks about the Kayenian Empire, or the Kayenian music, do not hesitate to contact me:

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REFERENCES:

- 1 H. Barnard, W.Z. Wendrich and B. Hopkin; "Kayenian Musical Instruments." *Experimental Musical Instruments* III, 1 (June 1987); p. 14-15.
- 2 "VvK" stands for "Friends of Kayolonie." The VvK-foundation was put up in 1981 to protect the Kayenian Empire artistically and financially.
- 3 H. Barnard and D.J. Hamoen; "Het 19-toons orgel uit Keiolonie." *Bouwbrief* 34 (August 1984); p. 14-19.
- 4 H. Barnard, L. Sluiter and B. den Hollander; "Keiaanse muziekinstrumenten." *Bouwbrief* 37 (May 1985); p. 7-8.
- 5 M. Sloper; "Aliquot Scales." 1/1 (The Quarterly Journal of the Just Intonation Network) VI, 1 (Winter 1988); p. 2 and 14.
- 6 H. Barnard et al.; *An Introduction to Kayenian Music*. Amsterdam-Textel 1986 (second edition).
- 7 *Archives of the VvK-foundation; A Selection of Ten Kayenian Instruments*. Amsterdam-Textel 1987.

RECORDINGS

CASSETTES

Notes by Bart Hopkin

Here are more reviews of independently-produced cassettes featuring unusual musical instruments. The reviews are designed to be informative rather than critical; we've simply tried to indicate what is on the tapes and where to get them. Following the short reviews on this page we have a more extended review of an important compilation tape, newly released by Stamp Axe.

JON ROSE: FEATURISMS / THE RELATIVE VIOLIN

Fringe Benefit Records, 172 Riverview Ave., Dangar Island, New South Wales.

"The Relative Violin" is the name Jon Rose has given to a set of performance parameters he has developed around the violin. They involve extensive physical alterations of the instrument, as well unconventional playing techniques. Rose's violins are pulled apart and reassembled; various small sounding objects are attached to them; they are strung every which way; very tall and very short bridges are used; odd things are used for bowing; percussive techniques are exploited as well; electronics are added; and the music is often recorded in bizarre circumstances. This tape is one of several documenting the development of The Relative Violin and Rose's improvised performances. Most of the sounds heard here have an edgy, scrappy quality.

DARRELL JONSSON: URBAN SPACE EPICS

Gardener Productions, 115 S. Topanga #154, Topanga, CA 90290.

The predominant instruments here are Jonsson's kalimbas, nicely recorded to capture the piquant irregularities of their sound. Over the kalimbas he incants a peculiar half-sung poetry, mostly contemporary in subject matter and vocabulary, but with an archaic feel. One track adds guitar, bass and keyboards.

WILLIAM EATON: TRACKS WE LEAVE

Canyon Records Productions, 4143 North 16th St., Phoenix, AZ 85016.

William Eaton is the maker of the beautiful guitar and harp-like instruments that appeared in EMPI's April 1989 issue (Vol. IV #6). On this cassette he plays several of them, in pieces with many rapid notes running together to create flowing

textures. He is joined by R. Carlos Nakai playing Native American flutes, Rich Rodgers playing shakuhachi & percussion, Claudia Tulip on orchestral flute, Arvel Bird on violin, and Udi Arouh on tablas and guitar. Plucked strings and flutes dominate most of the pieces. William Eaton and R. Carlos Nakai also recently collaborated on *Carry the Gift*, also released on Canyon Records.

SARAH HOPKINS AND FRIENDS: HEARTSONG

Resource Recordings, GPO Box 4168, Darwin, N.T. 0801, Australia.

Sarah Hopkins wrote about whirlies in EMPI's October 1989 issue (Vol. V #3). Whirlies are flexible corrugated tubes, usually about four centimeters in diameter and a meter or more long. The rush of air through them produces the tones of a harmonic overtone series when the tubes are whirled overhead. In this recording we hear a chorus of whirlies -- an extraordinary sound -- joined in parts by handbells, singing bowls, wind chimes, spirit catcher (an outer-air chordophone made by Darrell De Vore), harmonium, and voices, including some harmonics singing. Sarah Hopkins has also recently produced the CD *Sky Song* with Alan Lamb, on the Polygram label.

CATHERINE FAVRE: PLANET HARP

Studio Luna, Box 252, Half Moon Bay, CA 09109.

Side 1 of this tape features the pentatonic Magical Moon Harp, designed, made and played by Catherine Favre after a 14th century Finnish instrument. Side 2 features several pieces played on Ngombi, a harp from Gabon, played here by Catherine Favre, E. Roma, Paul Giacomantonio, and Joseph Mange Isingua. Some percussion, whirlies, synthesizers and ambient natural sounds appear as well. Lovely plucked string sounds in simple, translucent music.

NADI QAMAR: NIGHT MUSIC

Nuru Taa Arts, Rt 1, Box 274, Kewaunee, WI 54216.

Nadi Qamar makes and plays several varieties of Mbira, plus some African string instruments and occasionally fingergongs. Several of his mbiras extend the sound producing elements of the instrument to include very long, curved, gong-like rods, special resonators, and other features. The mbiras feature