Siegel Harmonics – A Sound Like No Other

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Abstract- By utilizing proper technique one can produce a harmonic tone equal to a minor third from the fingered note.

Index Terms- Siegel, Harmonic, Bass, Music

I. Introduction

The purpose of this article is to provide a stepwise walkthrough for the reproduction of Siegel Harmonics. It will identify proper finger placement, plucking, and tuning of an electric bass guitar in order to replicate the end-result desired.

II. Materials

- Electric Bass Guitar
- ¼" Audio Cable
- Bass amplifier

III. Identifying the Sound, Research And method

The foremost preliminary step to identify the sound that we are trying to reproduce which is a minor third from the root fingering that reverberates harmonically across the string. The effect is most observable along the following locations of the fret board.

1) The seventh fret along the E-string or a B produces a harmonic D-minor chord
2) The ninth fret along the A-string or a F# produces a harmonic A-minor chord.
3) The eleventh fret along D-string or a C# produces a harmonic E-minor chord.
4) The seventeenth fret along the G-string or a D produces a harmonic E# chord.

The collection of the initial data occurred on October 22nd, 2007 with the first discovery being made using a Squire P-Bass. Thereafter continued experimentation to reproduce the effect in-order to assess the musical qualities of the sound the entire process was repeated along the length of the neck of the bass several times along each string. Later I confirmed my findings by reproducing the effect with a 100% success rate across multiple electric bass guitars of various makes and models by using the steps provided in Section IV. Eventually I came to produce the song titled "The Cerebral Chauffer"[1] in-order to show off the musical qualities of a Siegel Harmonic.

IV. Study & FINDINGS

A. Steps to reproduce

In the case of this reproduction, and for the remainder of the paper, we will be using the fingering for the Siegel Harmonic along the seventh fret of the E-string of a bass tuned at 440hz in order from thickest string to lightest: E, A, D, G.

Apply full pressure to the E-string along the seventh fret, which would when normally plucked produce a B, but leave enough room between your hand and the other strings so that they will vibrate fully.

Pluck the E-string and only the E-string from behind the fingering hand so that the fingering hand is further from the instrument's headstock than the plucking hand.

Continue to apply pressure to the E-string to allow the sound to resonate. In this example, the resonance should occur at 36.708hz.

B. Overview of findings

Siegel harmonics produce a sound that is equal to a minor 3rd up from the fingered root. The sound is generally short lived, but can be sustained by multiple strikes of the string so long as the non-fingered strings are allowed to vibrate freely.

C. Detailed findings

The sound is created due to shortening the string length between the fingering hand and the headstock. However, since the fingering hand is muting the vibrations along the string towards the pick-up the vibrations are instead transferred up the neck of the instrument past the plucking hand and through the headstock; wherein they travel down the string just past the neighboring string. In the case of our example with the E-string the string that would carry the vibrations from the headstock would be the D-string. Subsequently, it is observable that if G-string was being fingered then the A-string would vibrate when this technique is applied, then if the A-string the G-String vibrates and if the D-string then the E-string vibrates. The other strings carry vibration as well, but their effects are negligible at best when compared to the primary vibrating string and as such they may be muted so that additional tones may be played along them while Siegel Harmonics are in use.

V. CONCLUSION

That a new musical phenomenon known as Siegel Harmonics

has been discovered creating a foundation for future research into capabilities, specifics, and ability to replicate across additional string instrumentation.

Acknowledgment

Bill a.k.a. **Just Plain Bill**, assisted in the publication of this paper by forcing me to write it in-order for the technique to be added to Wikipedia so that future musician could utilize it in musical works and in order to preserve an art form.

Bruce N. Miller, assisted in research by explaining how the vibrations in instrumentation worked so that their root source of them could be identified in this instance.

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Definitions

American Standard Tuning – E1 at 41.204Hz, A1 at 55Hz, D2 at 73.416, G2 at 97.999hz

Electric Bass Guitar – A four stringed guitar designed to carry the bass frequency through it's instrumentations.

Minor Third – A musical interval that contains three half steps.

Harmonically – The effect of an overtone accompanying a fundamental tone at a fixed interval produced by the vibration of a string.

Musical Qualities – The ability to be included in a piece of composition.

Pluck – To strike a single string with a finger so that it vibrates.

Plucking hand – The hand dedicated to plucking the string.

Fingering – The term used to describe the gesture that it used to tune a string instrument by shortening the length of the string in-order to augment it's tuning.

Fingering hand – The hand used to apply fingering to an instrument.

Fret – Segments of a guitar's fretboard that are designed to guide the fingering hand in order to create set frequencies that correspond to musical notation.

References

[1] Hayden B. Siegel, "The Cerebral Chauffer" 2013 https://soundcloud.com/user2679539/the-cerebral-chauffeur

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