

## Architecture of Tonality

unifying the systems of harmony

*This piece explores the principles behind a proposal for unifying the systems of harmony to benefit the explorations of musicians, teachers, sound practitioners and all people with ears. The accompanying chart (same title) that this piece serves as the introduction for is available at [www.alantower.net](http://www.alantower.net)*

Proportional Harmony  
*body nature*



Tempered Harmony  
*man-made*

Elemental Harmony  
*raw nature*

A friend and I taught each other guitar in the early 70's, learning as we went. Two decades went by and the first of my three most influential music teachers showed up, demonstrating to me and others a radical new approach to sound and music. A few years later the second and third teacher arrived, in part helping contextualize my understanding of the first teacher's work. Through embedding myself in what each had to offer, and then standing back for a view of the larger soundscape that together they represented for me, the *Architecture of Tonality* was born, catalyzed by a 2011 experience in a Bavarian Cathedral described on page three.

I am currently a full-time musician with around 20,000 hours spent making up acoustic music for solo and group play. I'm mostly in heaven when in the middle of creating a new piece for a new album.

When my friend and I began making up music for solo acoustic guitar, we found ourselves naturally drawn to so called "open tunings", where the instrument is tuned to a six string chord. For us this increased the beauty and richness of the sound, though we didn't know why. I later started playing piano, and found that certain standard intervals for example, the major third C-E, everyone plays didn't sound good to me, and so didn't use them. *What was going on?*

In a fundamental way everything relates to our individual experience, our perception of pitch, our own psychoacoustic response. As one of those teachers put it from another direction, “The overarching question is: How does our ear derive sense and meaning from its input signals?” While this is a vast and fascinating subject, I will take the liberty to jump ahead and present an approach, based upon my experience coupled with accepted tenets of music, that opens the door to a more unified understanding of harmony. My intention is for this offering to contribute to new openings for musicians, teachers, sound therapists, and listeners alike.

Over the years I learned there were basically two different kinds of harmony systems in the world. The oldest one I will call *Proportional Harmony (PH)* (also known as Just Intonation) arose naturally with people of all cultures, as it derives from the geometry and physics of nature, the natural vibrational proportions our ear and body easily recognize and resonate with. This approach eventually became more codified in India and the Middle East as the primary system, involving the playing of resonant “in tune” notes in relationship to a constant drone. The younger kid on the block (starting around the 1600s and solidifying by the 1800s amidst controversy), which I will call *Tempered Harmony (TH)*, commonly known as equal temperament) now dominates the Western World, and has impacted the *Proportional Harmony* world in a number of ways. It is a breakthrough system for designing and tuning instruments geared towards equality among tonal centers and the creation of chords. At its core it’s designed for change, calling forth modulation in different ways. Modulation often creates a certain freshness or excitement, and for a composer provides interesting work in both leaving home and coming back home to the original tonal center.

These abilities (chords, modulation) are not a focus in the world of **PH**, which is more about staying put (beautiful tones over a drone), its strength lying in the richness of sound and emotion, in part the result of being in tune at its core, a foundation of the system. *The Tempered Harmony (TH)* approach, in order for its benefits to be achieved, requires a permanent altering of pitches away from the geometry of nature e.g. this occurs in how the distances between frets of a guitar are organized, and how the notes of a piano are determined by a piano tuner. As a result all the notes are out of tune to varying degrees (except the octaves). This was the compromise, which is something mostly unknown by the public, and by a large number of musicians as well. **TH** music shines best when it’s moving along in tempo, helping mitigate the tuning issue that comes with the territory. The **PH** approach, because it is based on a consistent unchanging ground (drone) with notes intimately in tune with this drone, conversely has a refined ability to go slow, allowing us to bask in the purity of the sound, bringing different benefits for our body and psyche.

Proportional Harmony PH



Tempered Harmony TH

On a personal level music based on **TH** tends to have less of its effects in my body, being more active in engaging my mind with its outward-facing chordal journeys, while **PH** music is more active in my body and tends towards the inner experience realm.

For those interested in the story of this **PH -TH** arc, or the journey of “tonal harmony from its natural origins to its modern expression”, W.A. Mathieu undertakes it expertly in his groundbreaking book for musicians, *Harmonic Experience*, or *Bridge of Waves* for the layperson.

Much later it dawned on me that most musical instruments actually vibrate somewhere along a gradient between these systems. A good wind player, for example, can raise or lower pitch by changing her embouchure, and a violin player is not constrained by fixed frets and so is able to shift pitch as desired. The guitar, a *Tempered Harmony* instrument, can be nudged over towards the world of *Proportional Harmony* by using an open tuning, bringing the best of both systems together (see diagram next page). Aha! so *that's* what was going on back then when I was learning guitar in my late teens (this example is included with others in a chart called *Explorations Between Worlds* accompanying another chart entitled *Architecture of Tonality- unifying the fields of harmony*, for which this article is the introduction). All available at [www.alantower.net](http://www.alantower.net).



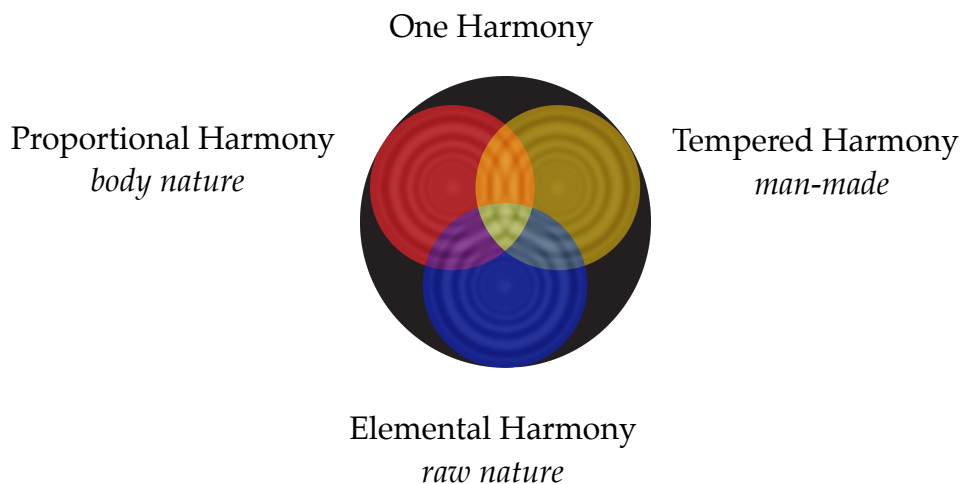
Now this is where it got most interesting for me. I began to play the Soundstone in the last month of 2010, a heavy hunk of sculpted granite developed by German professor Klaus Fessmann, cut into partial slices such that individual blades may be brought into vibration by rubbing them with the hands, using water for creating friction. The principle is akin to the glass harmonica, though producing much more powerful and organic rolling vibrations. I found it amazing that rock that has been silent for millennia could sing in this way!

However, after a few weeks of play, I reluctantly decided it wasn't for me, because I was not able to create music for it in the way I was accustomed. It just didn't make sense . . . the tuning, the chords that were possible etc. Then one day I realized the SoundStone was a completely different animal, actually from another tuning universe which I will call *Elemental Harmony (EH)*, recognizing this is also where instruments like Gamelan and gongs live. **EH** is a system partly based upon the physical vibration of raw material, involving more chaotic and unpredictable fluctuations, calling forth a different way of thinking about and feeling sound.

*The Architecture of Tonality* came forward in the Summer of 2011 during a concert I was playing with Professor Klaus Fessmann, SoundStone maestro, in a Bavarian cathedral

near Iffeldorf, Germany. The concert began with Klaus spinning vibrations up into the arched ceiling on a Stone his son had sculpted called the *Egg*. Soon thereafter, Celtic Harp came in, and finally the voice of a remarkable woman singer wafted over our heads. I had been invited to improvise with the group, but I was so stunned with the beauty of this trio of sounds in that church space, it was some time before it felt right to contribute anything. It was in those moments of pure listening that the seed of this work germinated. The SoundStone had opened up for me a new field of harmony, *Elemental Harmony*, which brought into view a trio of resonant fields that were distinct but also had overlap (**purple**, **blue** and **orange**), becoming unified as One Harmony.

## Architecture of Tonality



The piano and the SoundStone evidence some fascinating connections between *Tempered Harmony* as the dominant system, and *Elemental Harmony* as a generally unrecognized tonal system. The piano, as a foundational **TH** instrument, actually incorporates some of the **EH** flavor with its non-harmonic fluctuations occurring regularly, due to notes being slightly out of tune amidst many vibrating strings. This points to a developing idea that many instruments touch all three systems of harmony in some way. There is much here to research and try out in the area of adapting instruments between these fields. Many musicians already intuitively understand this concept, and experiment with it in their playing quite naturally. The *Architecture of Tonality* brings this larger picture into a more coherent view, presenting creative and exciting openings in a number of directions.

Later I realized that many of the instruments that fall in the **EH** category are “fixed pitch” (not designed to move between tonal centers as with **TH**), while the SoundStone,

an **EH** instrument, somehow redefines modulation through its very design (an observation by one of those teachers mentioned earlier). In another direction, one of my goals is to investigate with the Soundstone maker how to build and tune an **EH** instrument using principles of **PH**, as this could bring forth a way for beginning players and audiences to more immediately be caught by the beauty and tonal richness of the stone.

The addition of **EH** to the two previously recognized two systems creates a triangular relationship, mediating the historical competition between **TH** and **PH** with a more integrative map of harmony and resonance. This competition, of sorts, is another fascinating story I will explore in a future piece.

Developing methods for moving an instrument from its core system of harmony towards another, should open up interesting new directions for musicians, teachers, instrument makers, sound practitioners, and the wide world of listening ears.

For anyone interested in pursuing this line of inquiry further there are two charts available which provide a more in-depth treatment. Along with this article they are available at [www.alantower.net](http://www.alantower.net).

#### Charts

*Architecture of Tonality- unifying the fields of harmony*  
*Explorations Between Worlds*

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