

## Composer's Statement on *African Math*

The ground rule for this music was to adapt sounds located at the heart of the classic western *instrumentarium* to the performance techniques of instruments found in Africa. I have long taken an interest in the interface design of technical devices and their relation to the human body -- the way they choreograph tactility and action, and thereby, in the case of musical instruments, comport sound patterning in specific ways. The *mbira dza vadzimu* from Zimbabwe, for example, a kind of digital musical device with iron keys protruding from a sound board, differs strikingly from the modern industrial piano in various respects. Like the piano, the mbira construes music on the model of a keyboard, but its template inverts the left-to-right arrangement of low-to-high notes found on the piano. With the mbira, the low notes are clustered toward the center of the template, with the higher notes fanning off to the edges. This reflects the biological symmetry of the two hands, a very different conception to that found on the left-right orientation of the piano keyboard.

Arguably, the piano was designed to integrate the qualitative differences between the five fingers -- from the binary phalanges of the *pollex* (thumb) to the ternary ones of the *digitus mi'nimus ma'nus*, etc. -- with the quantitative equality of the keyboard's parallel components. A number of assumptions informed this design. Facility, for example, was associated with the upper notes of the right hand, where the faster-moving passages of music were generally to be found. Also, the thumb was construed as clumsier than the other four fingers, and in early keyboard performance, eliminated from fingering patterns altogether. The same marginalization of the thumb can be seen in the interface design of the QWERTY typewriter. The *mbira dza vadzimu* reverses the psychology of the asymmetry found in piano design in two respects. First, it paradoxically favors left-handedness (the left-hand side of the mbira has two manuals, while the right-hand side has only one), and, second, it deploys the thumb alone to strike all the keys. (Of course, it is now clear that recent western industrial technologies, such as the iPhone, and so on, have since discovered that we can all adapt our typing hands to the mbira-style with equal facility, but this was not always the case!).

In the battle for path dependency of industrial standards, we often find one kind of technical arrangement dominating another, which creates a kind of technological lock-in. Despite the many updates during the past three hundred years, it is surprising to observe how similar Bartolomeo Cristofori's 1709 invention is to the modern piano of today. More surprising still is the capacious stability of its interface design in technologies no longer controlled by criteria oriented to the task of integrating equidistant mechanical components with the tactility range of *digiti* extending from human hands. No longer situated at the crossroads of technics and flesh -- a once productive *mélange* of key, code, signal, hammer, hand, finger, and ear -- musical time today is nonetheless still held in the arms of its code.

From the pitch lattices grounding current popular music to the sound designs of commercial ambience; from the programs underwriting MIDI audio beeps, alarms, recorded voices and ringtones to software applications for iPhones and iPads that enable users to create sound compositions, auditory experience today is increasingly marked by a subset of discrete tones that fit on a standardized modular grid. The

piano's coded key template has become immortalized as the archetypal digital representation scheme for musical form in our times – a Platonic object.

In contrast, the mbira-type instrument is fast losing ground as an organizational principle for making music today. Traditionally played in pairs, with four hands, one mbira player interlocks (within the spaces of) the other. The woven arrangement produces a particular kind of ratchet-wheel aleatorics, which issues figures of asynchronous sound. Not only is the motor image of the striking fingers radically delinked from the acoustic image that comes to ear, but musical lines issue forth as ventriloquism. The mbira writes sound by throwing lines of unplayed material; a parallel polyphony that escapes the supervision of its makers. I point this out because, along the way, for all the incredible affordances of the piano, we are losing these techniques for making sounds and patterns as certain systems of coded relationships become technologically locked-in.

So, *African Math* is an attempt to bring some of these techniques to the piano, as well as to the stringed instruments. In the first movement, for example, the cello is made to imitate a technique of plucking and stopping found in single-string bow music from the Kalahari region; in the second movement we inhabit the world of the Basotho accordion, and so on. As I mention in the notes on the disc, with the arrival of pianos, guitars and accordions in the colonies, Africans have long adapted industrial western instruments to great effect. The accordion music of the Basotho, for example, tends to take advantage of the complementary pitch sets inherent to the instrument in ways that reflect African interlocking techniques. It is, in this sense, *Africanized*.

When I was growing up in South Africa, I remember how African pianists at the local music school ~~approached works of the great European masters, with a rich and strange inflection.~~ It is not easy to define the approach they took, but perhaps one can speak here of a change in focus from figure/ground relations to all-over-pattern. Instead of bringing long range structural lines and harmonic schemata to the fore, the African approach finds inspiration in the texture of the figures, their manner of weaving, the surface as cloth. The music is also often a little faster or slower than the median *tempi* found in the west. Perhaps one may even say the African approach hears music, not as developmental or goal-directed, but as continuous and cyclic. Perhaps it becomes a kind of present tense music. But it becomes other things too, bearing resemblances across time and space, like speaking German *Biedermeier* with a Tswana or Zulu accent.

Sincerely,

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