

THE *FLUID PIANO* PROTOTYPE (2009) FACING PIANO HISTORY

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Historical Circumstances

The piano was born late in the history of musical instruments. Its invention required long research and entailed significant intellectual abstraction.¹ The piano's escapement mechanism was a technological evolution that was the product of the combination of speculation and practice. This is a long way from percussion, blowing into a wind instrument, bow stroking, all being intuitive ways of producing sound characteristic of ancient civilizations.

The supremacy of inventive reason has determined the history of the piano from its replacement of the harpsichord in the late eighteenth century until the 1840s. That was a time of a profusion of inventions, when manufacturers agreed that innovation was the key to success. Throughout the 19th century the piano became a symbol of industrialization. Throughout this period of colonization, European musicians had little interest in non-European indigenous music and temperaments.

During the 1870s, the modern piano was technologically refined to the instrument we know today. The use of metal made it a product that could be exported to the colonies. This new generation of imposing instruments was received with enthusiasm. As a result, faith in inventiveness died out amongst piano builders, and the focus changed from innovation to marketing.

The twentieth century – an age of fulfilment of past research of musical instruments – had a unique vision of the ideal piano. Manufacturers believed they had finally produced a lasting, fully developed instrument. The piano became radically standardized during the second half of the century, and the concert grand, despite its unchanged structure, kept on gaining in power. A very bright sound – apparent in a smaller difference between registers, colour, and a purer resonance – was the only novelty. After a series of revisions and verifications, the technical character of the piano is considered to have reached its final and absolute form. Since World War II, Steinway grand pianos have become the ultimate reference for many pianists.

¹ Cf. Pollens, Stewart. *The early pianoforte*. Cambridge: Cambridge University Press, 1995.

We live in an age where the piano is regarded as a powerful machine rather than an artistic and subjective instrument. It has no defects, it is perfectly efficient, adjustable, and identically reproducible. Earlier, in *Les avatars du piano*² written between 2008 and 2010, I predicted that, beyond current standardization, if the twenty-first century is to extend the twentieth, new transformations will depend on modern technology to achieve greater power, control, and security. This historical trend is still relevant – David Klavins' *Una Corda* (2014) and Geoffrey Smith's *Fluid piano* (2009) are the exceptions that prove the rule. Besides, only a tiny minority of the piano world today is likely to be attracted to pianos designed in a new way. Unconventional piano makers like Wayne Stuart (Australia), David Klavins (Germany), David Rubenstein (United States), and Stephen Paulello (France) can be counted on the fingers of one hand.

The Idea

From a historical perspective, the idea of the *Fluid piano* is not an improvement of the piano but an abrupt change of its western identity. The concept gradually grew from Geoffrey Smith's musical work. Surprisingly, Smith, from Brighton, England, does not come from the piano world. He is a hammer dulcimer (American) or hammered dulcimer (British) performer, composer, and researcher with a serious interest in music from beyond Europe. He has performed and composed on particular bespoke prototype instruments: diatonic, chromatic, and microtonal dulcimers. He became an inventor when he had the feeling that he was working on something pioneering in the history of acoustic musical instruments: the *fluid tuning mechanisms* of his *Fluid dulcimer* which allow the tuning of each note to be altered separately by microtones either before or during a performance. The *Fluid dulcimer* is therefore the instrument that led to the invention of the *Fluid piano* which incorporates a more elaborated version of the *Fluid tuning mechanisms*.

The pianoforte is a keyed dulcimer, writes Arnold Dolmetsch.³ Smith similarly considers the dulcimer as the precursor of the piano, which has a mechanized hammer system. He became interested in the Iranian pianist Morteza Mahjoubi (1900-1965), who tuned the piano according to the

² In French, „avatar“ means transformation, reincarnation and reverse. Cf. Kreidy, Ziad. *Les avatars du piano*, Paris: Beauchesne, 2012.

³ Dolmetsch, Arnold. *The interpretation of the music of the XVIIth and XVIIIth centuries. Revealed by contemporary evidence*, London: Novello & New York: H. W. Gray, 1915, p. 431.

Persian traditional modal system, when reading about the time when the western piano was imported into Iran.. Smith wondered if the *fluid tuning mechanisms* of his microtonal dulcimer could be adapted to the western acoustic piano, which is restricted to fixed tunings. The pianist will have freedom to adjust the pitch by means of a mobile slider under the strings of each note. Instead of having a fixed pitch, Smith's idea was to enable the piano to easily access an unlimited variety of tunings.

The Production

When Smith first had the idea to make the *Fluid piano*, he couldn't afford to cover the costs of building a prototype.

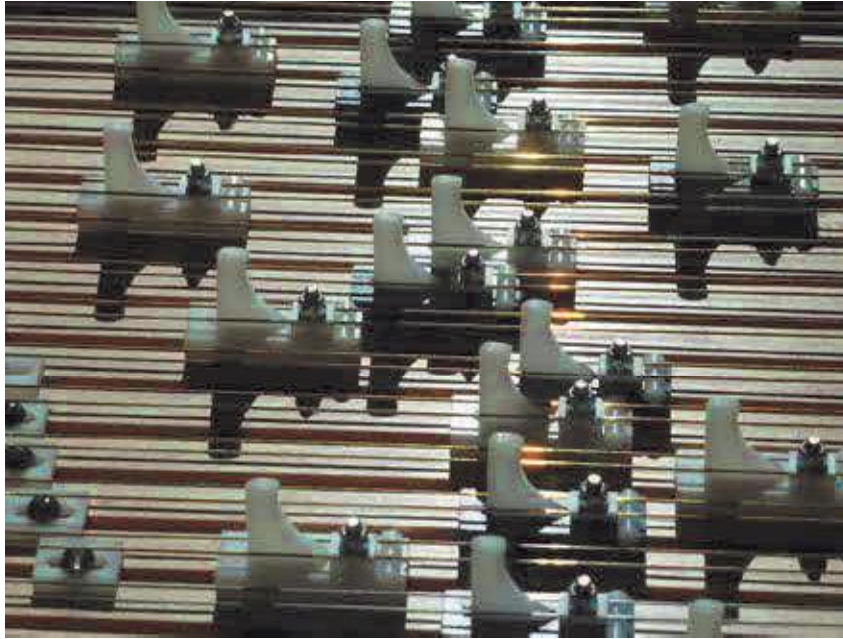
The starting point was to make a one note *Fluid piano*. Smith wanted to see if one of the tuning mechanisms could be incorporated into a piano keyboard. It took him three years to raise the money to build this one-note action. Malcolm Rose built the first successful *Fluid piano* action. Smith then met with various instrument makers to see who would be interested and capable of designing and building a whole instrument. He also had meetings with people in several institutions, only to be disappointed by members of staff at the instrument making department of a university in London who told him that to build such an instrument would be impossible. However, because of his experience as a composer and performer on the *Fluid dulcimer*, he refused to believe them.

After a while, he made contact with the fortepiano, harpsichord and harp maker Christopher Barlow who was interested in the development of a *Fluid piano* prototype while asserting that the final result could not be guaranteed. After his encounter with Barlow, Smith found success with an application to Arts Council England, and the real work began in the autumn of 2007. Barlow and Smith examined the *Fluid piano* one-note prototype and the *Fluid dulcimer* prototype, and started the design. The handmade construction took about eighteen months. Barlow and Smith completed the project in the spring of 2009. Since the *fluid tuning mechanisms* needed lower string tension they could not use modern piano strings,⁴ and so, the sound power of the *Fluid piano* is similar to that of a fortepiano with the same lightweight action. In order to gain sonic brilliance, Smith and Barlow decided to equip the prototype with bare wooden hammerheads, typical of some early classical fortepianos. However, in 2015 Smith considered the using felt hammers for future commissions. The *Fluid piano* also resembles a fortepiano in its handicraft character, its wooden

⁴ Cf. Christopher Barlow's website <http://www.barlowharps.com/fluidpiano.html> (accessed on 12 November, 2017)

frame, the limited range of its keyboard,⁵ its divided sustaining pedal,⁶ and its moderator pedal.⁷ In addition to the *fluid Tuning mechanisms*, these features make its approach even more confusing for pianists and composers who are more accustomed to the modern piano.

Fig. 1. Fluid Tuning Mechanisms



Who Might Be Interested?

Smith claims that his invention “has never been fully supported by the establishment or by music colleges or universities.”⁸ Despite interest from people in diverse institutions, the major interest has come from a wide range of countries and cultures. Musicians from around the world are realizing that it is possible to play their own native tunings on an acoustic piano. For advocates of ethnic temperaments, the *Fluid piano* is a transfiguration of the piano in praise of their ancient traditions. Utsav Lal, a raga pianist performing Hindustani music, is the first musician to record

⁵ Five octaves and a major third, from F1 to A6.

⁶ This allows the treble and bass to be sustained independently or together.

⁷ The moderator pedal moves a thin piece of cloth to the striking point under the strings and changes the tone closer to that of a piano.

⁸ Conversation with Geoffrey Smith, 09/25/2015.

an album on the *Fluid piano*. The instrument was given a new mechanism for the occasion: “A new set of hammers with a thin covering of ‘box-cloth’ on each hammer-head had to be specially fitted to the instrument (...) the new hammer-heads produce a more pianistic and tonal sound,” writes Smith.⁹ Released on July 1st 2016, the CD entitled *The Fluid Piano* was announced as a World Music/Indian Classical recording.

Cultural Identity

Scales and intervals have always been a central issue for musical languages. The tuning of the piano has always been fixed by the tuner. Unlike string quartet musicians, for instance, pianists cannot alter the tuning of a note. The pitch accuracy of their instrument is outside their control. Moreover, the predominant tuning now is equal temperament. Due to the technological hegemony and cultural prestige of the West, the domination of equal temperament continues to expand throughout the world at the expense of ethnic music in the oral tradition. The spread of electronic keyboards in recent decades has only reinforced this trend.

It is worth recalling that the piano has long been seen a universal instrument. This attitude ignores or even denigrates other tuning systems. The *Fluid piano* changes that situation and facilitates collaborations between all styles of music. This opens the way to a future where musicians coming from any geographic area will be able to play on a piano keyboard in an infinite range of tunings.

The *Fluid piano* is both a normal and a revolutionary piano. It is designed to work like a normal pianoforte when the sliders are in the central position. Its basic tuning is equal temperament, but after the tuning, the pianist can smoothly alter each note, plus or minus one semitone, to reach every conceivable micro-interval. The destiny of the *Fluid piano* is to enable the piano to acquire a transcultural dimension. Smith’s goal is to release the piano from the restriction of the western identity and turn it into a world instrument.

⁹Smith, Geoffrey. *The Fluid Piano, Utsav Lal, Raga pianist*, (2016), CD booklet, Fluid Piano Recordings, p. 10. Available at: http://pdf.thefluidpiano.com/booklet_nobckg.pdf (accessed on 12 November 2017).

Fig. 2. Utsav Lal playing the Fluid piano



Internationalism

Acoustic exploration of micro-intervals in piano manufacturing has never been easy. Since the last decade of the 19th century – but not exclusively – a variety of specially constructed pianos was designed. Pianos playing continuous microtones for western experimental compositions or for non-western music were built occasionally. A small number of these unusual instruments still exists. One can understand why composers such as Charles Ives (1874-1954) or Alain Louvier (1945), in order to have all quarter-tones, choose simultaneously to play two ordinary modern pianos positioned perpendicularly to each other and tuned with a quartertone difference. Such experiences are hard to achieve. To play the Arabic maqâms, the Egyptian Naguib Nahas in 1912 and the Lebanese Abdallah Chahine in 1954 each built an upright piano. But the transition from prototyping to small series or mass production has never occurred. Piano manufacturing remained unchanged. The leading piano brands did not open up to non-European music during the second half of the 20th century. They left the microtonal music market to electronic keyboards. Microtonal composers such as the Mexican Julian Carillo (1875-1965), the Russian Ivan Wyschnegradsky (1893-1979) or the Czechoslovak Alois Hába (1893-1973) had no impact on piano mass production. Contemporary piano music was composed for the so-called modern piano which is a legacy of the romantic era. Pierre Boulez (1925-2016) lamented this rigidity. He wanted the piano to have sev-

eral stops, to evolve towards sounds never heard before. He collaborated with Steinway & Sons in this regard, but the project was abandoned for commercial reasons.¹⁰ Nowadays, many innovative composers are not attracted to changes in piano tuning or manufacturing and prefer to focus on electronics.

All these microtonal pianos had fixed tuning. In contrast, the *Fluid piano* removes the psychological security of fixed tuning. Information on sound accuracy is no longer provided, nor does it have an autochthonous character like traditional ethnic instruments. It distinguishes itself from all ancient and modern pianos. Here lies its singularity that confuses the musicians of the piano world because pitch accuracy has never been part of their technique.

The *Fluid Piano* is probably the most amazing contemporary innovation. For the first time in history, a single invention challenges the fundamental nature of the piano. Eight years since its release, it must be noted that the role of the *Fluid piano* is much more the integration of non-European temperaments and much less the exploration of microtones by Western composers. Its purpose is not to replace any acoustic or electronic instrument but to create something radically new: an original pianistic repertoire.

Even though, despite its success in the media and the interest it has generated among musicians playing non-European music from an oral tradition, it fails to interest pianists or contemporary music composers. It has not yet been sold and there is only one *Fluid Piano* prototype. Time will tell if this is the premise of a new era in piano history. Will the piano become a truly universal musical instrument if one day the *Fluid piano* becomes successful worldwide?

Political Idealism

The *Fluid piano* has involved a tremendous amount of personal work for Geoffrey Smith. He has never given up because he remains intimately committed to his ideals: cultural independence and internationalism. Smith is not a nationalist, he hates the desire to control ideas and to restrict freedom. He is aware that all around the world a lot of tunings are being marginalized or lost because of the predominance of western tuning. He believes that the *Fluid piano* can make a significant contribution to the conservation of indigenous and historic tunings worldwide if young musicians can work with their own tunings. According to Smith, freedom of expression offered by *The Fluid piano* would create more exploration, experimentation, collaboration, and would at the same time help the conservation of ancient music from different civilizations.

¹⁰ Interview with Pierre Boulez, *Piano Magazine*, n° 36, September – October 2003, p. 36.

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Websites

- Christopher Barlow's website: <http://www.barlowharps.com/fluidpiano.html>
- The Fluid piano website: <http://www.thefluidpiano.com/>