

Petrasonic, a musical exploration of Iowa's geology

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Jean-François Charles creates at the crossroads of music and technology, as in the collaborative soundtrack to Dziga Vertov's movie "The Eleventh Year" (with Nicolas Sidoroff and four other musicians, 2015) or in his "musical chemistry" work with Scientific Glassblower Benj Revis (Aqua ignis, 2018). His opera Grant Wood in Paris was commissioned by the Cedar Rapids Opera Theatre and premiered April 12-14, 2019.

As a clarinetist, he has performed with classical, jazz, and other sound artists, from Maurice Merle to Douglas Ewart or Gozo Yoshimasu. He worked with Karlheinz Stockhausen for the world première of Rechter

Augenbrauentanz (Stockhausen-Verlag CD #59). His album "Electroclarinet" was awarded prizes at the Global Music Awards in both categories Contemporary Classical Album and Composition/Composer. The music was reviewed as full of drama and drive (Dolf Mulder, Vital Weekly) or colorful and jazzy, giving the listener a plethora of timbral explosions (Lori Ardovino, The Clarinet Journal).

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musical chemistry: <https://now.uiowa.edu/2018/04/innovative-ui-concert-adds-chemistry-physics-equation>

The Eleventh Year: <https://youtu.be/SSve8HNjZ4Y>

Electroclarinet: <https://www.electroclarinet.com/p/listen.html>

Petrasonic was performed in October 2019 at the University of Iowa by the following collaborators: Volkan Orhon (double bass), Dan Moore (stone instruments), Ryan Clark (geologist), Matthew Wortel, (thin section technician), Will Borich (lighting & video design), Jean-François Charles (sound diffusion & live electronics). The piece builds on a long tradition: stones have been used as musical instruments and ritual bells all over the world for centuries. The sounding stone qing is one of the oldest Chinese musical instruments, while the Musée de l'Homme in Paris holds a collection of Sub-Saharan cylindrical lithophones dating from the Neolithic era.

FIGURE 1 – Dan Moore (stone matrix) and Volkan Orhon (double bass).



The unique stone instruments in Petrasonic include phonolites collected in French Massif Central. The stone matrix and the stone harp were built in Iowa. These sliced stone instruments were inspired by the art of Pinuccio Sciola (1942, 2016), an Italian sculptor from San Sperate, Sardinia, who worked mostly with rocks from his native land. He created numerous “sound stones” meant to be caressed by hands or rubbed by another stone.

FIGURE 2 – Score excerpt.

ca. 48

**Although the Manson Impact Structure...
...the geode.**

Most of Iowa's geodes come from...

Double Bass

arco sul pont. ord. gliss. vibrato exaggerato breathy

f *mf* *pp* *f* *p sub.*

Matrix

Percussion

... 340 million years ago.

en écho

ppp *mf espr.* *p*

Matrix stone

cantabile

mf

This musical composition is scored for double bass and stone instruments. During the first part of the piece, two fermatas allow a geologist to tell the story of the Manson Impact Structure. He recounts how the study of shocked quartz grains from Manson cores showed that this crater was created by an asteroid about 74 million years ago. Meanwhile, a technician manipulates thin layers of rocks under a microscope; these images are fed to a live projection mapping system.

During the second part of the piece, the narration is interleaved with the music to explain the creation of the Iowa state rock: the geode. While the musicians are building toward the climax of the piece, both stone experts work together to crack open a geode on stage. They show the inside of the geode to the audience during the musical coda.

FIGURE 3 –Matthew Wortel and Ryan Clark cracking open a geode



The full video of the live performance is available at https://youtu.be/AU_1due6r0o

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