

"Sismo-Dance" Workshop-Performance

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"Sismo-Dance" Workshop-Performance

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Sliding, friction, stick-slip, instability, rupture, shaking, interaction, heterogeneity, details, local, global, time, space, prediction, propagation, amplitude. Such a common language describes as well a shallow Earth dislocation or a dancer movement. This basis allows us to introduce a dance as the signature of an earth-quake. "Danse le tremblement de la terre" workshop aims toward a physical integration of the earthquake physics as regularly classified as (i) the propagation effect, driven by well known grounded elastic waves, and (ii) the seismic source effect, that emerges from sliding instabilities between two rocky interfaces. The 5-day workshop was co-lead by an amateur-dancer-professional seismologist and a professional dancer-choreographer in order to merge the understanding of the mechanics of earthquake and faulting and the dance experiments. Each half-day session focuses on specific earthquake physics topics both from the observational and the



model approaches. The workshop sessions encompass friction and faulting, waves, interactions and triggering, 1D-2D cellular automaton, slow and regular quakes, self-organization and disorder. Each session starts as a short $\frac{1}{4}$ hour scientific introduction up to synthesize the start of the art of the scientific understanding (and the current limitations) on earthquake science. It is followed by a physical training, this later being oriented toward the specificity of the movement to be developed (as contact, sliding, rotation, group or solo). After practicing improvisation sequences, the emerging movements are re-adjusted and commented and selected in the framework of earthquake physics and solid earth movement. From each of these sessions, we select a set of scenes that are put together as a sequential live performance.

The performance was presented to a 40 persons audience. The performance itself corresponds to a step 2 of a branching dissemination process on earthquake knowledge through EPOS project. The step 1 was effective through a 4 days residence at the “Centre de Développement Choreographique - le Pacific”, (Grenoble, September 2016), where we, the choreographer and the seismologist, originally defined and explored a set of topics to be danced. The workshop performance and discussions also pointed on the way the scientific work operates and on the role of the EC funding in the earth science community. As example of a “Sismo-Dance” experience, the performers confront with the non-predictability of earthquake in size time and space domains, e.g. each performer displacement is randomly drew from on stage dice values. For this scene, the performer displacements are further bounded to follow a grid which geometry is reminiscent of the computer models we use as seismologists. As another example, the changes in surface shaking patterns between a local M3 quake (i.e. as reported to be triggered by the impoundment of the nearby Monteynard reservoir lake) and a M8 event from distant japan, were experienced by the dancers. The changes in frequency on the way dancers undulate, the synchronicity or not of the shaking onset for dancers due to delay in first wave arrival times, and the extended time delays for dancer to be involved in shear movement (mimicking earthquake S waves), all do contribute to specific artistic creation. For each of the performance scenes, on stage installation includes either a large “earthquake science” background projection or a seismological tools (seismogram, seismic sensor, analog model). Sound was eclectic as either a metronome rhythm or piece of silence or real music or paper crackling noise. The crackling noise, triggered by paper crunching, is used during the performance to introduce both a local brittle damage as irreversible deformation shaping the landscape and the associated wave propagation.

The whole workshop experiences of integrating the science of earthquake through the body language allow a wide and unexpected rich exploration of the earthquake fundamentals through dancer movements. It leads toward unique dance performance that mesmerized both the audience and the dancers.

*Trièves region, French Alps, is located in between Vercors and Devoluy massif, 60 km south of Grenoble city)

Video: ["Sismo-Dance" Workshop-Performance](#)

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