

Education as an Art

A Journal for the Waldorf Schools of North America
Vol. 27, No.2 – Summer 1968

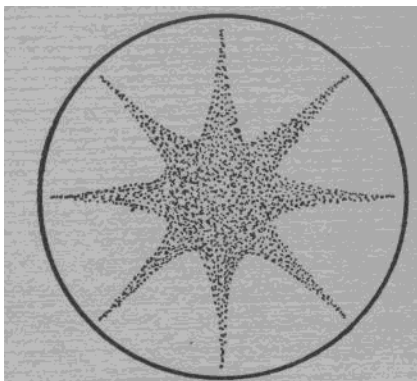
THE CHLADNI PLATE - MEETING POINT OF TWO WORLDS

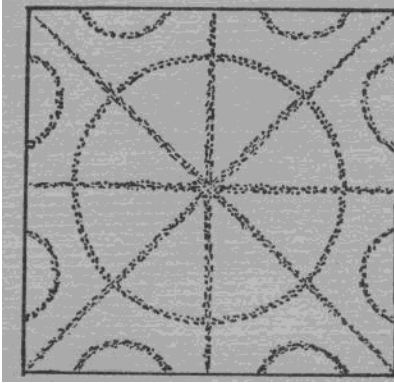
By Gerhard Bedding (Waldorf School, Adelphi University)

Waldorf students have their first acquaintance with physics in the sixth grade. Worlds of wonder open up: light and dark give birth to sparkling colors that mix in surprising ways (did you know that red and green could make yellow?); a hot-air balloon rises slowly and majestically; a flame dances and quivers, sensitive to sounds we make.

One of the most fascinating experiences in acoustics is the demonstration of Chladni's plate. This is a simple metal plate, usually circular or square, supported in the center. Fine sand or salt is sprinkled on top. The edge is bowed with a violin bow and, with some skill and luck, one can induce the plate to sing a pure note. Behold! The grains of sand suddenly arrange themselves in a sharply defined, symmetrical pattern. With one magic stroke, intricate and beautiful order is created from chaos. The suddenness of this event is a never-ending source of wonder for the children. They hold their breath when the bow is applied to the plate, and then, if the stroke is successful, they respond with a most heartfelt "Aahh!"

A particular Chladni plate can be made to vibrate at dozens of different pitches, each one commanding its own form. The higher the pitch, the more intricate the pattern becomes. By applying dry ice or vibrating piezo-electric crystals to the plate, one can produce notes of very high frequencies, resulting in patterns of astonishing variety, detail, and beauty. The two illustrations show simple patterns on a round and on a square plate. The first form was obtained by bowing the edge, the second one by touching the square plate with a chip of dry ice.





After Chladni's work around 1800, little research was done until recent times. The latest work is connected with the names of Mary Wailer, formerly physicist at the London School of Medicine, and Hans Jenny, medical doctor of Dornach, Switzerland. The latter, in cooperation with a photographer, an actor, and a Waldorf teacher, produced a motion picture, "Vibrating World," which was shown on television in Germany and now travels through the U.S.A. as part of an art exhibit sponsored by International Business Machines.

It is hard to describe the fascination of watching the creative moment on a Chladni plate. After the tone dies out, the pattern on the plate remains and can be admired and studied. Yet this is a post-mortem one is looking at a corpse. The living drama unrolls when the sounding tone, as a dance master, conducts the dancing particles to their places in splendid choreography.

Sometimes one may produce a note with wavering pitch. It is then as if two or more dance masters were giving conflicting orders. There is a struggle between the forms, they change back and forth, and one waits with bated breath to see which will win.

The Chladni plate is a meeting point of two worlds. Material and non-material worlds meet, and it is the not-visible that shapes the visible. Spenser wrote:

*For of the soul the body form doth take;
For soul is form, and doth the body make.*

Emerson said: "Nature is the incarnation of a thought, and turns to a thought again, as ice becomes water and gas. The world is mind precipitated ... "

We all experience that a person's face is an expression of, is shaped by, his own unique spirit. The Chladni plate shows that each tone also has its own physiognomy. If a simple, mechanically produced tone has such an intricately beautiful shaping force, the human voice must introduce a still higher order of form-giving. The brand-new invention of "voiceprints", as unique for one individual as his fingerprints, may possibly demonstrate one aspect of this realm. Yet, with all of these phenomena, we are only in the foothills of this landscape. In the background towers the archetype of all shaping forces, as voiced by St. John: "In the beginning of all things was the creative Word. ."