

Shape, Color & Sound

Penesta Dika in collaboration with Tomor Elezkurtaj

This work is about creating “sounding images” and “visible sound” simultaneously through tangible shapes/objects. This concept is an attempt to mix visual and acoustic rules of the historic and contemporary artists, scientists and theoreticians by using simple rules to achieve complex result.



Fig. 1. Johannes Itten Color - Rules

| | | | | | | | | | | | |
|---|-----|---|-----|---|---|-----|---|-----|---|-----|---|
| C | Cis | D | Dis | E | F | Fis | G | Gis | A | Ais | H |
| C | Des | D | Es | E | F | Ges | G | As | A | Be | H |

Fig. 2. Primary Scale in Semitones – used by Arnold Schönberg

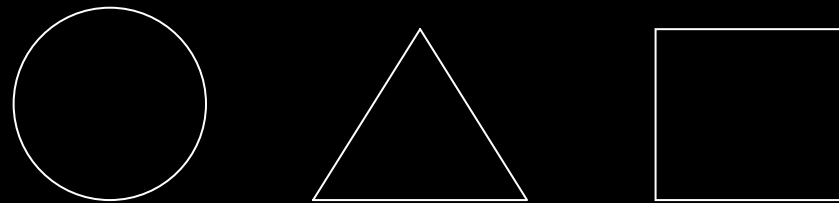
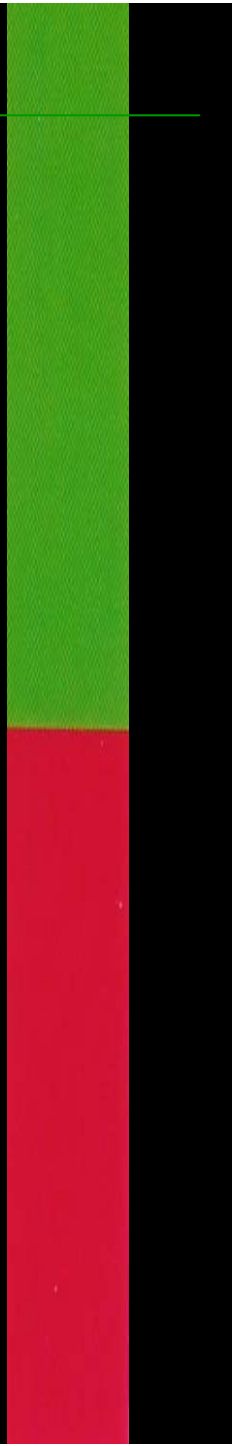


Fig. 3. Simple regular geometric shapes – Euklid

This concept is based among others on
-the color-circle of Johannes Itten,
-twelve-tone-technique of Arnold Schönberg and
-elementary geometrical shapes of Euclidean Geometry.



The main objects for this tangible Interface, made for the ReacTable, are three geometrical objects, whose surfaces represent a tone and a color. The users can create simultaneously visual and acoustic works that can be, among other things, rearranged, saved and played overlaid.



- Based on Itten' s color – circle, which contains three primary colors and twelve colors in a circle, I created:
three elementary objects, which had to have summary twelve planar surfaces
- The objects I created based on elementary shapes, such as circle, triangle and rectangle.

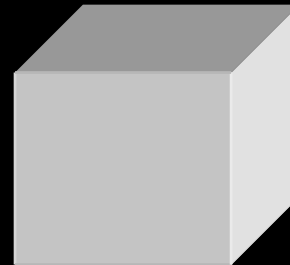
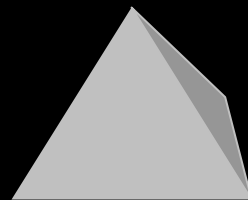
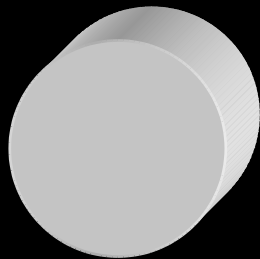
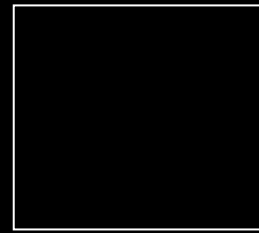
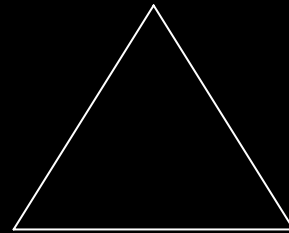
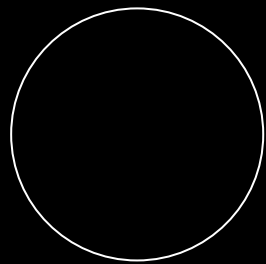


Fig. 4. Objects created through a „scratched ball“ – for this I used elementary shapes

-I wanted to create regular objects with these shapes, so squeezing a very primary object (the ball) and trying to get 12 planes in three objects, I get: a disc, a tetrahedron and a cube.

Each surface of these objects has:

- a tone (from C - H) and
- a color (based on Itten's color - circle).

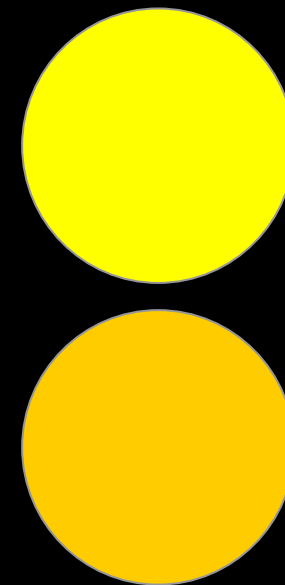
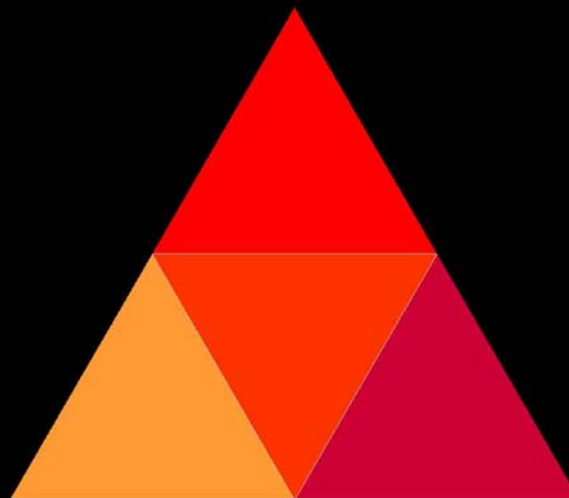
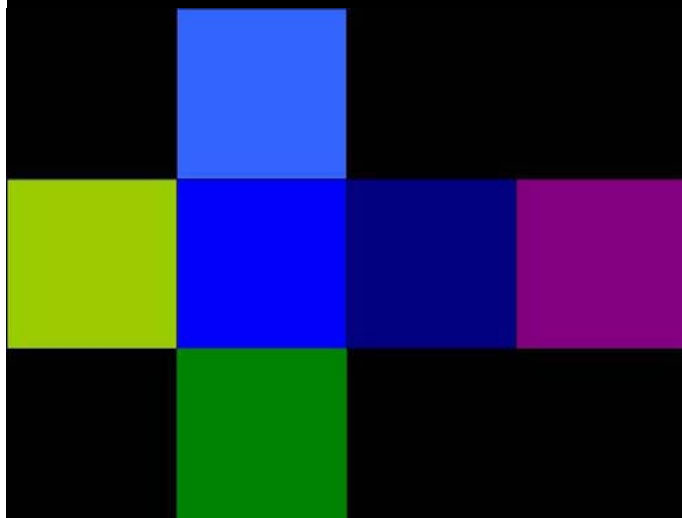
So we have 12 surfaces (shapes), 12 colors and 12 tones...

We have 3 main tones of the main scale (C, E, G), 3 tangible objects made of 3 main shapes (circle, triangle and rectangle) and 3 main colors (Yellow, Red and Blue) distributed in this 3 shapes and in 3 main tones (C, E, G).



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- I put 6 warm colors in the disc and tetrahedron and 6 cold colors in the surfaces of the cube.
- The cube as a object seems to be (*for me*) a stable object so for that I defined it as a cold one.
- The tetrahedron is a object with spiky edges so it has (*for me*) more a feminine character and it gets the warm colors.
- The disc looks like the sun, so I decided to define it also with warm colors. Also the primary colors (yellow, red and blue) are arranged in three primary geometrical shapes (circle, triangle and rectangle).
- Three main tones of the main scale in the classic music harmony (C, E, G) gets three main colors (yellow, red and blue) and gets three main shapes.
- Based on this rules are then arranged the rest of tones, colors and shapes.



- To decide the relation between colours and notes/tones, I used also Itten's rule about complementary color – contrast, respectively the physiological aspects of human eyes, that also the medicine is based on.
- I wanted to use primary colors for the primary notes C, E, G.
- The primary colors are: yellow, red and blue.



Fig.5. Proportions of the contrasting colors.

- also when we think about light – dark – contrast, than we know that the lighter shape compared to the same in a dark color, would look wider.
- so for me C is the „widest tone“ of the scale.

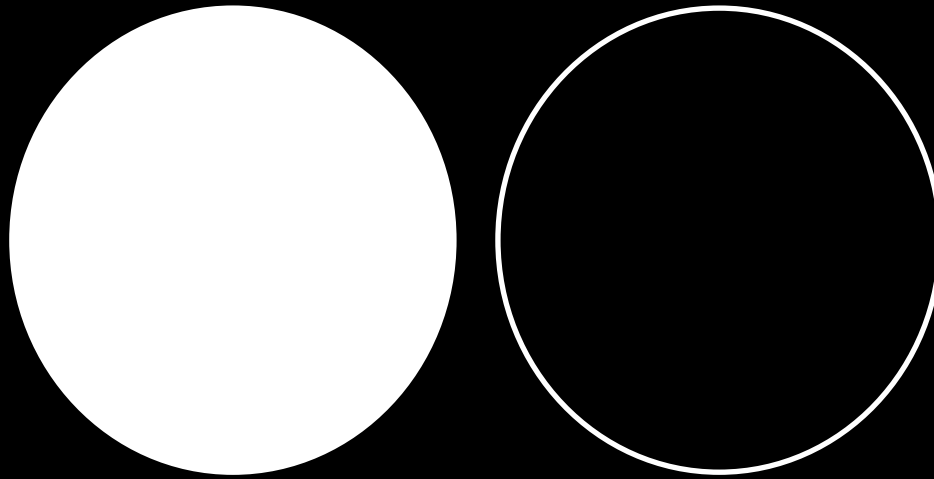


Fig. 6. light – dark – contrast



The result:



Fig. 7. Implemented notes in the color-circle

- In the project that is exhibited in the “Ars Electronica 2006” within the framework of the Interface Culture, the Interface is adopted for a Mouse-Interaction. The colors/shapes/tones can be dropped in a round surface and make shapes and sounds. Through them will be created a image and sounds.
- The surface is tiled in three concentric surfaces, which represents three different octaves.
- The tones are natural recorded with a transverse-flute.
- To see the result of what you are creating with tones, shapes and colors, your work will be displayed live on the wall.

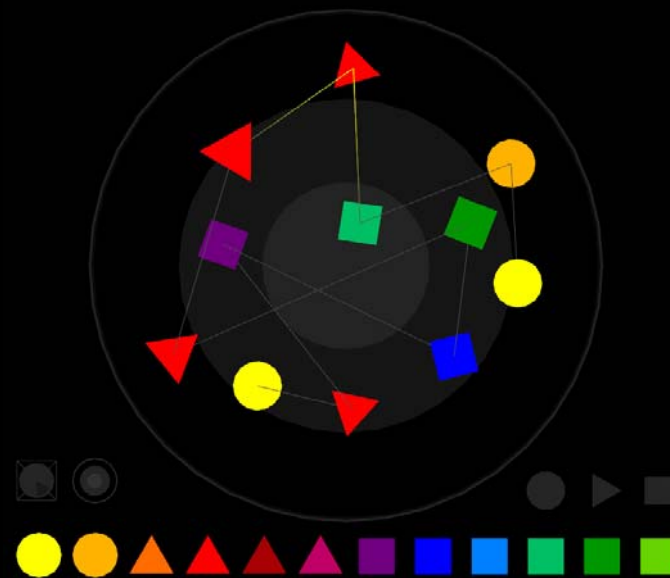


Fig. 8. Interface of “Color, Shape and Sound”

-if you are putting the “stamps” over the existing shapes they will be physically overwritten and they will make the volume of the notes higher and will create irregular shapes. New shapes and new sounds are going to be created.
When the overwritten shapes are different, then they will be played as a chord.

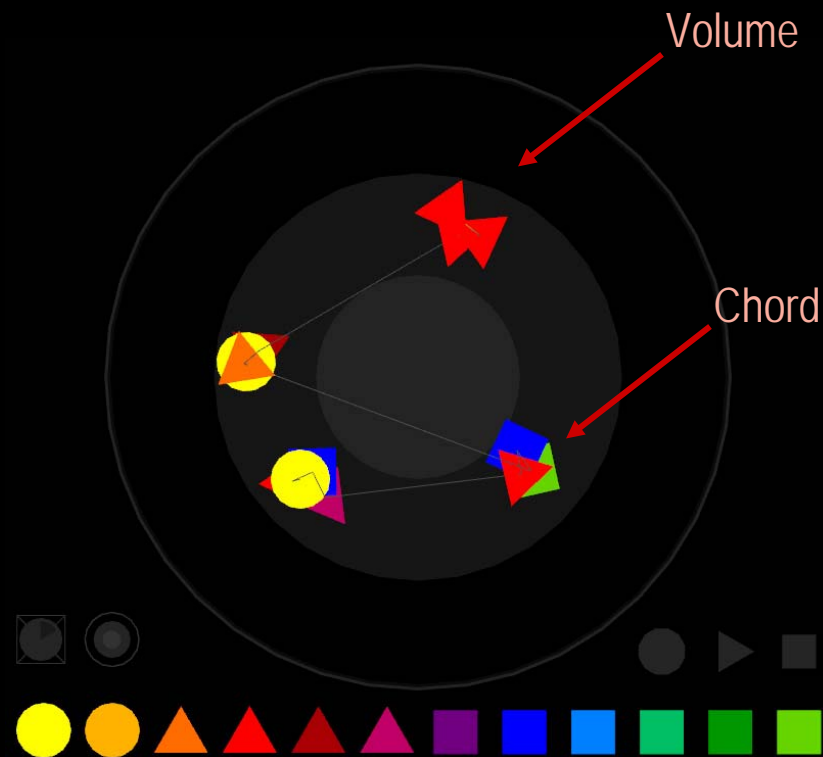


Fig. 9. Creating Higher Volume and Chords

- The notes would be played in the order as you put the tones/colors/shapes over the surface.
- During the notes are going to be hear, the shapes and the colors are going to be moved – first a kind of short blinking and then a permanently rotating. This has the meaning that the melody is currently running...
- The result can be for example recorded and played again overlaid with another composition.

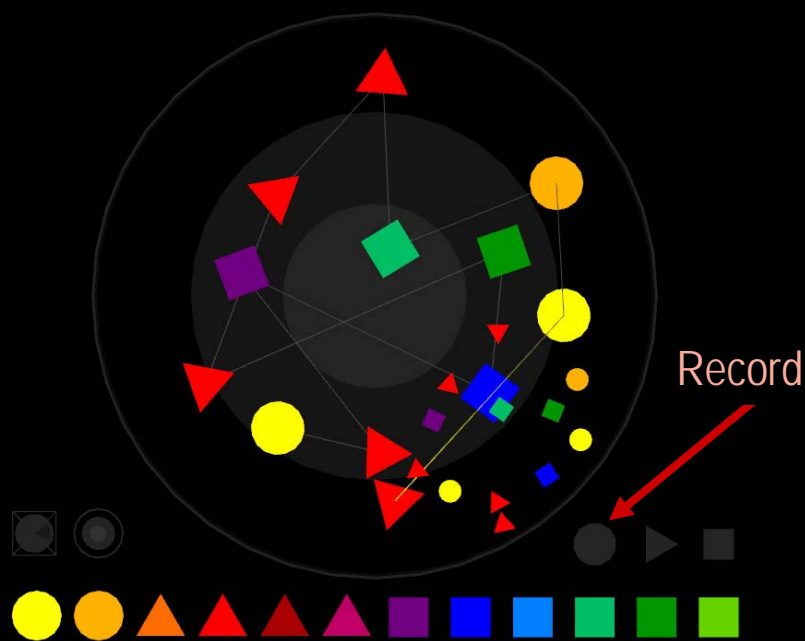


Fig. 10. Symbol used for recording a melody/image

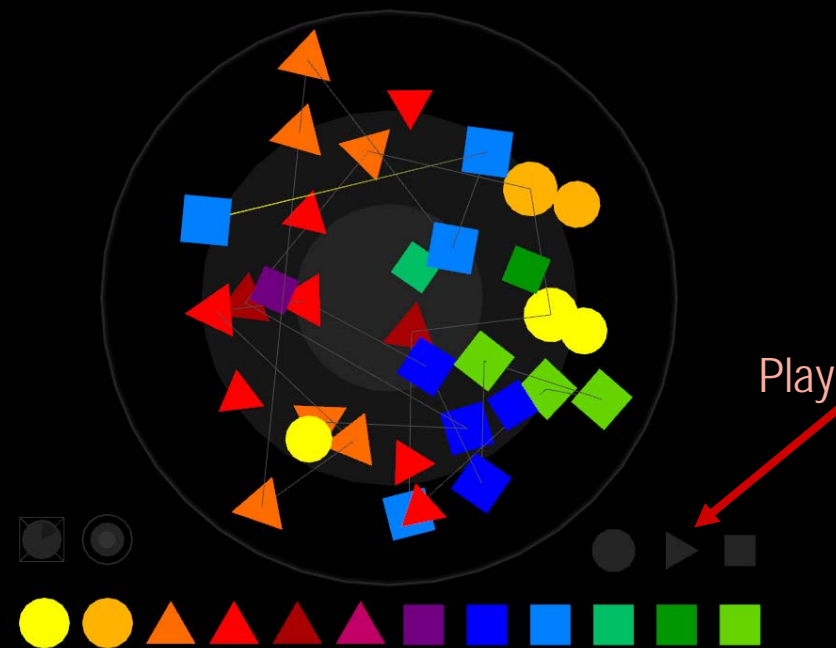


Fig. 11. Symbol used for playing a recorded melody/image

- It is also possible to change the Tempo and make breaks (if you put it over a tone once) or delete tones/shapes (if you put it over a break).
- The shapes are going to be played relatively to this tempo.

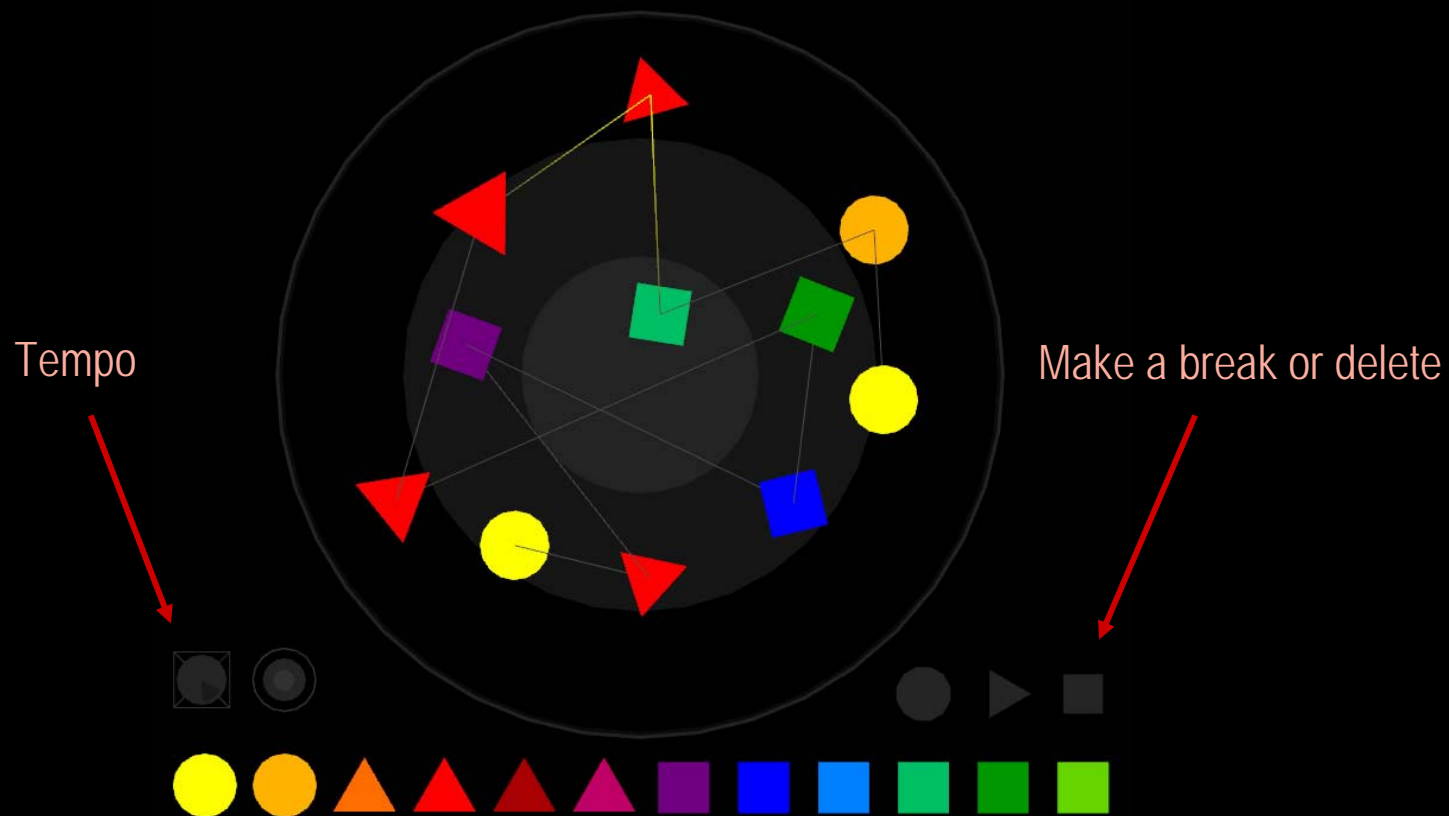


Fig. 12. Symbol used for changing the Tempo, make breaks and delete

-If the users doesn't put the shapes a few minutes over the surface, the shapes/sounds/colors begins to become more and more complex.

- for example first will be played over each note a major third (from C a C-E-C), then a C-E-G-E-C, C-E-G-H-G-E-C and so forth. Also the Schönberg-Scala will be mixed with this classical rules.

-the shapes are going to be multiplied **flowing rotated parable** in all directions covering the surface more and more...

-when a new user comes and puts a shape/color/tone over the surface it begins everything from the first step, everything will be simplified again and then it will be another complex structure continuously developed.

-the shapes can then be tiled and create new smaller shapes and the tones of the chord can create other chords....

- the optic result of this interactive work is a kind of geometric abstraction, which is being rotated and permanently moving.
- the user can create a kind of “all-over”-moving-image or also a “chromatic”-moving-image
- The melody can be arranged as a classic one or a modern one, or a mix of both of them.

- For the future it is planned to implement rules about for example change the smoothness, sharpness, of the shapes, etc. Each of these would have consequences on for example legato, staccato, etc.