SyneSynth

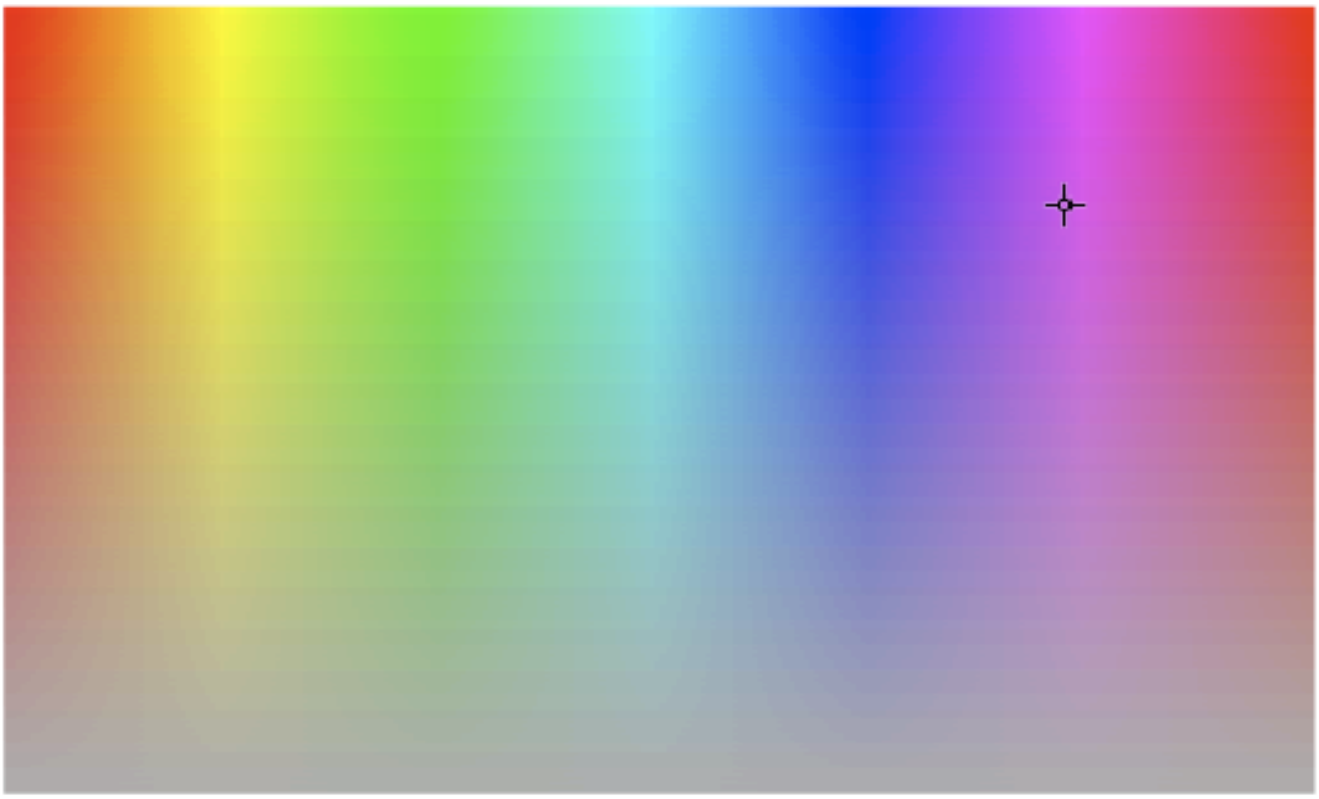
created by Benjamin Martinson

watch animation

fullscreen

volume

animation speed



About the SyneSynth

The Synesthetic Synthesizer (SyneSynth) is an interactive composition built with Adobe Flash and loops of synthesized and pre-recorded material. The software generates music by mixing 44 different loops in different ways to create a sound world correlating with a specific color.

This program has two modes: "Watch animation," which generates a unique multimedia performance of the work by following the color-change instructions in the XML code on the last page, and "Play the SyneSynth," in which the user can treat the software more like an instrument than a composition, by controlling the color of the music oneself. An explanation for using this interface can be seen on the following page.

Colors are processed in this software by splitting them into three channels: red, green, and blue. For example, a value of 100% red, 0% green, and 0% blue would create a vibrant red, 0% red, 100% green, 100% blue would create a bright cyan, and 50% red, 50% green, and 50% blue would create a medium gray. The 44 loops which combine to create the music heard are each associated with one of these three channels.

The interplay between color and the music can be understood in two layers. The background layer is the harmonic material. Each loop contains a portion of a color's harmony, and each fades in and out at random times. However, the volume set for each loop is directly dependent on the the value of the channel with which it associates. A green value of 100%, for example, will mix in more of the green loops of higher pitch, and a green value of 0% will favor the lowest. The algorithm gets more complicated, however, since the green channel will be nearly silent if red or blue approaches 100% (due to the fact that we would perceive the presence of red or blue rather than the absence of green.)

The foreground layer is made up of fragments of text. Inversely to the background, these come in at entirely random volumes, but the probability that any one of them will start playing at any moment is informed by the value of their associated channel. For example, a value of 0% red will have a silent red foreground, while a value of 100% red will tend to have several fragments of the red text playing at once. The texts that are presented in the red, green, and blue channels are chosen from the old testament and cover the topics of death, survival and birth, respectively.

While each primary color evokes a distinct sound-world, some of the more interesting music comes from subtle mixtures. Mixing red and blue creates purple, and likewise the resulting sound-world of purple is a cascading mixture of the red and blue sound-worlds. By mixing colors, one can tap into almost 17 million distinct sound-worlds, defined by differences in hue, saturation, and brightness.

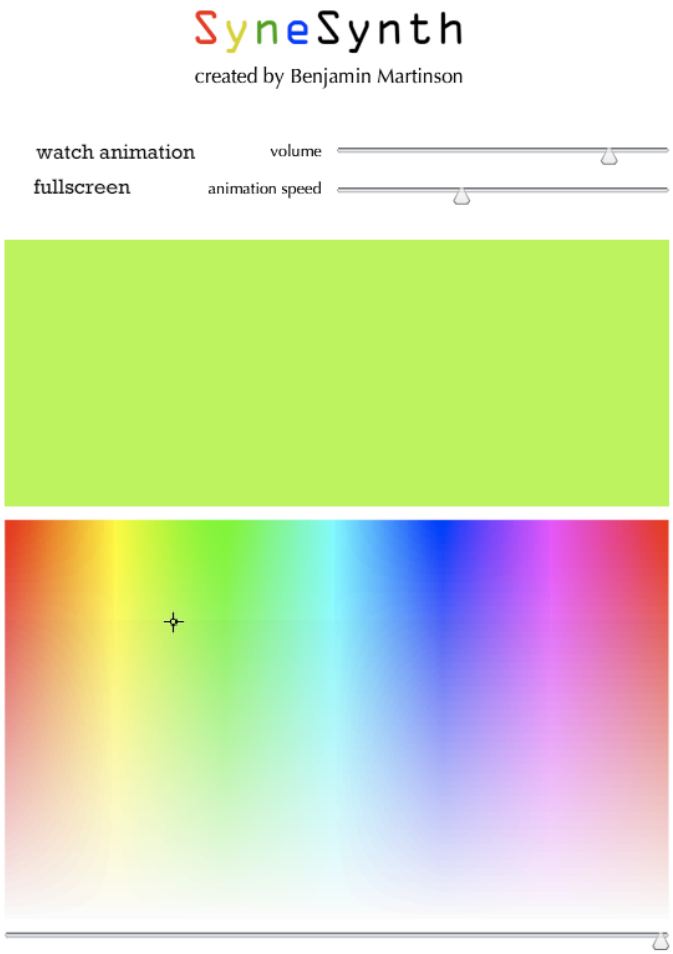
While this piece is complicated in its concept and especially in the details of its internal code, the SyneSynth is meant as a work of art, not theory. Therefore, the best way for one to experience and understand this work is to watch the animation and play the "instrument" oneself. The SyneSynth can be loaded at http://www.BenjaminMartinson.com/synesynth and can be run directly from your browser.

The user interface

The user interface is one of the two ways in which the SyneSynth can be experienced. This method allows the user to change the color, either immediately or gradually, and listen as the music shifts to reflect the chosen color.

This interface is made up of four controls: volume, animation speed, the palette, and brightness (the bottom slider). The function of the volume slider is obvious, and the animation speed slider is used to control the speed at which the pointer moves to a new color when that color is clicked. The palette and brightness slider are used to change the color of the music. Since every color can be understood to represent values in three dimensions (be it red, green and blue or hue, saturation and brightness) a computer screen cannot display every possible color at one time, and therefore the additional slider is necessary.

As long as the SyneSynth user interface is running, music is being generated–however, you will initially need to turn up the volume to hear it. While there are almost 17 million colors to choose from, it's important to remember that each color corresponds to a "state of mind" in the program, not an individual sound. Sitting on one color, the program will spin out an endless cascade of unique music derived from that color. In this sense, the SyneSynth user interface becomes less of an instrument. One could indeed argue that in this case the real composer ceases to be the user or creator, but the program itself.



The user is given control of the volume and the animation speed in the sliders to the right. The volume, as a courtesy, begins at the 0 position.

The color that the SyneSynth is currently set to is displayed in the box on the right. As the pointer moves across the palette, this dynamically changes, as does the music that is being mixed.

The user is given the ability to change colors by using this color palette. Clicking anywhere on the palette will move the pointer to the spot that was clicked. The speed at which the pointer moves is the "animation speed" mentioned above. As well, the user can drag this pointer for more control.

This palette represents all hues at all levels of saturation, at a certain level of brightness. As such, it is a 2-dimensional cross-section of the 3-dimensional color-space.

The slider at the bottom changes the brightness of the palette above.

```
<animation>
	<!-- Introduction to music -->
	<keyframe time="0"   color="000000"                    volume="0"   />
	<keyframe time="200" color="000000" motion="linear"    volume="60"  />
	<keyframe time="200" color="000000" motion="linear"    volume="60"  />
	<keyframe time="300" color="440000" motion="linear"    volume="60"  />
	<keyframe time="100" color="440000" motion="linear"    volume="60"  />
	<keyframe time="100" color="332200" motion="linear"    volume="60"  />
	<keyframe time="200" color="000000" motion="sinusoidal" volume="40"  />

	<!--Explore colors -->
	<keyframe time="300" color="005500" motion="linear"    volume="60"  />
	<keyframe time="200" color="666600" motion="linear"    volume="50"  />
	<keyframe time="200" color="660000" motion="linear"    volume="50"  />
	<keyframe time="100" color="550055" motion="sinusoidal" volume="50"  />
	<keyframe time="50"  color="550055" motion="linear"    volume="40"  />

	<!-- Intensify -->
	<keyframe time="200" color="444444" motion="linear"    volume="50"  />
	<keyframe time="200" color="999999" motion="linear"    volume="80"  />

	<!--Explore Colors-->
	<keyframe time="200" color="553399" motion="linear"    volume="70"  />
	<keyframe time="100" color="000099" motion="linear"    volume="60"  />
	<keyframe time="200" color="009999" motion="linear"    volume="60"  />
	<keyframe time="100" color="00AA00" motion="sinusoidal" volume="65"  />
	<keyframe time="100" color="999900" motion="sinusoidal" volume="70"  />
	<keyframe time="80"  color="BB0000" motion="sinusoidal" volume="75"  />
	<keyframe time="60"  color="AA33AA" motion="linear"    volume="80"  />
	<keyframe time="50"  color="3333CC" motion="linear"    volume="85"  />

	<!-- Awaken -->
	<keyframe time="50"  color="000066" motion="sinusoidal" volume="60"  />
	<keyframe time="200" color="444444" motion="linear"    volume="50"  />
	<keyframe time="200" color="FFFF44" motion="sinusoidal" volume="80"  />

	<!-- Spiral to the top -->
	<keyframe time="50"  color="FF9955" motion="linear"    volume="80"  />
	<keyframe time="100" color="66FF66" motion="sinusoidal" volume="80"  />
	<keyframe time="80"  color="66DDDD" motion="linear"    volume="80"  />
	<keyframe time="70"  color="AAAAFF" motion="linear"    volume="82"  />
	<keyframe time="60"  color="FFAAFF" motion="linear"    volume="84"  />
	<keyframe time="50"  color="FFBBBB" motion="linear"    volume="86"  />
	<keyframe time="40"  color="FFFFAA" motion="linear"    volume="88"  />
	<keyframe time="40"  color="BBFFBB" motion="linear"    volume="90"  />
	<keyframe time="40"  color="AAFFFF" motion="linear"    volume="90"  />
	<keyframe time="100" color="FFFFFF" motion="linear"    volume="100" />

	<!-- Slow fade out -->
	<keyframe time="100" color="FFFFFF" motion="linear"    volume="80"  />
	<keyframe time="400" color="FFFFFF" motion="sinusoidal" volume="0"   />

	<!-- 4620 total frames = about 4'49" at 16 frames/second -->
</animation>
```