The Alphabet Synthesis Machine

by Golan Levin, with Jonathan Feinberg and Cassidy Curtis.

http://alphabet.tmema.org/

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CONTRIBUTORS

The Alphabet Synthesis Machine was created by:
**Golan Levin** *[USA, concept / direction / interface design & programming]*, with
Jonathan Feinberg *[USA, database & CGI programming]*
Cassidy Curtis *[additional concept]*

An interactive online artwork created for Art21 and PBS by Golan Levin with
Jonathan Feinberg and Cassidy Curtis, the *Alphabet Synthesis Machine* is a co-
production of Art21, Inc., New York City, and The Arts Company, Cambridge, MA.

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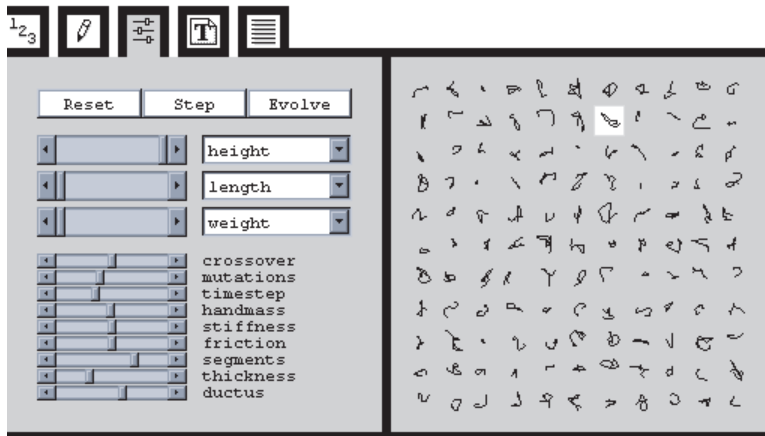
OVERVIEW

The *Alphabet Synthesis Machine* is an interactive online artwork which allows one to create and evolve the possible writing systems of one's own imaginary civilizations. The abstract alphabets produced by the Machine can be downloaded as PC-format TrueType fonts, and are entered into a comprehensive archive of user creations. The products of the Machine probe the liminal territories between familiarity and chaos, language and gesture.

ARTISTS' STATEMENT

I very clearly remember the first time that I encountered an unfamiliar alphabet: it was an event which occurred in my family's synagogue when I was very small, perhaps four years old. I had just learned to read English, but it had not yet been explained to me that there could exist other writing systems apart from the one I knew. One evening during a ceremony, I asked my father what the funny black squiggles were in the prayer books we were holding. "Sh!" he said: "that is how we talk with God." Astonished, I became transfixed by the black squiggles, which no longer seemed quite so funny; but although I stared at them until I was dizzy, I could find no way to render them intelligible. Only later did I learn that these marks were Hebrew. Since that time, I have been preoccupied by the possibility that abstract forms can connect us to a reality beyond language, and bridge the thin line between nonsense and the divine.

Somewhere between the visual noise of television static, and the visual order of the text you are now reading, lies a fascinating realm of visual semi-sense. Precisely where do the borders of that realm lie? By studying that realm of semi-sense, we surmise that we may come to a deeper understanding of precisely how sense-making occurs at all. To do this, we have written software which attempts to generate artifacts that seem to make sense, but in fact, don't.

The particular goal of this work is to bring about the specific feeling of semi-sense one experiences when one recognizes—but cannot read—the unfamiliar writing of another culture. Our *Alphabet Synthesis Machine* is an interactive system in which a user guides an evolutionary genetic algorithm in order to create and explore coherent sets of abstract glyphs. Hopefully, these mark-like forms resemble the plausible alphabets of human civilizations with which we simply happen to be unacquainted.

TECHNICAL REALIZATION

The *Alphabet Synthesis Machine* is comprised of two software systems: an inter-active client-side applet, which allows users to create and evolve their abstract letterforms, and a server-side archiving system which stores the user creations as downloadable TrueType fonts.

At the heart of the interactive applet is a genetic algorithm. This algorithm attempts to evolve a population of candidate glyphs according to a set of fitness metrics established by the user. Some of these fitness metrics are obtained from an initial 'seed glyph' provided by the user, while others are controlled by the user in real-time, through a set of parametric sliders and other interface controls. The glyphs are evolved both as individuals (i.e. each in relation to an ideal metric, in order to enhance their individual 'letterness'), and also as a species (i.e. each in contradistinction to each other, in order to enhance the variety of the alphabet as a whole).

The glyphs themselves are the virtual trajectories of synthetic hand movements, produced by a 3-dimensional physics simulation of a hand-pen-paper system. This model incorporates such forces as the response of hand muscles to neural firing rates; the inertia and intrisic viscosity of the arm; gravity; and the friction of the stylus against the virtual writing surface.

When the user is finished evolving their abstract alphabet, its glyphs are converted into quadratic Bezier outlines and then transmitted to the server, which stores them as a PC-formatted TrueType font. This font can be downloaded at the time of its creation, or at any future time from an online archives of user creations. Visitors have created more than 5000 alphabets since the project's launch (1 October 2001). While this version of the machine (1.0) deals strictly with single-stroked cursive alphabetic forms, future versions of the ASM will explore the possibilities of cut- and printed-letterform simulation.

CONTRIBUTOR BIOGRAPHIES

Golan Levin [golan@flong.com, b.1972] is an artist, designer and composer interested in developing artifacts and experiences which explore supple new modes of audiovisual expression. His work has focused on the design of systems for the creation and performance of simultaneous image and sound, as part of a more general examination of communications protocols for individual engagement and social dialogue. Levin is the recipient of an Award of Distinction in the Prix Ars Electronica 2000 for his *Audiovisual Environment Suite* (AVES) interactive software and its accompanying audiovisual performance, *Scribble*. Levin received undergraduate and graduate degrees from the MIT Media Laboratory, where he studied with John Maeda in the Aesthetics and Computation Group. Prior to this, he worked as a research scientist and designer at Interval Research Corporation for four years. He currently resides in New York City.

Jonathan Feinberg is a New York City-based software engineer and musician, and has collaborated on a number of interactive artworks with Martin Wattenberg, Marek Walczac, and Golan Levin.

Cassidy Curtis is an animator and computer graphics researcher based in San Francisco. Cassidy has worked on research projects ranging from synthetic watercolor simulations, to fabric simulations for the movie Shrek. Cassidy works at Pacific Data Images (PDI) in Palo Alto, California.

RELATED BIBLIOGRAPHY

"By the meaningless sign linked to the meaningless sound we have built the shape and meaning of Western man." — Marshall McLuhan, The Gutenberg Galaxy, 1962.

"A page of type is one of the most abstract pieces of communication I can imagine. Symbols of the most ancient origin can be put together in ways that stimulate they eye, through pattern, and the mind, through thought." — Warren Chappell, A Short History of the Printed Word, 1970.

"That language may be in itself an arbitrary absurdity, that it may communicate nothing except in its stuttering essence, that it may depend almost entirely not on its enunciators but on its interpreters for its existence, and that the role of readers is to render visible that which writing suggests in its hints and shadows." Manguel, History of Reading, 1995.

"By this art you may contemplate the variation of the 23 letters." — Jorge Luis Borges, The Library of Babel, in Labyrinths, 1960.

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