

Histories of the Future

by Patrick LeMieux

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For Patrick LeMieux, the future of electronic literature is not before us, and instead entails an investigation of the past—of the unknowable territories we collaborate with through e-lit.

This series of short interventions were made at the “Futures of Electronic Literature” discussion at the bi-annual Electronic Literature Organization conference in 2012. Titled “Electrifying Literature: Affordances and Constraints,” the conference took place at West Virginia University in Morgantown on June 20th to June 23rd. The contributors were organized by Stephanie Strickland to offer suggestions on how to improve the organization as it attempts to re-define its mission in a shifting cultural, economic, and technological landscape. Ranging from the concrete to the poetic to the theoretical, the following nine short statements were made by a group of emerging artists, scholars, and practitioners from a variety of disciplines and backgrounds.

A small Java applet, running at a hundred frames per second, has been continually rendering all possible combinations of black and white cells within a 32 by 32 pixel grid since January 27, 1997 (see Figure 1). Inspired by the dimension and format of Susan Kare’s now-ubiquitous [Macintosh icons](#), John Simon Jr.’s *Every Icon* (1997) attempts to exhaust the potential of this tiny, two-tone canvas one square at a time. After flickering faster than the eye could see for what seemed an eternity, the first cell of the second row turned black on June 8, 1998, well over a year after being launched. Simon’s software will take more than 5.85 billion years

to reach the third line¹—sometime in a future beyond the death of the sun. When asked to contribute to a discussion on the future of the Electronic Literature Organization (ELO), my thoughts did not immediately turn toward money, morale, or membership (as important as they are) but to those multitemporal moments and multiscale movements with which electronic literature trouble the very concept of futurity. The “Future of the ELO” is contingent not only on institutional memory but the material inscriptions of digital media like Simon’s *Every Icon*.

Figure 1. This .GIF of *Every Icon* was recorded from [here](#) at approximately 18:00:00 on Monday, February 10, 2014.²

Imagining a future beyond the third line of *Every Icon* requires some serious computation, let alone calculating the total life expectancy of Simon’s artwork. As with many programming languages, Java’s primitive data types are intimately bound to the bit or binary digit, the most basic unit of computer memory which can only oscillate between two states: on or off, 0 or 1. The “byte” data type, for example, can hold any number from -128 to 127, representing the 256 unique combinations possible with 8 bits. The “int” or integer data type, used to store whole numbers is composed of 32 bits that can be used to represent numeric values from -2^{31} to $2^{31}-1$. Unfortunately, 2^{1024} lies far outside the range of Java’s integers and even the 64-bit “double” data type is no match for such a figure. Luckily, there exists a class within Java’s math library that can manipulate “immutable arbitrary-precision integers” or “BigIntegers” that correspond not to 32- or 64- or even 128-bit chunks of memory, but as much memory as is needed.³ Using these string-like BigIntegers, 2^{1024} can be rendered in full, a value that far exceeds the memory limitations of the bit, byte, int, and double:

17976931348623159077293051907890247336179769789423065
727343008115773267580550096313270847732240753602112011
38798713933576587897688144166224928474306394741243777
6789342486548527630221960124609411945308295208500576
88381506823424628814739131105408272371633505106845862
98239947245938479716304835356329624224137216.

Despite the fact that 2^{1024} is a discrete number, that each of its 309 digits are known quantities, and that mathematical operations may be carried out both with and within it, enumeration of such a figure not only outpaces human consciousness but time and space. We cannot count to a duocentillion. As with Carl Sagan's [demonstration of a "googolplex"](#) in *Cosmos*, there are not enough atoms in the known universe to account for such numbers.⁴

Unlike $10^{10^{100}}$, 2^{1024} , and even 0, which substitute symbol for count,⁵ *Every Icon* attempts to render an enormous sum in bit shifts, processor cycles, and liquid crystal refractions—what Matthew Kirschenbaum⁶ might call a "forensic" territory rather than a "formal" map. And like Borges' cavalier cartographers from "On Exactitude in Science" or Swift's Lilliputian lecturers in *Gulliver's Travels*, Simon hoped to exhaust a small set of material constraints but ended up exhausting the limits of human experience (see Figure 2).⁷ "While *Every Icon* is resolved conceptually," he writes, "it is unresolvable in practice."⁸ We can never fully experience the durational quality of either the macro or micro processes of *Every Icon* not to mention the recombinatory potential of more complex electronics that fill our desks, laps, and pockets.

Figure 2. When a summary absolutely will not do, Borges' one-paragraph story, first published in *os Anales de Buenos Aires* in 1946, must be reproduced in full.⁹

In “Dwarven Epitaphs: Procedural Histories in *Dwarf Fortress*” (a longer meditation on a [more complex microcosmos](#)), Stephanie Boluk and I argue “the rise of electronic forms of inscription places unique pressure on the concept of writing and the concept of history.”¹⁰ Surrounded by ticking medias, it is no coincidence that hyperbolic claims about the “end of history” have been made from both technological as well as cultural perspectives as computational media becomes more ubiquitous. Beyond Friedrich Kittler’s apocalyptic tidings at the beginning of *Gramophone, Film, Typewriter* (1980),¹¹ Wendy Chun describes digital storage as a condition of “enduring ephemeral”¹² and Terry Harpold has argued that the history of networked and programmable media has been subject to a dehistoricized “upgrade path”—the endlessly rewritable “new” in a new media economically constructed around planned obsolescence.¹³ Although digital technologies elide both cognitive and sensory faculties, new forms of historical inscription are being automated on an unprecedented scale.

The historian of the future may find herself mining server logs to reconstruct the *World of Warcraft*¹⁴ or checking where, when, and by whom revisions were made in notable Google Docs. Smart phone surveillance and networked life-logging will offer composite records of individual geographic movement while carrier hotels across the continent compile the ebb and flow of mass communication along with thousands of petabytes of content per year.¹⁵ All data becomes metadata as digital technologies write a microtemporal history of dynamic processes that include, but are not limited to, the movements of humanity. Like Det. Lester Freamon [building his drug case](#) based on when and where individual phone calls were made (and not the content of conversation) in *The Wire*¹⁶ or the University of Miami physicists analyzing the 2008 financial crash through micromovements on Wall Street,¹⁷ big data appears to be most

useful in retrospect. Despite the extra-functional, machinic history appending each and every technological inscription encoded today, we continue to simultaneously ignore and overestimate our position as the subject of history. Human consciousness, as a lens, seems at once too general and too specific to capture the magnitude and *minitude* of historical inscription.

The future of the Electronic Literature Organization, then, is not merely contingent on the discussion generated from conference panels nor the artistic and literary intentions of its members' projects, but is constantly co-written by computational collaborators. In some sense, works of electronic literature, e-poetry, and digital art operate according to the same automatic and serialized logic as telephone records, bank invoice, GPS systems, and email exchange. The difference is that unlike data logs and transaction records, e-lit invites speculation on the nature of processor cycles and refresh rates, of electrical currents and electrons. Electronic literature attempts to approach abstract, autonomous software in terms of human forms of inquiry and teaches us to recognize the actions of the nonhuman agents with which live. History is being written within us, around us, and without us—quotidian events, in mechanical and computational systems, and in the geological and cosmological happenings of the universe. And though we can speculate on the existence of nonhuman agents and how deeply they affect our lives, we can never experience the radically distinct ontological spaces of the digital, the microtemporal, and the cosmological. For me then, the Electronic Literature Organization functions, and I hope continues to function, as an ontological lens with which to observe the effects of certain stars—points of light projecting not a future, but some already distant past (see Figure 3, 4, 5, 6, 7 ... 2^{1024}).

Figure 3. Instead of enumerating through every element of a 32 by 32 grid, *Every Icon Editor* (2014) is an interactive Java applet that projects the date of any arbitrary icon. For example, the time at which the Electronic Literature Organization logo will appear in John Simon's *Every Icon* is forecasted above. Just click or drag within grid to turn cells from white to black (or black to white). The date in which each outcome appears is updated with every edit. *Every Icon Editor* is available [here](#).

Figure 4. Four historic moments in the history of John Simon's *Every Icon* can be calculated with *Every Icon Editor*. [1] The first icon ever, 1024 white squares, appeared only for an instant on January 27, 1997 at 9:42:30. [2] After that, each individual icon represents a hundredth of a second since Simon's project was launched, including the precise moment *Every Icon Editor* was first compiled on February 25, 2014 at approximately 15:41:30. [3] Some edited icons are scheduled for enumeration only after the sun expands then collapses into an earth-sized diamond approximately 4-5 billion years from the present. [4] The ultimate icon, with which both *Every Icon* and *Every Icon Editor* terminate, projects a meaningless date: 14:50:12 on December 13 of a year that cannot be easily written.

Figure 5. Oriented to the left side of the grid, each of Susan Kare's original Macintosh icons will appear for a hundredth of a second in *Every Icon*.

Figure 6. Taking into account every unique orientation, Kare's computer and document icons will be rendered a total of seven times each. A smaller icon like her famous wristwatch will occur

892 times within *Every Icon*, each one displaced by a single pixel and millions of years.

Figure 7. Even Kare's remarkably faithful portraits of Steve Jobs—first in 1983 then again in 2011—are slated to appear in *Every Icon*. Creativity is pre-calculated and all potential is exhausted but only in a time beyond thought and only for an instant within an eternity of ordered noise.

Patrick LeMieux is an artist, game designer, and Ph.D. student in the Department of Art, Art History, and Visual Studies at Duke University. Two recent projects include [Open House](#), a telematic artwork for virtually squatting the US housing collapse, and [Speculation](#), an alternate reality game based on finance capitalism and the culture of greed on Wall Street.

NOTE 2.

When the online edition of Simon's artwork is loaded, both the local time and processor speed of the computer are taken into account to initialize pixel position.

NOTE 3.

See documentation for the BigInteger[here](#).

NOTE 4.

Sagan, Carl. "The Lives of the Stars." *Cosmos*. Cosmos Studios, 2002, DVD.

NOTE 5.

For more information on how symbolic language has come to permeate numeric representation see Rotman, Brian. *Signifying Nothing: The Semiotics of Zero*. New York: St. Martin's Press, 1987. Print.

NOTE 6.

Matthew Kirschenbaum distinguishes between forensic and formal media in Kirschenbaum, Matthew. *Mechanisms: New Media and the Forensic Imagination*. Cambridge: MIT Press, 2008. Print.

NOTE 7.

Carroll, Borges, and Swift each offer apocryphal anecdotes that satirize the enlightenment project of a fixed, absolutely clear, indexical language by modeling the chaos of materiality with no representational capacity or symbolic modeling.

NOTE 8.

["Simon, John. "Every Icon." Parachute: Contemporary Art Magazine. Jan. 1997: 85. Web.](#)

NOTE 9.

Borges, Jorge L. "On Exactitude in Science." *Collected Fictions*. Trans. Andrew Hurley. New York: Penguin Books, 1998. 325. Print.

NOTE 10.

Boluk, Stephanie and Patrick LeMieux. "Dwarven Epitaphs: Procedural Histories in Dwarf Fortress." *Comparative Textual Media: Transforming the Humanities in the Postprint Era*. Ed. N. Katherine Hayles and Jessica Pressman. Minneapolis: University of Minnesota Press, 2013. Print.

NOTE 11.

Kittler, Friedrich A, Geoffrey Winthrop-Young, and Michael Wutz. *Gramophone, Film, Typewriter*. Stanford: Stanford University Press, 1999. Print.

NOTE 12.

[Chun, Wendy Hui Kyong. "The Enduring Ephemeral, or the Future Is a Memory." *Critical Inquiry* 35. 148-171. Web.](#)

NOTE 13.

Harpold, Terry. *Ex-foliations: Reading Machines and the Upgrade Path*. Minneapolis: University of Minnesota Press, 2009. Print.

NOTE 14.

For more on the preservation of videogames see the various Preserving Virtual Worlds projects [here](#), and especially McDonough, J., Olendorf, R., Kirschenbaum, M., Kraus, K., Reside, D., Donahue, R., Phelps, A., Egert, C., Lowood, H., and Rojo, S. "Preserving Virtual Worlds Final Report." *Illinois Digital Environment for Access to Learning and Scholarship*. 31 Oct. 2010. Web.

NOTE 15.

For an in depth study of carrier hotels and hardware supporting the Internet see [Patterson, Nancy. "Bandwidth is Political: Reachability in the Public Internet." *Diss. York University. 2009. Web.*](#)

NOTE 16.

Simon, David. "The Wire." *The Wire: The Complete Series*. HBO Studios, 2011 DVD.

NOTE 17.

Johnson, Neil, Guannan Zhao, Eric Hunsader, Jing Meng, Amith Ravindar, Spencer Carran, and Brian Tivnan. "Financial Black Swans Driven by Ultrafast Machine Ecology." ArXiv.org, 7 Feb. 2012. Web.