

New Novel Machines:  
*Nanowatt and World Clock*  
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**Abstract**

*My Winchester's Nightmare: A Novel Machine* (1999) was developed to bring the interactor's input and the system's output together into a texture like that of novelistic prose. Almost fifteen years later, after an electronic literature practice mainly related to poetry, I have developed two new "novel machines." Rather than being works of interactive fiction, one (*Nanowatt*, 2013) is a collaborative demoscene production (specifically, a single-loading VIC-20 demo) and the other (*World Clock*, 2013) is a novel generator with accompanying printed book. These two productions offer an opportunity to discuss how my own and other highly computational electronic literature relates to the novel. *Nanowatt* and *World Clock* are non-interactive but use computation to manipulate language at low levels. I discuss these aspects and other recent electronic literature that engages the novel, considering to what extent novel-like computational literature in general is becoming less interactive and more fine-grained in its involvement with language.

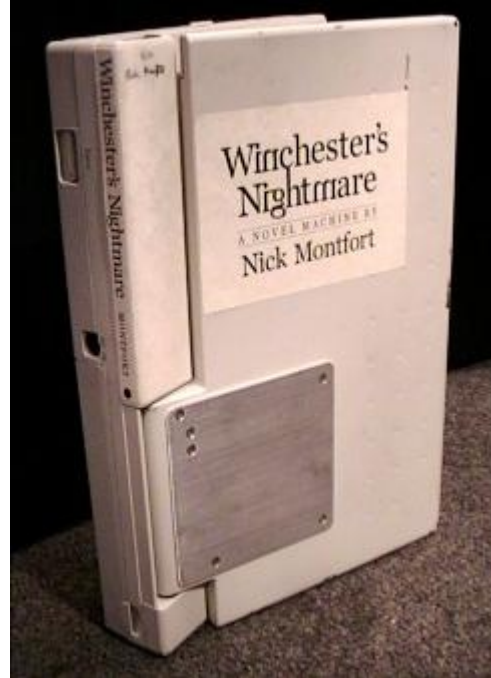
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A technical report from

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Suite 900, Mountain View, California, 94041, USA.

In 1999 I released *Winchester's Nightmare: A Novel Machine*, a work of interactive fiction developed in Inform 6 with extensive library modifications to cast the verbal exchange in a third-person framework, bringing the interactor's input and the system's output together into a texture more like that of novelistic prose. Speaking of library modifications, the player character in this work is Sarah Winchester, eccentric architect of the curious Winchester Mansion (which does not appear in *Winchester's Nightmare*) and heir to the rifle company's fortune. My novel machine was influenced by Steve Meretzky's *A Mind Forever Voyaging*, which takes its title from Wordsworth's *Prelude*; and the interactive fiction work of poets, mainly Robert Pinsky's *Mindwheel* and to some extent Thomas Disch's *Amnesia*; and the work of John Ashbery, although most strongly by his article "Mystery Mansion," about the Winchester Mansion, which appeared in the March 1987 issue of *House and Garden*. The interactive fiction was (and is) free to download and play, but I also created an edition of ten "hardback" copies on decommissioned IRS notebook computers.



Almost fifteen years later, in an electronic literature practice mainly related to poetry, I have developed two new "novel machines," *Nanowatt* and *World Clock*.

Neither *Nanowatt* or *World Clock* is a work of interactive fiction. One is an old-school demoscene production (specifically, a single-loading VIC-20 demo) and the other a fairly concise novel generator. These two novel machines, one collaborative, one individual, offer me an opportunity to discuss how my own and other highly computational electronic literature relates to the novel. It's a curious question to ask of a group that has been, in recent years, very productively discussing the relationship of electronic literature to video and computer gaming, to concrete poetry, to artists' books, and to the Web at large. But this is my question now: What is the relationship of recent electronic literature to the novel?

What I am considering now is, specifically, *highly computational* electronic literature. By "highly computational" I mean to indicate something very similar to Chris Crawford's concept of "process intensity." If you were to play the role of the computer and present such an electronic literature work manually, you would not mainly be retyping or transcribing a text for the reader; you would be manipulating symbols, calculating results, perhaps rolling dice, and then determining the outcome based on this.

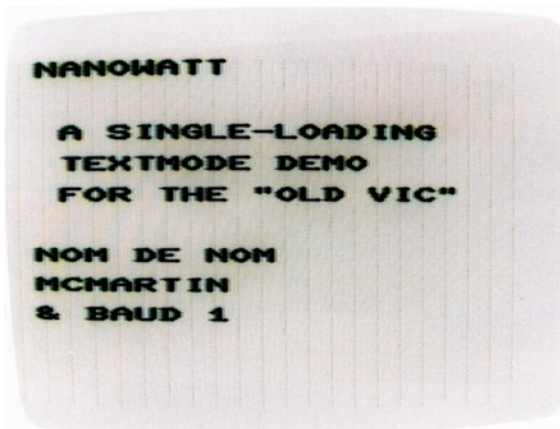
Some electronic literature is a complex surface of text, classically called a hypertext. Some of it is a multimedia experience whose production and viewing has been enabled by the computer. Some of it is a networked performance, relying on the formal and material properties of the systems that transmit it. These works are not particularly

computational, and they do not need to be computational for their authors to achieve their goals. There is plenty of fascinating work of these sorts that has been rolled out recently, from subaltern Twine hypertexts to international videopoems to the performance @Horse\_ebooks with its dramatic, M. Night Shyamalan-like reverse robot reveal. I am not sure that much of it is particularly related to the novel, but perhaps it is. In any case, I will leave discussion of that for another time.

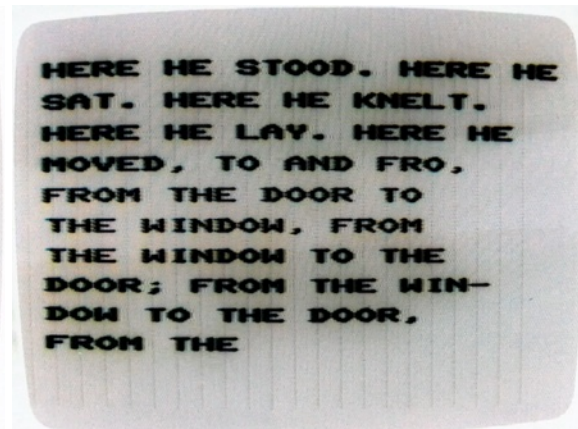
Instead, let us consider highly computational work, including bots, interactive fiction, story generators, poetry generators, systems to creatively translate and transform texts, and literary videogames. They may have multimedia elements or not. They may be interactive or not. They may use data from a network or refer to large local stores of data or not.

The two pieces of mine that I am discussing now happen to have three things in common: They have no multimedia elements, they are not interactive, and they make no use of the network, employing no or almost no data beyond the programs themselves.

*Nanowatt* is a 3.5 KB machine language program, written in assembly language, for a 1981 computer that can display only 22 characters on a line. This demo was completed and first shown publicly at Récursion, a demoparty in Montréal, on November 30, 2013. I developed the concept and programmed the demo working with French and Beckett expert Patsy Baudoin and with Michael C. Martin, who wrote the music and programmed the music system, Soundnaif. *Nanowatt* is not simply inspired by Samuel Beckett's second novel, *Watt*; it, like Jorge Luis Borges's famous author Pierre Menard, produces a long passage from *Watt* (and from the French translation of *Watt*) verbatim. *Nanowatt* is certainly not, itself, a novel, nor is it novelistic in length and scope. However, it is a work that specifically engages the novel and deals with a specific novel.



*Title screen of Nanowatt. All images are inverted video stills from the program running on a VIC-20 with Commodore 1702 monitor.*



*The initial English phase of Nanowatt. The song that plays throughout the generation of all Watt texts is Camino by mcmartin.*

THIS SOLID AND TASTE-  
FUL FURNITURE WAS  
SUBJECTED BY MR KNOTT  
TO FREQUENT CHANGES OF  
POSITION, BOTH ABSO-  
LUTE AND RELATIVE.  
THUS IT WAS NOT RARE  
TO FIND, ON THE  
SUNDAY, THE TALL-  
BOY ON ITS FEET  
BY THE FIRE, AND  
THE DRESSING-

*The second, longer phase of English text generation.*

I CAN'T GO ON.

*The "Krik!" text from Watt of frog sounds, which is the same in English and French, is presented rapidly after this.*

JE VAIS CONTINUER.

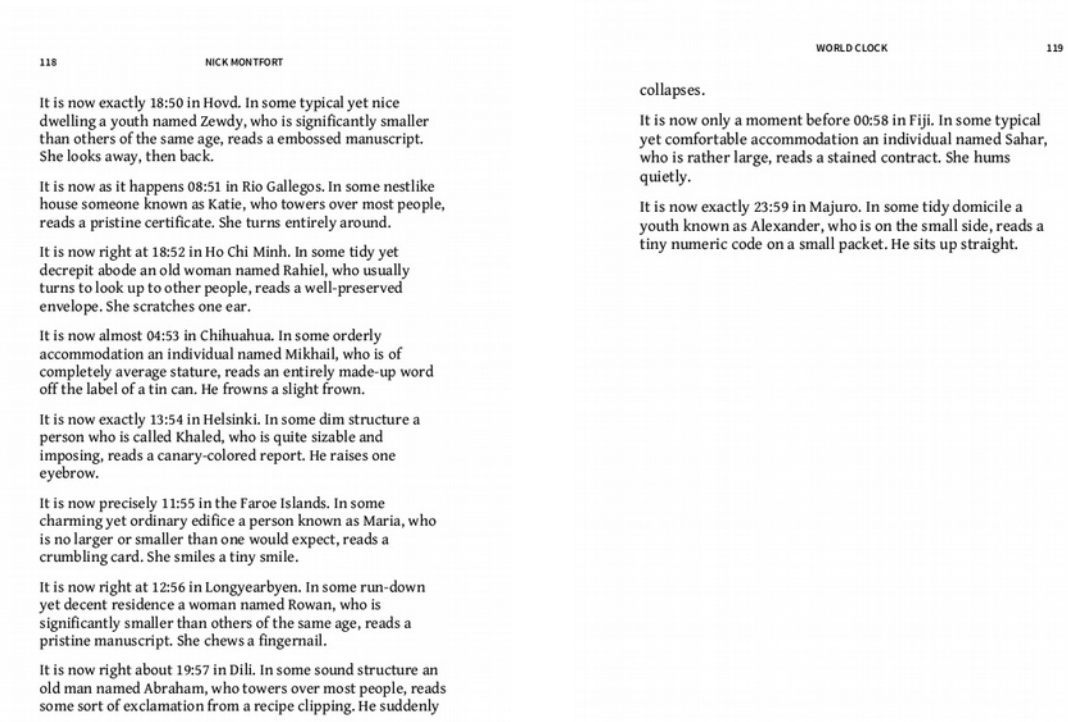
*The system can, in fact, go on.*

ICI IL SE TENAIT IM-  
MOBILE. DEBOUT. ASSIS.  
A GENOUX. COUCHE. ICI  
IL ALLAIT ET VENAIT.  
DE LA PORTE A LA  
FENETRE, DE LA FENE-  
TRE A LA PORTE;  
DE LA FENETRE A  
LA PORTE, DE LA  
PORTE A LA

*It continues to present the same texts in French. At the end of the production, there are shout-outs typical of the demoscene and another mcmartin song, a cover of The Neverending Story theme, plays.*

*World Clock*, both the novel and the novel-generating program, was created for Darius Kazemi's NaNoGenMo (National Novel Generation Month) and posted/released on November 30, 2013. It draws on "The Chronogram for 1998" by Harry Mathews and the short prose work "One Human Minute" (collected, in English translation, in the book of the same name) by Stanislaw Lem. Building on the workings of my simple generator *Lede* and similar programs, it portrays 1440 actions, all of them instances of reading, each being undertaken throughout the world at a different minute of one day. The output is certainly supposed to be novelistic, and computation is also supposed to be essential to the process of producing this novel. If anything could be done to validate this effort as novelistic, it would be something that recognizes, officially and institutionally, this work as a novel. For instance, literary translation into another language, or publication in a series of works that includes other novels – for instance,

*Finnegans Wake*. I could not manage this myself, but Piotr Marecki has managed both. *World Clock* now exists in Polish translation, and that translation is being published in the *Liberatura* series in Kraków. The source code for the generator is online, as is a PDF of the book, both linked to my blog, *Post Position*.



*The end of chapter 11 of World Clock.*

Compared to *Winchester's Nightmare* and earlier electronic literature that is explicitly related to the novel, such as Robert Pinsky's *Mindwheel* (prominently labeled "An Electronic Novel"), *Nanowatt* and *World Clock* are less interactive (as stated, they are non-interactive) while connecting computation and language in new ways. They are not well-understood as traditional texts, and are better thought of as cybertexts. Even better, perhaps, they should be thought of as computer programs, programs with extremely specific materialities, programs that are absolutely inseparable from (in the case of *Nanowatt*) the 6502 processor, the VIC sound and graphics chip, the 3.5kb free RAM of the VIC-20, and (in the case of *World Clock*) the "zoneinfo" time zone database.

Both of these cybertexts, these programs, manipulate text at a finer level of granularity than does *Winchester's Nightmare*, even if the result of this textual engagement is deterministic, as in *Nanowatt*, or without high-level variation, as in *World Clock*.

Is novel-like computational literature, in general, becoming less interactive and more fine-grained in its engagement with language? To answer this question, we must identify recent novelistic electronic literature, either work that identifies itself as a

novel or that has some significant relationship to the novel.

Out this year for the iPad is one the most powerful novelistic works of e-lit, Steve Tomasula's *TOC*, a much more complex and engaging treatment of time than the simple *World Clock*. Interactivity is essential to that experience; computation is not used a great deal beyond this as the work unfolds for the reader. While *TOC* is certainly interactive, its exquisite multimedia aspects are most visible and distinctive. By emphasizing high-quality visual and audio media, it represents an important contemporary direction for work that has also been taken, in different ways, by authors including Illya Szilak, David Clark, and Kate Pullinger.

In interactive fiction, one of the few recent works to be labeled a novel, and to have the virtual heft of one, is the 2008 *Blue Lacuna*, "an interactive novel" by Aaron Reed that is richly branching, with compelling environmental description and movement between worlds. As a parser-based interactive fiction with many different configurations of text, which can change in fine-grained ways, *Blue Lacuna* is the strongest contrast I can find to non-interactive digital projects that relate to the novel. However, this notable IF novel was published in 2008; *TOC* was published originally in 2009. Aaron Reed has been prolific since then, but has not released another work called a "novel" or directly engaged with that genre. Other long-form parser-based interactive fiction has been released, notably Emily Short's wordplay game *Counterfeit Monkey*, but the author herself does not call this a novel or remark on its relationship to the novel. Probably more related to the novel are Short's Jane-Austen-inspired Versu games, which are computationally rich but do not accept natural-language input.

Consider, also, that one of the great novels of the Web is *The Unknown*. One of its authors is still producing electronic literature: Scott Rettberg, whose collaborations with Roderick Coover are also striking multimedia productions, but quite different. His and Coover's trilogy of catastrophic occurrences, although visually and textually rich as well as multilingual, are not interactive at all. Rettberg and Coover's collaboration with me, *Three Rails Live*, and these two's latest collaboration, *TOXI-City*, are also not interactive, although they are combinatorial and presented in different, computationally assembled configurations. In these video pieces, the links of *The Unknown*, and the hotel bell of the performances, have been set aside for a different type of experience, a combinatorial one of viewing and listening.

Many authors who published novelistic electronic literature with Eastgate are now found only in print or, in some cases, continue to write new digital work (as, for instance, Deena Larsen and Stuart Moulthrop do) but, recently, they have done so in shorter formats. Rob Wittig, head midwife of *Invisible Seattle*, the novel of Seattle, by Seattle, is now engaged not in novel-writing but, with Mark C. Marino, in overtly theatrical activity under the rubric of "netprov," even if it sometimes involves Google Docs. And, speaking of performance, Talan Memmott has recently taken us on a journey back to Perplexia that sounds about as novelistic as can be: *Huckleberry Finnegans Wake*. But note that this piece is also not interactive in the traditional computational sense. The dream this particular piece has, on its cross-country nocturnal journey, is of theatre and cinema.

Nevertheless, one would not need to quest for very long to find a specific e-lit

antecedent to *Nanowatt*. This program is a stand-alone computational artifact analogous to the more network- and search-based *How It Is in Common Tongues*, by John Cayley and Daniel C. Howe. While *Nanowatt* computationally reconstructs certain passages from *Watt*, in two languages, *How It Is in Common Tongues* reconstructs the entire text of a short book by Beckett by searching the Web for the longest quilt of quotations from it that do not refer to Beckett. (*Nanowatt* is really just a very small way to do, with computation and compression, what *How It Is in Common Tongues* does with search and the Web.) In case one imagined that *Nanowatt* innovates by presenting the text in two languages, no – something similar had already been done by Cayley, back in 2004, in his work *Translation*, which incorporates text from Walter Benjamin in three languages. In *Translation*, interaction is optional: one can choose to “surface” the text in any of the three different languages. And one need not go back to *Translation* to find a multilingual text; Cayley also presented a French version of *How It Is in Common Tongues* at the ELO conference last year. The digital version includes running text that shows where the source of the “common” version comes from. The English work is, finally, realized as a book, the product of computation on the Web, just as *World Clock* is a book.

Our culture has undergone several major changes in the past 15 years, and certainly in the past 30 years, with regard to computing. Computing has become completely ordinary, for one thing. Certainly at conferences and in academic and artistic environments, it is not unusual for people to use the interactive computing and networking capabilities of mobile phones, notebook computers, and tablets all the time. We no longer need to create works that call attention to interactivity itself. Additionally, our experience of computers is not that of a lengthy session of reading and use, undertaken only at a special computer desk that can also serve as a novelistic reading chair for an immersive experience. Instead of offering a hypertextually exploded book, or many lengthy, involved interactive fiction experiences, it seems more suitable today to either present small-scale projects that fit into a daily schedule or create truly pervasive experiences that overtly call for attentive viewing or that take the form of a material book. The e-lit novel, and at least the computational novel, may find its form, in coming years, not on our personal computers, but more frequently as a performance, an installation, or even a codex.

### **Bibliography of Novel Machines**

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