

Growing in the Dark:

algorithmic books and possibilities for the contemporary manuscript

By Reg Beatty

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Abstract

This essay documents a generative bookwork of mine called *Growing in the Dark*. It responds to the challenges of current thought including object-oriented ontology (Levi Bryant and Ian Bogost), the dark ecology of Timothy Morton, and the vibrant materialism of Jane Bennett. It also asks how the contemporary artist's book might be studied as a set of procedures, and then "grown" from that code.

Keywords: vibrant materialism, generative art, artists' books, object-oriented ontology, dark ecology, nonhuman, software structures, digital gothic, digital humanities.

Acknowledgements

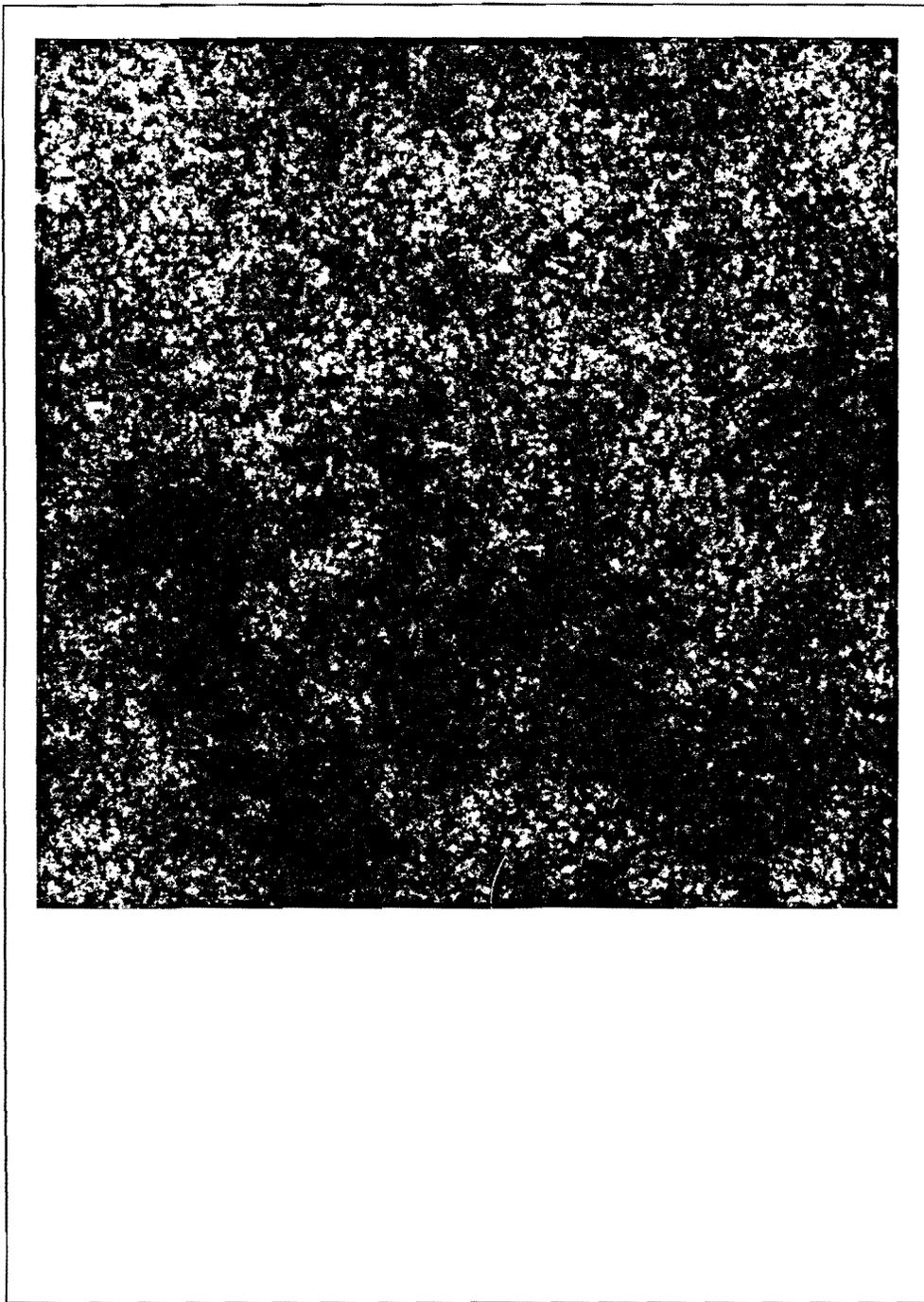
I would like to thank my supervisor Professor Lorraine Janzen Kooistra for all her wisdom, enthusiasm, and encouragement surrounding this project, also my reader and advisor, Professor Bruno Lessard for his timely comments and an office full of enticing books. The chair of my Examining Committee, Professor Monique Tschofen, has always added immeasurably to my whole graduate experience. My parents, Ruth and Roy Beatty, knew I had it in me, and my wife, Mary Dwyer granted me love, and leave, to get it all done.

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Page from *Carpets*, 2013. Moab Entrada Rag,
Canson endpapers, digitally printed with
archival inks, glassine. 7 $\frac{1}{8}$ "w x 10 $\frac{1}{4}$ "h.

Prelude

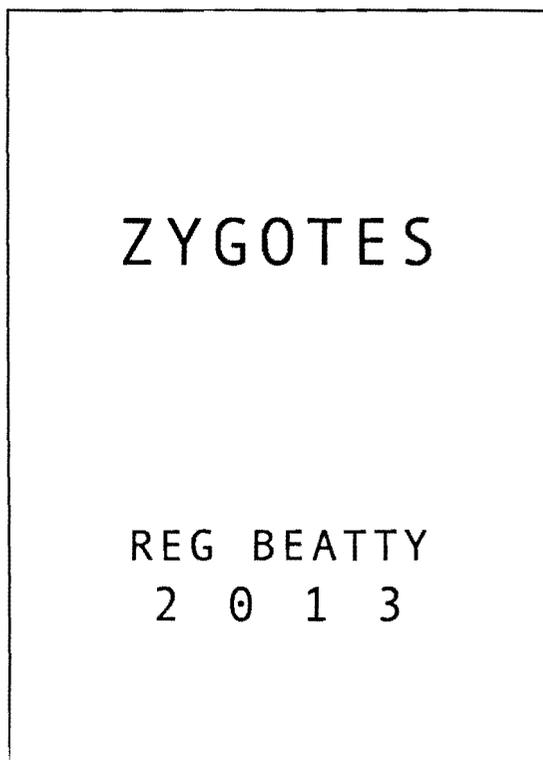
“The public execution of the paper book today is not an attempt to erase the content, like book burnings by the Inquisition or by nazis; it is in fact the opposite: it is the transfer of the content to a new life in a new medium. The literate millions watching the guillotine are privy to the first public demonstration of the passage of the soul from one body into another, a reincarnation that is not a metaphysics.”

(Andrei Codrescu i)

The transmigration of souls described by Codrescu’s “bibliodeath” is happening apace, so in the meantime we might be interested in asking a few questions about the process, such as: what actually constitutes this “new” body of the book; is it even “a” body instead of several bodies, some we already know about, others as yet unspecified? Codrescu does not talk about how dematerialization works. He is more interested in the (no longer final) resting place where books’ souls are interred in digital archives. But this teleportational state also creates the opportunity for a multiplication of souls. It is a *flickering* kind of life as “envoy-souls” are called hither and thither from the archive to screens anytime, anywhere in the networked world.

Book artists wonder about where all this transmigration leaves them, and often they opt out (souls be damned). In a kind of frenzy of rejection they flaunt the sheer stuff of their work with extravagant displays of gut, bone, feathers, wood, rubber, lint, alloy, detritus, seaweed, glass, fiber, the cannibalism of other books, and electronics. It is as if they are saying, “just try beaming that up!” My own work as a book artist has often relied on, enjoyed, even celebrated, the particular resistance and/or pliancy of a given material. And when my colleagues get together, conversation quickly turns to technical problems—how to make A stick to B without warping; where to buy the best X; what tool to use if you are working with that horrible stuff Y. This is the craft side of anyone’s training on display, as well as the signs of a practice that weathered and survived the “dematerialization of the art object” of the seventies. Interestingly, the conceptual artists of that time took to using books as part of that process. In a way, their productions were as much about “this-is-not-a-painting” or “this-is-not-a-sculpture” as they were about simply being “a book.” What matters to me in this odd coupling of those that like the muddiness of mud, as they dig in their heels, and those that like the etherealness of their concepts, as they head to the printers to pick up their 200 copies, is that I keep passing them both, but in opposite directions.

Growing in the Dark is a project that starts from that liminal place in the communication network that constantly shunts souls—some kind of digital bardo? It is a work that at first does not have to appear, to instantiate, except as it chooses randomly. It does not have “a body” or bodies as yet, or at least only the lightest of ones, being code. If anything, it is like those otherworldly creatures that sometimes choose to shed their wings, their lightness, and walk among us, suddenly subject to heft and touch and senescence. Unrealized, it is a set of instructions specifying the materials for a book (an infinite number of books)—an algorithm. Realized, “RUN,” it is a program that gets entangled in “performing itself.” To make that happen, *Growing in the Dark* generates content for four books—Zygotes, Carpets, Junk, Totems—through slight variations in a few lines of code. It also includes some larger works: a projection, large panel, several hanging “scrolls,” as well as a small hand-painted manuscript; all built from the same or similar generated materials as the books. The code does not produce straightforward images—the pages are really snapshots from some strange family album; an ongoing, potentially endless, sequence, the production of which has been assigned to a diligent and tireless agent. Behind it all is a dawning awareness that this materiality is not the old familiar one from the studio. In this set up I’m less a creator and more a piece of enabling equipment.



Zygotes title page, 2013. Moab Entrada Rag, Canson endpapers, digitally printed with archival inks, glassine. 7 $\frac{3}{8}$ "w x 10 $\frac{1}{4}$ "h.

Cutting Edge

*"In the old art all books are read in the same way.
In the new art every book requires a different reading."*

(Ulises Carrión qtd. in Lyons 42)

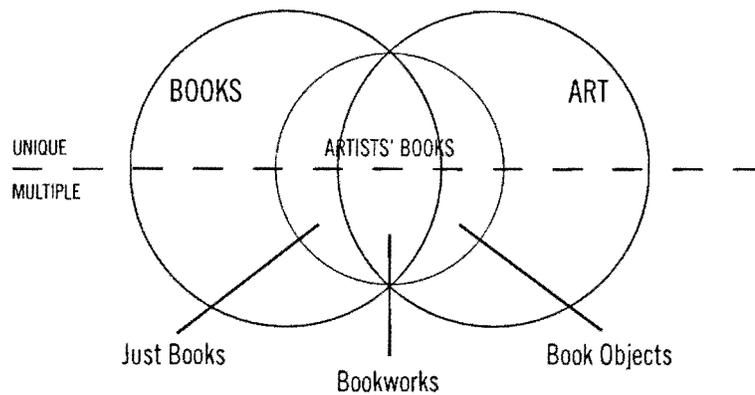
I am a professional bookbinder and book artist. I have shared a studio with Don Taylor and Kate Murdoch for more than 20 years and taught bookbinding and book design at a number of post-secondary institutions for the past 10 years. In the studio, the mantle of a thousand-plus-years tradition can be worn fairly convincingly but the moving target that is teaching has forced me to be "light on my feet" and to put the presuppositions of my practice to the test of my students' (naïve?) questioning. My favourite definition of that practice comes from the title of a book by Renée Riese Hubert and Judd David Hubert published in 1999, *The Cutting Edge of Reading: Artists' Books*. I take this less as a statement of fact than as a provocation—ask innocently how to begin reading one of these unfamiliar objects and you can suddenly find yourself handed a book sealed shut, covered in razor blades. Most book arts programs are connected to fine arts faculties' print-making facilities. It can take some time to convince these image-makers that they are now facing challenges to do with reading and an object they *thought* was familiar. And since many of these books can be displayed in all kinds of contexts, alongside all kinds of other objects, it might be important to include as part of that "cutting edge" an exposure to any number of literacies. That is why I prefer provocations—they keep you thinking.

Theorist, critic, and book artist, Johanna Drucker shies away, in her indispensable *The Century of Artists' Books* (1995), from any straightforward definition. Instead, she structures the book's chapters around a taxonomy of "making" that suggests the range of the practice: democratic multiple; auratic object; variation on the codex; self-reflective; visual form; verbal exploration; narrative and non-narrative; agent of social change; conceptual space; and document. Drucker was worried that, despite this ambitious output by her fellow artists, "because the field of artists' books suffers from being under-theorized, under-historicized, under-studied and under-discussed, it isn't taken very seriously" ("Critical Issues" 3). She proposed three things: establishing a canon, a critical terminology, and a descriptive vocabulary, "...even though each has its own problems and will raise hackles and objections." In 2004, Drucker, working at the University of Virginia, and thinking seriously about the impact of digital humanities, proposed a searchable online database that would tackle these issues head on.¹ In specifying the metadata for such a project she moves

1. www.artistsbooksonline.org

from a surveyor's broad taxonomy to an anatomist's sense of fine detail. As she "unfolds" her nested metadata, the extensive DTD (Document Type Definition) available for marking up an artist's book reveal layer upon layer of description and analysis. One crucial distinction she establishes is the hierarchy of Work, Edition, and Object. The "Work" is the organizing principle behind the project (which may be much more than a book) and coordinates all the elements. This cannot be copyrighted. The "Edition" deals with production and materials, "...including but not necessarily limited to the actual texts, images, layouts and dummies, manuscripts, correspondence about production or reception, edition size, physical characteristics, design, and so on." The "Object" is, "...the example one has in one's hands, and it will likely have some individuating characteristics: an inscription, a number, damage, repairs, anomalies from the printing process, an individual or unique binding, a provenance, an owner, and so on." Drucker also pays careful attention to the "agents," initiating and producing, that may be involved: artists, writers, publishers, editors, photographers, designers, printers, binders, etc. Glancing over only a few of the other tags she has provided we see: Thematics (e.g. narrative, documentary, provocative); Production Aesthetic (e.g. small press, processed-based, collage work, visual poetry, book-like objects); Materials and Means (e.g. standard and non-standard); and Structural Features (e.g. image-text interleaving, palimpsest, sequencing.) There is even room made for frankly declared subjective commentary. Drucker's delicate and thorough surgical procedure on the artist's book did, as predicted, raise hackles. Artists found the whole exercise far too daunting (maybe a little too much information?) and the project was mothballed a few years later. But who knew, until Drucker's fractal-like meta-data descriptions laid them out, just how many forces could really be at play?

Historical lineages of book artists typically trace themselves back no further than William Blake and William Morris. Blake, with his striking and complex marriage of image and text—both seemingly formed by the same gestures—and Morris, with his obsessive attention to material details (just this ink, just that paper) and his re-discovery and understanding of the logic and beauty of the two-page spread, have inspired, and been studied closely by a long line of print/book makers. But there is another lineage—this one starting in the early 1960s. There is a Venn diagram, redrawn many times, originally conceived by Clive Phillpot, curator and former librarian of MoMA, which tries to map the tiny world of artists' books onto the intersection of the broad categories of "Books" and "Art." As the smaller circle is placed over the two larger, a tripartite division is created. Phillpot identified the divisions as follows: where just "Book" and "Artists' Books" intersect you get "Just Books"—catalogues and books that just happen to be made by an artist (more *written* than



made); where all three overlap you get “Bookworks,” which Phillipot takes the most seriously; and where only “Artists’ Books” and “Art” meet you get “Book Objects,” more like sculpture perhaps, or installation. His scheme often included further horizontal divisions that try to take account of unique or multiple books, or verbal vs. visual approaches. While a generally useful schema for identifying certain distinctions, Philpott already had an artist in mind to occupy the central space—“The principal credit for showing that the book could be a primary vehicle for art goes to Ed Ruscha.” Philpott goes on to justify his choice:

[Ruscha’s] books were unsigned, unnumbered...and the editions were unlimited. This was a radical break with the nature of previous interactions between artists and books. The customary aura of artworks was instantly dispelled. These were no precious objects to be locked away and protected from inquisitive viewers. They were obviously for use, and intended to be handled and enjoyed. Thus, Ruscha created the paradigm for artists’ books. (qtd. in Lyons 97)

The necessity for radical breaks and dispelled auras aside, there is something very appealing about this new paradigm and *Growing in the Dark* works from this alternate conceptual lineage. Ruscha charged at the time \$3.50 for his first book—if you like, you can buy a copy (no small thanks to Phillipot) on Abebooks for \$25,000.

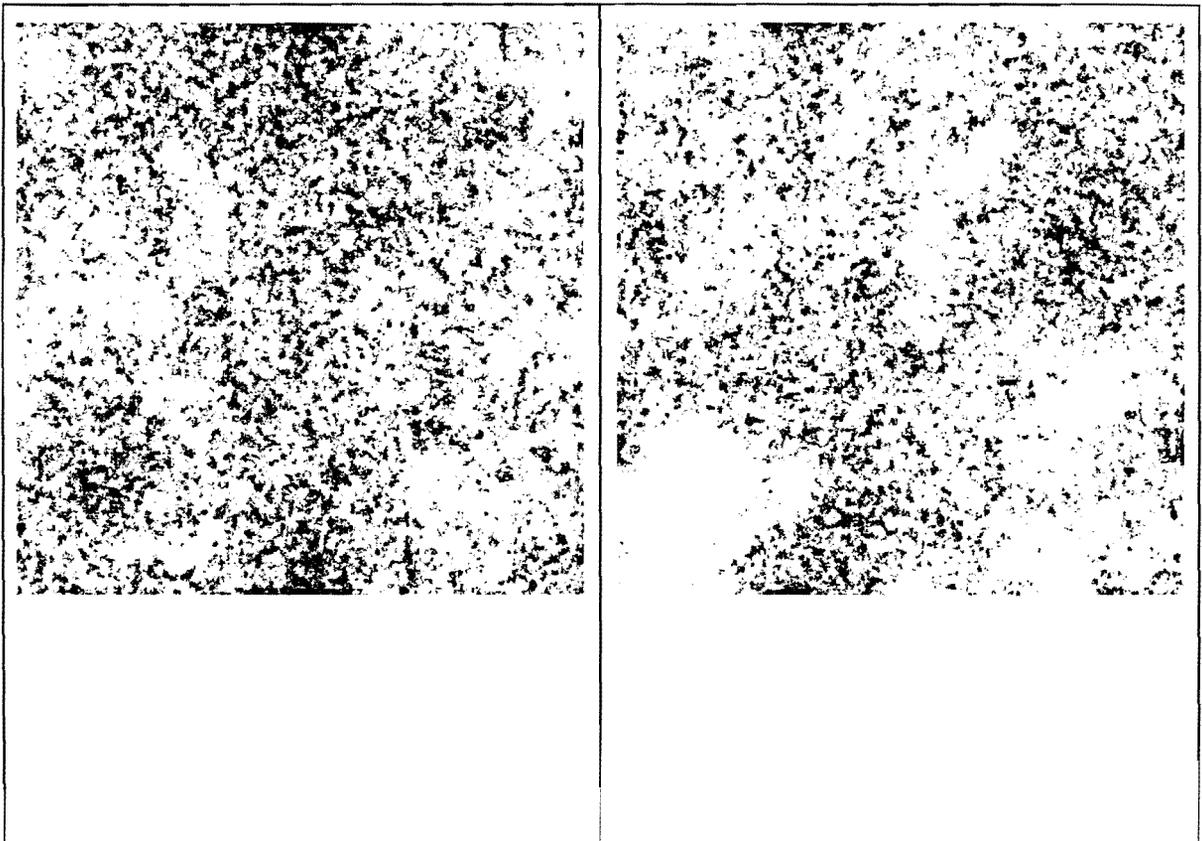
Reading Mallarmé’s *Un coup de dés jamais n’abolira le hasard* (A throw of the dice will never abolish chance) can leave you slightly giddy even 100 years on.² It is as if the space that was locked away on the page has suddenly been released. This is a feat that even Morris could not pull off—his book spaces are enveloping and warm, like tapestries hung on the wall. But once released, the

2. “...the reader, breathless and enthusiastic, must tap into innate energies of anticipation, but also visual memory to connect the ‘latent narrative thread.’” (Arnar 235-236)

coming century would see ongoing attempts by other artists to free every force lying dormant in the book. Drucker is also sensitive to this but in her own distinctive way. For her, the book:

...is an inhabitable universe of image and thought and language, a mute space of unrealizable dreams and manifest desire for form. The book is a passage of time, an expandable space, a fluid sequence of elements whose discrete identity becomes absorbed into the reality of a seamless experience, a static set of units whose unresolvable differences return the viewer to the cells of its interior spaces in a contradictory act of engagement and transcendence. (Century 363)

This is a beautiful, dreamy, paradoxical testament about what a book might be. But between the lines there also lurks a latent sense of agency—something that can make us expand, or be absorbed, or become fluid, and return to it again and again.



Carpets spread, 2013. Moab Entrada Rag, Canson endpapers, digitally printed with archival inks, glassine. 14¾" w x 10¾" h (open).

Vibrancy

"I get up with the page that is turned. I lie down with the page put down."

(Jabès qtd. in Rothenberg 794)

Jane Bennett's book *Vibrant Matter* (2010) finishes with a "Credo" that is as good a place as any for us to begin a consideration of vibrancy:

I believe in one matter-energy, the maker of things seen and unseen. I believe that this pluriverse is traversed by heterogeneities that are continually doing things. I believe it is wrong to deny vitality to nonhuman bodies, forces, and forms, and that a careful course of anthropomorphization can help reveal that vitality, even though it resists full translation and exceeds my comprehensive grasp. I believe that encounters with lively matter can chasten my fantasies of human mastery, highlight the common materiality of all that is, expose a wider distribution of agency, and reshape the self and its interests. (122)

It is a declaration that defines, admonishes, chastises, makes humble, and hopes for the future. She uses the personal voice but, as in a litany, what she implies is the response of a community to the revelation of a vitality where it is typically denied—in "nonhuman bodies, forces, and forms." Her hope is that an "encounter" with this vitality will be salutary for all the parties involved. In a conversion-like scenario, the moment of her epiphany is very specific: sunny Tuesday morning, June 4, Cold Spring Lane, outside of Sam's bagels, storm drain to the Chesapeake Bay. And then she noticed:

one large men's black plastic work glove
one dense mat of oak pollen
one unblemished dead rat
one white plastic bottle cap
one smooth stick of wood. (4)

What then happened was that the contingent "togetherness" of the glove, rat, cap, and stick, somehow started to change from being a simple pile of trash, not worth much more than a glance, into something calling from the haecceity of each thing as itself. Bennett began to feel something stirring within each item of this strange grouping; something vital, able to make things happen. Bennett calls what she discovers "thing-power":

Thing-power has the rhetorical advantage of calling to mind a childhood sense of the world as filled with all sorts of animate beings, some human, some not, some organic, some not. It draws attention to an efficacy of objects in excess of the human meanings, designs, or purposes they express or serve. Thing-power may thus be a good starting point

for thinking beyond the life-matter binary, the dominant organizational principle of adult experience. (20)

This resonates with much of Bennett's earlier work where she explores how experiencing "enchantment" might be a necessary pre-condition if we hope to change our ethical convictions. Perhaps we have put away our childish things too soon. When I teach book making, I confront students who have a very limited sense of what goes on in a book. For the most part they do not read, and when they do, it is as a means to an end—content extraction. I ask them to bring in a children's book, one of their own if possible, and get them to recollect and reimagine those first experiences with it. One of the things that everyone remembers is just how physical reading was, and the books show it! There are also memories of books-as-companions, and how the images and stories get linked up with other toys, children, and sundry objects appointed as props. In creating larger fantasy worlds, everything becomes animated. I want my students to have an awareness of this kind of thing-power.

Bennett, searching for the right "mood" to underlie sustained ethical reflection, and knowing that epiphanies come unbidden and do not always translate, hopes returning us to the animated categories of childhood might prepare us to face the consequences of taking the nonhuman into account. Some of these consequences were discussed in April 2011 at V2_ in Rotterdam where a group of humanists, artists, natural and social scientists used Bennett's book as a point of departure for discussions and presentations. The proceedings were e-published in 2012 as *The Vibrancy Effect*. In the prologue, the authors worry that:

As techno-science increasingly reaches into every aspect of life, formerly fast held distinctions between the inert and the active, the human and non-human and life and matter are cracking. From biotechnical engineering to the cataclysmic imminence of climate change, our very notions of what and how we consider life are under fire. What are the ethical, aesthetic and political stakes in understanding a worldview in which humans are no longer at the centre?

While these are many of the same questions raised by Bennett, unlike her, this declaration does not contain any measured considerations about persuasion (no time for that—things are starting to crack.)

Someone who is particularly good at thinking about where we find ourselves, now that distinctions will not "hold fast," is Timothy Morton. He proposes we adopt what he calls a *dark ecology*. It is "dark" because the various catastrophes we worry about, and wonder how to prevent, have

already happened. “We sprayed the DDT. We exploded the nuclear bombs. We changed the climate. This is what it looks like after the end of the world” (98). There is nowhere to go, no vantage point high enough from which to safely monitor somebody else’s tragedy—we are implicated through and through. But waking up and discovering that we are living in the aftermath of environmental disasters is only the beginning.

A whole series of other disturbances flow from recognizing the agency of the nonhuman—one is that all of our well-worn dualisms (first and last, male and female, inner and outer...) do not disappear in some nonhuman holism, but start getting capriciously messed up with each other. Morton takes seriously the idea that Nature is anything but natural. Evolution is the art of the mash-up, the monster. “All organisms are monsters insofar as they are *chimeras*, made from pieces of other creatures” (66). Is it any wonder that he is especially fond of Mary Shelley’s *Frankenstein* and that the last way he thinks of it is as a cautionary tale about scientific hubris? Victor Frankenstein was so overwhelmed with horror when his creature opened its “dull yellow eye” and convulsed with life, that he fled. Notwithstanding his confusion about his moral and/or aesthetic scruples/preferences it had worked! Who knew that with a little bit of know-how, a kludge here and there, and a few trips to the dissecting room and slaughterhouse, you could play God? It was not hubris that was the problem but a worldview that (he suddenly remembered) did not include creatures “born” in laboratories. We know the creature had an Enlightenment soul and that monsters can just as easily be made cute and cuddly (vide Disney.) What Victor Frankenstein was able to acknowledge, at least by his actions, was how unexpected the strangeness of the monster was. How could he not have recognized the creature as his *own*? What he saw, what shocked him, was a nonhuman stare regarding him from out of whatever humanity, and whatever materials he thought he had cobbled together. Morton calls this “meeting the *strange stranger*”—the strangeness of recognizing the strangeness of recognizing the strangeness of recognizing...all the way down. The more we are persuaded to look, and the more we are able to see nonhuman bodies, the more we see everything as pieced together, randomly innovated, adaptively obsolesced, out of them. Meeting the strange stranger means having the shock of staring in the mirror at our own jaundiced eye and wondering who or what we are.

Bennett and Morton know that, once invited in, the nonhuman is capable of some serious cognitive and social re-engineering—but why not? We are all good at hiding our desperation about how things are going. Vibrant materialism is a program to “think bigness” by “thinking our smallness.” Maybe leaving centre stage will help us save ourselves *from ourselves*. Dark ecology is a knowledge that comes with the appearance of the strange stranger and the fear of suddenly not

knowing. Morton knows that confronted with this our “natural” reaction is to flee, but the Tibetan version of Buddhism that he practices challenges him to an “unnatural” reaction—staying put, there’s nowhere else to run anyway, and turning his fears into an opportunity for meditating on emptiness (as he watches the Sky Butchers prepare corpses for the vultures.)

Sounds difficult. Maybe art could help.

Preternatural was an exhibition held in Ottawa over the winter of 2011-2012. Philosopher Levi Bryant wrote an essay for the catalogue where he tells a story, very much from the perspective of object-oriented ontology (OOO), about how art might be a way of cultivating awareness of “alterity and agency independent of human conceptuality and meaning” (24). This is an art in aid of vibrant materialism.

OOO is a fledgling philosophy that has taken advantage of both the rapid fire comment stream of the blogging community as well as developments in alternative scholarly publishing to quickly build a community of followers. Graham Harman, Levi Bryant, Ian Bogost, and Timothy Morton are considered the core of the group even though they all pursue different “flavours” of OOO. In general, they attempt to re-introduce a new type of (speculative) realism into contemporary philosophical debate that seems mired in questions about the limits of human access to the world. “Correlationism” is the term that they use to describe this condition. For a sense of what OOO is attempting in trying to radically change this, we might consider Bryant’s exploration, in his *The Democracy of Objects* (2011), of the implications of a “flat ontology.” There, he populates the world with all manner of objects (in fact there is nothing *but* objects) and proposes four theses: first, that all objects are withdrawn from presence so that the question of how they still relate becomes important; second, that there is no world or “super-object” that would subsume all the rest; third, that humans have no privileged place in the scheme of things and that human/object and object/object relations are only different in degree; and fourth, that everything is on an “equal ontological footing such that subjects, groups, fictions, technologies, institutions, etc., are every bit as real as quarks, planets, trees and tardigrades” (32-33). This opens up philosophy and art to the possibility of exploring a newly revealed “heteroverse or pluriverse” (279).

In his *Preternatural* essay Bryant tells an exemplary tale of the “back country” where, the deeper we go, the further away we get from the familiar backdrop to our lives, the more we are forced to accommodate ourselves to a nonhuman reality. This far in, every footstep has consequences, every decision an element of risk. As night approaches we fall under the regard of unseen agencies that may or may not be including us in their plans to eat, freeze, ignore, infect.

"We encounter ourselves as aliens in an alien world..." (25). Bryant's story is an "invitation" to discover the nonhuman as the nonhuman and not as some new category created to reassure us. It is a case of "making strange"—Russian theorist Viktor Shklovsky's 1917 concept of artistic defamiliarization (*ostranenie*) but meant to "recover the sensation of life" for nonhumans (Shklovsky 12). But Bryant does not leave us stranded. What he calls his "wilderness ontology" takes us right into the heart of Times Square: "...wilderness is not a place to which we can go, for wherever we are we *already* are in the wilderness" (20). Art yanks at the backdrop and reveals this to us.

Growing in the Dark is conceived with Bryant's ontology in mind. It sees artistic defamiliarization as a quickening encounter with the nonhuman, and a revelation of "thing-power." It camps out with the strange stranger then brings back some plastic trinkets and an album full of "snaps."

But what kind of picture taking could this possibly be? In *Alien Phenomenology* Ian Bogost describes how the photography of Stephen Shore becomes the *ontography* of OOO. The simplest form of an "ontograph" is the list, what Bogost refers to as "...a group of items loosely joined not by logic or power or use but by the gentle knot of the comma" (38). He mentions in particular the penchant that sociologist Bruno Latour has for lists in his work, something Bogost dubs "Latour litanies." For example: "Elections, mass demonstrations, books, miracles, viscera laid open on the alter, viscera laid out on the operating table, figures, diagrams and plans, cries, monsters, exhibitions at the pillory" (38). In homage, but also in order to drain away some of Latour's literary panache, Bogost has written a program called the "Latour Litanizer" which generates a list by randomly selecting from among the millions of Wikipedia subject entries.³ Here are two that I just now created:

Aid Association of Lutherans, Daniel Foster (Australian footballer), Gmina Niedzwiedz, Esumi, Clayton Historic District (Clayton, New York), Witch of November, Operculum (brain), Orme.

University of the Philippines, Kitty Foyle (novel), Jed Graef, Roderick MacDonald (politician), Square lattice, Nyiragongo Territory, Clay Matvick, Leo Smit (Dutch composer), Pancake pen.

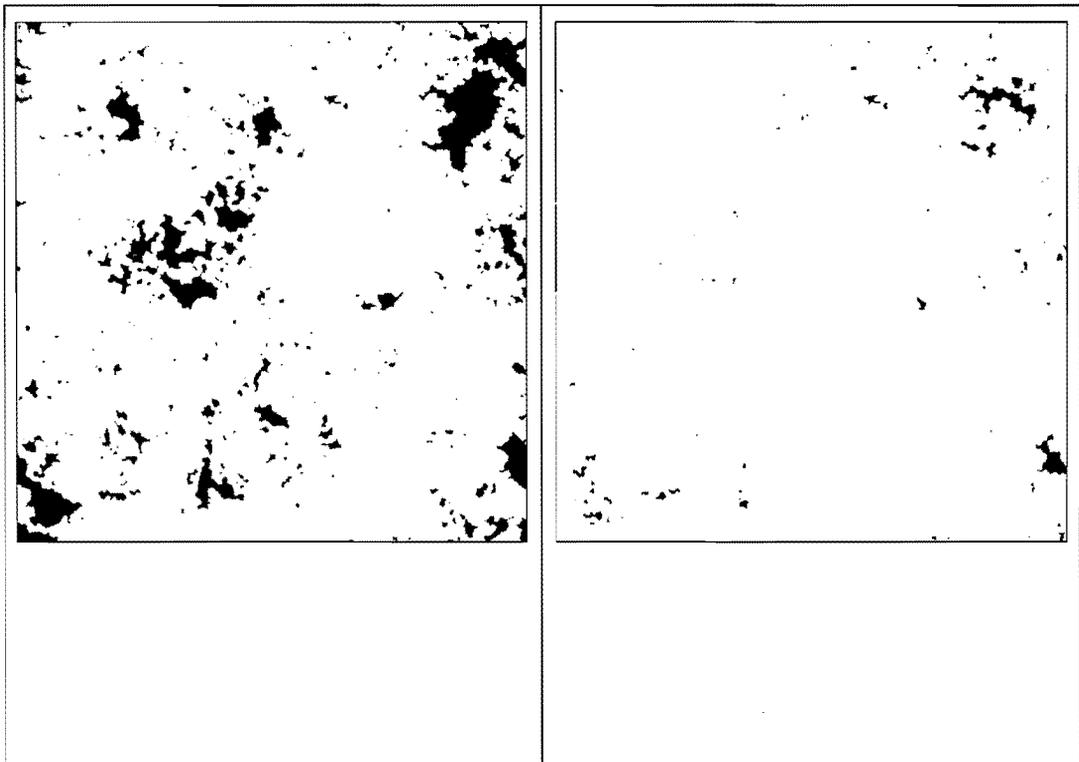
Generating these can get strangely addictive. There is another project by Laszlo Kozma that displays, *almost* in real time, Wikipedia edits on a map, as if watching the Litanizer in extremely slow motion.⁴

3. www.bogost.com/blog/latour_litanizer.shtml

4. www.lkozma.net/wpv

Lists like these are barely organized slivers from a set of potentially infinite metadata. Looking at one of Shore's most famous photographs *Beverly Boulevard and La Brea Avenue* (1975) Bogost remarks that the lack of a clear subject or focal point (what am I suppose to be paying attention to?), in addition to the casual composition, breaks apart its elements into the equivalent of a visual list. It is an ontograph of gasoline pumps, asphalt, shadows, signage, tires, people waiting for a bus, streetlights, distant mountains... It seems strange to find out that Shore chose to work with large awkward view cameras that need time and considerable bother to set up and operate (usually the purview of the "heroic" photographer) when all he seemed interested in was "the mundane." However, it is in the view camera's ability to capture so much quotidian detail and open up "the density of being" that Bogost finds the genius of Shore's particular choice. "The Latour litany gathers disparate things together like a strong gravitational field. But the Shore ontograph takes things already gathered and explodes them into their tiny, separate, but contiguous universes" (49).

The images created for *Growing in the Dark* can be understood as ontographs that lie somewhere between the "gathering" of Latour and the "explosion" of Shore. It is as if you could watch the world thicken on the ground glass of the view camera pixel by pixel.



Junk spread, 2013. Moab Entrada Rag, Canson endpapers, digitally printed with archival inks, glassine. 14¾" w x 10¼" h (open).

Code 1

“Walk during a few moments very consciously in a certain direction; simultaneously an infinite number of living creatures in the universe are moving in an infinite number of directions.”

(Stanley Brouwn qtd. in Lippard 115)

After working with John Maeda at MIT in the Aesthetics and Computation Lab, Casey Reas and Ben Fry started developing in 2001, *Processing*, an open source programming language made specifically for “visual designers and artists.”⁵ *Processing* provides an introduction to programming for a community not used to writing code. It fosters software literacy but also exposes artists to a new medium of expression.

Reas is interested in creativity and code in his own work. Inspired by the procedures of Sol LeWitt's wall drawings, he asked himself, “Is the history of conceptual art relevant to the idea of software art?”⁶ LeWitt would write the specifications for hundreds of these drawings. *Wall Drawing #69* (1971) states: “Lines not long, not straight, not touching, drawn at random using four colors, uniformly dispersed with maximum density, covering the entire surface of the wall.” When someone wanted to display the artwork they would “perform” the instructions as written, but under the conditions of a specific gallery wall. (The National Gallery of Canada has *Wall Drawing #623* from 1989.)

The Whitney Museum commissioned Reas in 2004 to work on a series of “translations” of LeWitt's wall drawings into code that became an online exhibit called *Software Structures*.⁷ Reas had already tried to make coding as spontaneous and responsive as possible, more akin to sketching, with some core bit of code accumulating additions, erasures and modifications over a long period of time. But after his confrontation with LeWitt's work, he stopped working directly in the code so that now, as he explains it, “The work develops in the vague domain of image and then matures in the more defined structures of natural language before any thought is given to a specific machine implementation. I'm calling this type of program a software structure.” By removing the code from the equation (so to speak) what this new structure permitted was an ongoing variety of implementation. For the Whitney show, Reas invited fellow artists Jared Tarbell, Robert Hodgkin, and William Ngan to “perform” his structures. Each artist had to interpret the instructions and then translate that interpretation into whatever programming language they chose to work

5. See Reas and Fry.

6. Quotes from artport.whitney.org/commissions/softwarestructures/

7. artport.whitney.org/commissions/softwarestructures/

with. Reas chose *Processing*, but he might have used *Flash* or *C++*. He also recognized: “A benefit of working with software structures instead of programming languages is that it places the work outside the current technological framework, which is continually becoming obsolete.”

Reas’s software structures are important because they reveal that a program’s code is not a simple origin and that other algorithms, possibly written in natural languages, lie before and/or after the programming. There is also a space created between the interpretation and implementation that permits these “recipes” to be prepared in all kinds of unexpected ways. In *Growing in the Dark* I tend to mix the two stages recursively and whereas Reas’s structures stay (abstractly) true to their source in conceptualism mine seem to be intuitively *provoked* by the code to translate them metaphorically (Reas sees circles interacting at different scales—I see clouds.) It is appropriate for my project that software structures were inspired by LeWitt for he was an accomplished book artist and implemented many of his instructions in book form.⁸

In 2009, the writing and coding effort of four Germans, Hartmut Bohnacker, Benedikt Gross, Julia Laub, and Claudius Lazzeroni, was collected and published as *Generative Gestaltung*. The book was another part of the growing support network for learning and sharing *Processing* code.⁹ It is both a stunningly beautiful manual and a pitch for a new field called “Generative Design” appearing under this title in English in 2012. The book tutors the artist in *Processing* through a number of systematically developed code examples but these are not simply lessons—the examples are part of a library of code, any segment of which can become the jumping-off point for independent design projects.¹⁰

P_2_2_1_01 (also known as “Dumb agents”) is the code sample that *Growing in the Dark* is built on. The description says: “Instead of being rigidly embedded in a grid, the pixel becomes an agent and can move freely based on different behavioral patterns. With each step the agent advances according to one of eight directions, leaving a trail behind. It pursues its mission and never gives up” (218). *P_2_2_1_01* is “dumb” because it is unaware of its previous decisions and is completely future-oriented. “Intelligent agents” have to reckon with the past. But despite its lack of sophistication, although it is not without some, what interests me about *P_2_2_1_01*’s doggedness is that it marks the point where *pixel* transforms into *agent*—a point on which the appearance of *vibrancy* also pivots.

8. For more on LeWitt’s books see LeWitt, De Donna, and Maffei.

9. See for example openprocessing.org

10. www.generative-gestaltung.de

Digital Gothic

“...instead of liberating people we might as well start liberating things.”

(Lars Spuybroek 265)

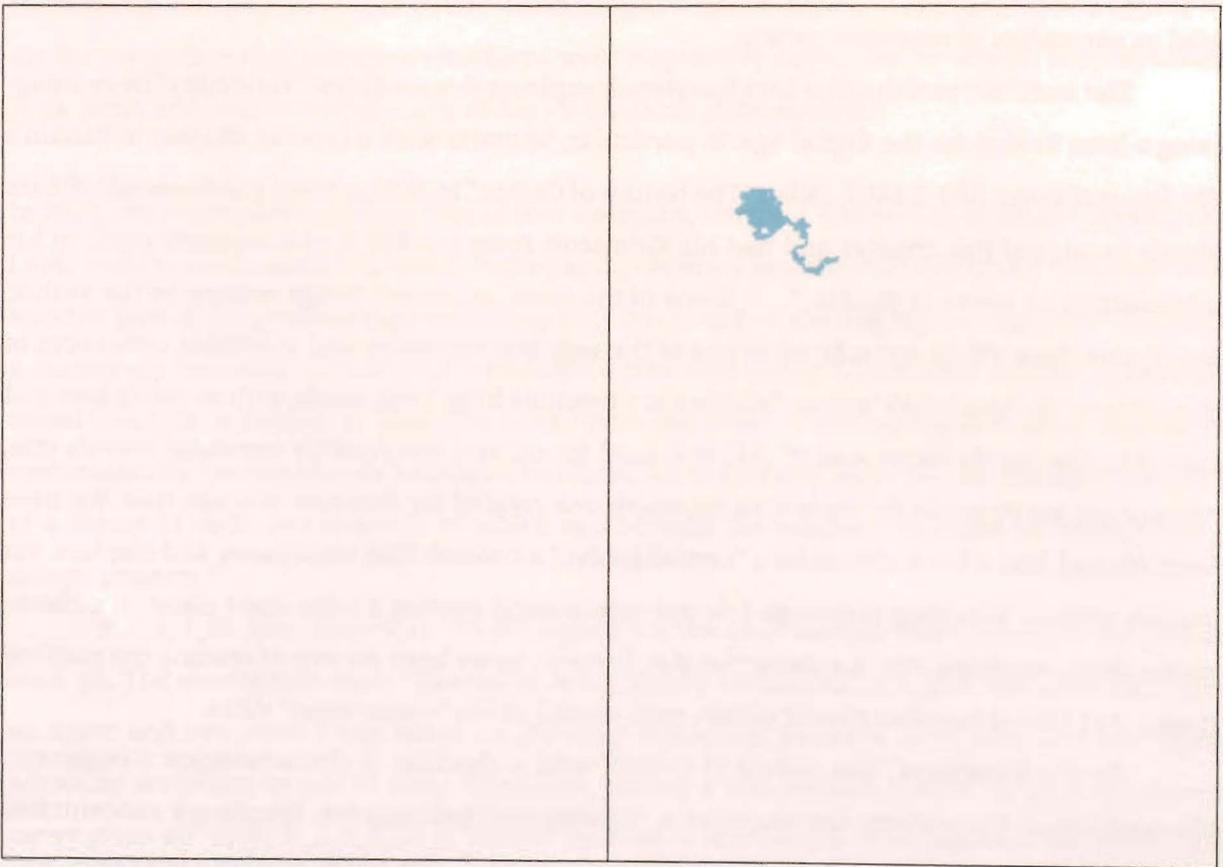
The medieval manuscript is the epitome of the kind of bookmaking that values the particular quality and dexterity of the skills displayed by scribes, illuminators, parchment makers, and binders. A great deal of coordinated effort was necessary to produce one of these books, from animal husbandry all the way to gold tooling. But the beautifully wrought and articulated pages of medieval books, as well as any contemporary manifestations of them, might also be appreciated as exemplars of *generative variety*.

The architect and theorist Lars Spuybroek explores this medieval “variability” by re-imagining a John Ruskin for the digital age. In particular, he starts with a famous chapter in Ruskin’s *The Stones of Venice* (Vol. 2 1853) called “The Nature of Gothic.” In 1892, a heavily influenced William Morris excerpted this chapter and had his Kelmscott Press publish it as a separate work. In his introduction he wrote of Ruskin “...it is one of the most important things written by the author, & in future days will be considered as one of the very few necessary and inevitable utterances of the century” (i). Spuybroek writes, “Morris’s is a precious little book, made with so much love and care that one hardly dares read it” (11). It is hard for us, and Spuybroek’s comment reveals this, so used are we to books for *readers*, to approach one created for *dreamers who also read*. We have been trained that a book should be a “crystal goblet,” a conduit that anticipates and displays our desires without intruding (although I do not recommend serving a wine-lover claret in a champagne flute). Anything else is a *distraction that distracts*, so we have no way of reading the political hopes that Morris has also placed within each tendril of his “ornamental” vines.

Ruskin structures “The Nature of Gothic” with a checklist of characteristics: Savageness; Changefulness; Naturalism; Grotesqueness; Rigidity; and Redundance. Spuybroek concentrates on the first two. He identifies Savageness with execution—“...the rough northern labourers, with their hands freezing, their heads in the mist and their feet in the mud, inevitably making “mistakes” (13) in their carving because of their “rude” nature but also because of the open design system of the Gothic...” (13-14)—and Changefulness with the “broad sense of variety in design” of the master mason (14). For Spuybroek, Savageness does not “come after” Changefulness, and Changefulness does not direct (tame) Savageness, instead, “*work is in design, and design is in work*”

(17). He calls this the *digital gothic* because "...the digital constitutes the realm of self-generating and self-drawing form" (17).

The architectural rib that seems to "grow" the various parts of the gothic cathedral exemplifies the flexibility of this procedure, unlike the modularity of the classical temple (the Modernist choice). Spuybroek wants us to start thinking "cathedral" instead of "temple." He wants us to "grow" our designs and replace the considered protocols and self-similar production of the assembly line with the extravagant algorithmic variety of digital fabrication. This is more like the often excessive productivity of nature. What Spuybroek finally asks is, "Can we make technology itself go wild?" (262).



Zygotes spread, 2013. Moab Entrada Rag, Canson endpapers, digitally printed with archival inks, glassine. 14¼"w x 10¼"h (open).

Code 2

"Beginning from an indivisible point, they unfold an extensive universe."

(Laura U. Marks 205)

One of the features of the P_2_2_1_01 code is the kind of agential (vibrant?) language chosen to describe what amounts to mechanical instructions for displaying pixels. The authors realized that, when run, the program seems to take on an agency we usually reserve for living things. Understanding P_2_2_1_01, how it is framed metaphorically and structured algorithmically, gets to the heart of *Growing in the Dark* as a work of generative art, using code in such a way that it traverses Drucker's categories: as an organizing principle that is an aspect of the project's "work"; as an executable that generates content, intellectual and physical, making up elements of the "edition"; and as a displayable part of an individual "object." My project also questions notions we have about the "original" work of art and its "copies." In what follows I give a quick tour of the code, omitting for clarity lines related to display speed and recording.

```
// P_2_2_1_01.pde
//
// Generative Gestaltung, ISBN: 978-3-87439-759-9
// First Edition, Hermann Schmidt, Mainz, 2009
// Hartmut Bohnacker, Benedikt Gross, Julia Laub, Claudius Lazzeroni
// Copyright 2009 Hartmut Bohnacker, Benedikt Gross, Julia Laub,
// Claudius Lazzeroni
//
// http://www.generative-gestaltung.de
//
// Licensed under the Apache License, Version 2.0 (the "License");
// you may not use this file except in compliance with the License.
// You may obtain a copy of the License at
// http://www.apache.org/licenses/LICENSE-2.0
// Unless required by applicable law or agreed to in writing, software
// distributed under the License is distributed on an "AS IS" BASIS,
// WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
// implied.
// See the License for the specific language governing permissions and
// limitations under the License.
```

The Apache License 2.0 allows for the modification and re-distribution of open source software.

```

// draw the path of a stupid agent

int NORTH = 0;
int NORTHEAST = 1;
int EAST = 2;
int SOUTHEAST = 3;
int SOUTH = 4;
int SOUTHWEST = 5;
int WEST = 6;
int NORTHWEST = 7;

```

Lines with // preceding them are comments and are not part of the program. Here we are told a story about what the code “does.” Sequential instructions about displaying and selecting pixels are translated into a narrative about stupid behavior. The orientation cues (North, Northeast, etc.) relate that behavior to our own sense of direction and purposiveness but the numbers they are assigned (0 to 7) are arbitrary—any set of eight *somethings* would suffice (it could just as easily have been “proceed with caution,” “this way prosperity lies,” “the horror, the horror,” etc.)

```

float stepSize = 1;
float diameter = 1;

```

This establishes that the increment between steps is set at 1 pixel. It also sets a diameter size (we will be “drawing” with a 1 pixel wide circle.)

```

int direction;
float posX, posY;

```

These lines declare that we will be establishing an integer value (int) called “direction” and 2 decimal values (float) called posX (a position along the width) and posY (a position along the height.)

```

void setup() {
  size(800, 800);
  background(255);
  smooth();
  noStroke();
  posX = width/2;
  posY = height/2;
}

```

The setup function is executed once and “prepares” for the draw function: a screen size is set (800 pixels by 800 pixels); the background is made white; anti-aliasing is turned on to stop edges

from looking “jaggy”; the shape outline is turned off; and the start position is set in the centre of the screen.

```
void draw() {  
  
    direction = (int) random(0, 8);
```

The random function “chooses” a number from 0 to 8 which is then associated with one of the cardinal or ordinal points. Twentieth century art had long been fascinated with the workings of chance, from Dada to John Cage, and contemporary generative art continues this exploration (some might argue that it is *built* on it.)¹¹

```
    if (direction == NORTH) {  
        posY -= stepSize;  
    }  
    else if (direction == NORTHEAST) {  
        posX += stepSize;  
        posY -= stepSize;  
    }  
    else if (direction == EAST) {  
        posX += stepSize;  
    }  
    else if (direction == SOUTHEAST) {  
        posX += stepSize;  
        posY += stepSize;  
    }  
    else if (direction == SOUTH) {  
        posY += stepSize;  
    }  
    else if (direction == SOUTHWEST) {  
        posX -= stepSize;  
        posY += stepSize;  
    }  
    else if (direction == WEST) {  
        posX -= stepSize;  
    }  
    else if (direction == NORTHWEST) {  
        posX -= stepSize;  
        posY -= stepSize;  
    }  
}
```

11. See the chapter on randomness in Montfort.

Each direction is then translated into instructions about how to move in terms of X and Y coordinates (e.g. to head Southwest; subtract one step in the X axis and add one step in the Y axis.)

```
if (posX > width) posX = 0;
if (posX < 0) posX = width;
if (posY < 0) posY = height;
if (posY > height) posY = 0;
```

These lines prevent the path from “wandering” off screen. If it does, its value gets re-set and it immediately re-appears entering from the opposite side. An unintended side effect of this behavior is that the screen becomes a “tile” with a repeat pattern that matches up along all its edges.

```
fill(0, 40);
  ellipse(posX+stepSize/2, posY+stepSize/2, diameter, diameter);
}
```

This is where the drawing actually happens. In *Processing*, a circle is an ellipse with equal diameters. In this case it is centred on the current X and Y positions, coloured black, and set to 40% transparency. The draw function is a loop, so “random” acts on behalf of the agent’s desire by continuously selecting new directions. The transparency (alpha) value allows for the gradual darkening of the path as it crosses and re-crosses itself. P_2_2_1_01 stepwise life does not exhibit any “emergent” behaviours but the accumulated results of its activity can be very surprising (not unlike Darwin’s descriptions of the actions of worms shaping the landscape and making the soil fertile.)

As a “medium,” this code is a technique for creating unique images, animations really, but as a “software structure” that is *already* part of the artwork it raises issues about where the original resides—the code? the animation? the image? the next image? the image after that? In a reflection on Walter Benjamin’s concept of the “aura” (also one of Drucker’s taxonomies for artists’ books) Bruno Latour writes, “Inside the scriptorium of a monastery, all exemplars were themselves copies, and no copyist would have said that *this one* is the original while *this one* is only a copy...” In fact, “the aura was able to travel and might very well have migrated to the newest and latest copy...” (282-283). It turns out that the mark of originality may reside in an artwork’s reproductive power.

Generative

"Beauty brings copies of itself into being."

(Elaine Scarry 3)

The patterns left by "stupid" pixels mapping their steady "every which way" progress through space can seem surprising, but the study of cellular automata has stimulated research in complexity across the sciences. The most famous example is the "Game of Life" modeled by British mathematician John Conway in 1970. An initial condition is set on a grid by colouring some cells black (alive) and leaving the rest white (dead). Four rules are invoked: if a live cell has less than 2 neighbours (a neighbor is any adjacent horizontal, vertical, or diagonal cell) it dies; if a live cell has 2 or 3 neighbours it stays alive; if a live cell has more than 3 neighbours it dies; and if a dead cell has 3 neighbours it comes to life. The rules are applied to the grid globally and then re-applied to each subsequent state. The simplicity of the set up belies the complexity of the results. Different initial conditions populate the grid with constantly evolving patterns. "[Cellular automata] give the uncanny impression of being alive. Some patterns spread until they look like the designs of intricate Oriental rugs, others float across the screen like gliders, and still others flourish only to die out within a few generations" (Hayles 240). This is uncanny enough that it has led scientist Stephen Wolfram to posit the study of cellular automata as the fundamental model for understanding how the universe "patterns" itself. This computational fundamentalism has also encouraged thinkers like Edward Fredkin to develop a "digital philosophy" where "the soul is an informational construct" ready for uploading.¹²

Theorist Laura U. Marks describes a "deceptively unassuming" artwork by John F. Simon Jr. called *Every Icon* (1997) that unfolds on a 32 x 32 pixel grid. It follows an algorithm that turns pixels on and off, row by row, in every possible combination. Theoretically every possible "icon," from the Mona Lisa to the Nike swoosh, will appear once for about 1/100 of a second. The only problem is that we might have to wait awhile—it will take something like 5.85 billion years just to complete the second row. For Marks, "...this modest-seeming artwork brings us into contact with infinity, or at least with a sublimely unimaginable duration that puts the lives of our computers, ourselves, and our planet into crushing perspective"¹³ (Marks 205).

12. See Fredkin's www.digitalphilosophy.org

13. For a fascinating online exhibition, built with Processing, about Mark's work visit www.enfoldment.net

In a 2003 paper called “What is Generative Art? Complexity Theory as a Context for Art Theory,” artist Philip Galanter provided a now widely used definition—“Generative art refers to any art practice where the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, which is set in motion with some degree of autonomy contributing to or resulting in a completed work of art” (4). It might seem from this that “autonomy” is the magic ingredient that “leavens” the system and all the artist has to do is step back and relinquish control. Actually it is the use of a system in the first place that creates the conditions for “autonomy” not the other way around. Galanter’s article goes on to outline a whole spectrum of generative art, from the symmetrical order of tile design to the random disorder of electro-noise music. These are relatively simple. In the middle of the spectrum, and exhibiting far more complexity, are artworks based on genetic and artificial life systems. Using a system allows the making of the work to be formalized and to that extent creates autonomy by ending further decisions by the artist. Where would *Growing in the Dark* fall in Galanter’s schema? It is also near the middle of the range, where the abstract extremes of order or chaos are in balance and where the necessary conditions for biological processes appear, but because its resources remain so simple it can only mimic these processes.¹⁴

Also in 2003, artist Roman Verostko wrote “Epigenetic Art Revisited: software as genotype” reflecting on 40 years of producing generative art.¹⁵ He describes algorithms as recipes (for baking bread, playing Nocturnes), where the final set of instructions must be made explicit, but the implicit way the artist (cook, musician, painter) shapes those instructions remains mysterious: “We must be careful not to confuse the procedure by which the artist creates the code with the procedure specified in the code. The creative process lies primarily in the process of writing the code.” He uses his own custom software, which he calls *Hodos* after the Greek for path. I did not write my own code for *Growing in the Dark*—does that make it a species of “found” art?

Perhaps because Verostko was a Benedictine monk for 16 years, he likens his studio to a scriptorium with several “electronic scribes.” The scribes are pen plotters—a now defunct technology that was originally designed for engineers and architects. “My first pen plotters, with names like Brunelleschi and Aberti are now retired. Occasionally I bring Brunelleschi out of storage and have him make a small drawing.” When drawing, these plotters can “exude an uncanny presence.” Verostko has always noticed affinities between “biological processes and coded procedures,” and

14. Pearson in *Generative Art* describes the balance between chaos and order as finding the “sweet spot.” (51)

15. Quotes are from www.verostko.com/archive/writings/epigen-art-revisited.html

that the transformation of code into artwork is analogous to the transformation of genotype into phenotype. If the necessary conditions have been met either in the environment or the studio, something will grow; maybe an oak tree, maybe a work of art.



Totems detail, 2013. Moab Entrada Rag, Canson endpapers, digitally printed with archival inks, glassine. Book size 7 $\frac{3}{8}$ "w x 10 $\frac{1}{4}$ "h.

Gasoline Stations

"There's a dryness which I went for, actually. I liked that, having it dry and simple and, in a way, unartistic."

(Ed Ruscha 213)

The book that turned Ed Ruscha into a "paradigm" was called *Twentysix Gasoline Stations* published in 1963. Its very familiarity makes it now seem inevitable, but creating the format was "agony" (Ruscha 212). The cover shows the title only, in large slab serif letters sized so that they almost fill the width of the book. Inside are 26 deliberately casual photographs of gasoline stations taken along Route 66 between Los Angeles, where his studio was located and Oklahoma, where he grew up, laid out very simply. All of Ruscha's subsequent books would be based on this model. Clive Phillpot never mentions the format or the content, instead, the new paradigm is located in the artist's use of commercial production values to avoid exclusivity and "preciousness." Ruscha seemed just as interested in how his unfettered artworks might circulate. He recorded a daydream he had in 1972 about an "Information Man" that would give him reports about the fates of his books, something we could probably do today with RFIDs (Radio-frequency identification tags):

He came up to me and said, "Of all the books of yours that are out in the public, only 171 are placed face up with nothing covering them; 2026 are in vertical positions in libraries; and 2715 are under books in stacks. The most weight on a single book is sixty-eight pounds, and that is in the city of Cologne, Germany, in a bookstore. Fifty-eight have been lost; fourteen have been totally destroyed by water or fire; two hundred sixteen books could be considered badly worn. Three hundred and nineteen books are in positions between forty and fifty degrees. (Ruscha 46)

These do seem like books that, having been stripped of content's distractions and become mere "objects," exist all the better to disseminate, take up space, and be subject to the forces of gravity and destruction. Conceptual artists paid attention. But what his books also did was spawn dozens of imitations, homages, and parodies—MIT just published *Various Small Books: Referencing Various Small Books* by Ed Ruscha (2013) featuring almost 100 examples of this kind. What is going on here?

His books dispelled the "customary aura of the artwork," but that was before we understood (following Latour) that the "aura" is a lively principle that engenders reproduction—as if the aura contains a set of tacit instructions about how to go about copying it. Ruscha's books not only inspired artists to make their own but to *make books just like his*: Bruce Nauman's 1968 *Burning Small Fires* or Jeff Brouws' 1992 *Twentysix Abandoned Gasoline Stations* or Jonathan Monk's

2003 *Small Fires Burning* (after Ed Ruscha after Bruce Nauman) or Brian Murphy's 2012 *Twentysix Beer Steins and a Bear* or...

I have already outlined the specific algorithm that *Growing in the Dark* "borrows" to produce what I call "ontographic" images. To organize these into book form I will also borrow Ruscha's tacit instructions.



Carpets, 2013. Moab Entrada Rag, Canson endpapers, digitally printed with archival inks, glassine. 7 $\frac{3}{8}$ "w x 10 $\frac{1}{4}$ "h.

Algorithmic Books

“Nothing inanimate, no mountain or cloud, can be considered completely dead, and nothing organic can be described as being fully alive at every scale.”

(Lars Spuybroek 62)

The animations that *P_2_2_1_01* generates vary over time; what appear to be cloud forms become a forest canopy then, as the density thickens, pitted rock surfaces become a night sky. Changing any of the variables, such as diameter, step, or transparency even a small amount produces twisting vermiculated patterns, while suppressing some of the possible directions creates striations like concrete or bark. Each of the books in *Growing in the Dark* focuses on a few of these variations: *Zygotes* is the modified code run for only a short amount of time; *Carpets* shows the code working pretty much as it was written; *Junk* shows the code running for so long that it seems to be “erasing” itself. The fourth book, *Totems*, involves overlaying words on what appears to be the trunk of a tree. These words have been generated using Bogost’s Litanizer. And as an imagined prequel to these books (another *origin* that comes *after*), my hand-painted manuscript evolves its own “coded” interlaced procedures.

These time-lapse exposures try to capture the density of being. I first saw what this might mean in the work of Japanese artist Shimpei Takeda. In 2012, ten months after the nuclear disaster in Fukushima, Takeda started a project called *Trace—cameraless records of radioactive contamination*.¹⁶ In a mournful parody of scientific documentation he placed film in direct contact with the soil in a variety of locations. The resulting exposures are dense abstractions that speak of incredible loss and devastation. *Junk* is my own small homage to Takeda’s work—if it speaks, it speaks about processes that once released cannot be easily contained.

We are back to the complicated vibrancy of Bennett’s “nonhuman bodies, forces, and forms...” And Bryant’s wilderness ontology allows for an art that can demonstrate those agencies to us by discovering their traces. Making things necessarily strange, art produces a troubled, sometimes lopsided, beauty. But this is the beauty of:

...seeing colour, hearing sound, seeing form, hearing language, and seeing things for, perhaps, the first time. For the first time, perhaps, we encounter the alterity of things, *their* alterity, and move beyond encountering things as mere vehicles or carriers of our own use and meaning. We encounter ourselves as aliens in an alien world or as those that dwell in the wilderness. (25)

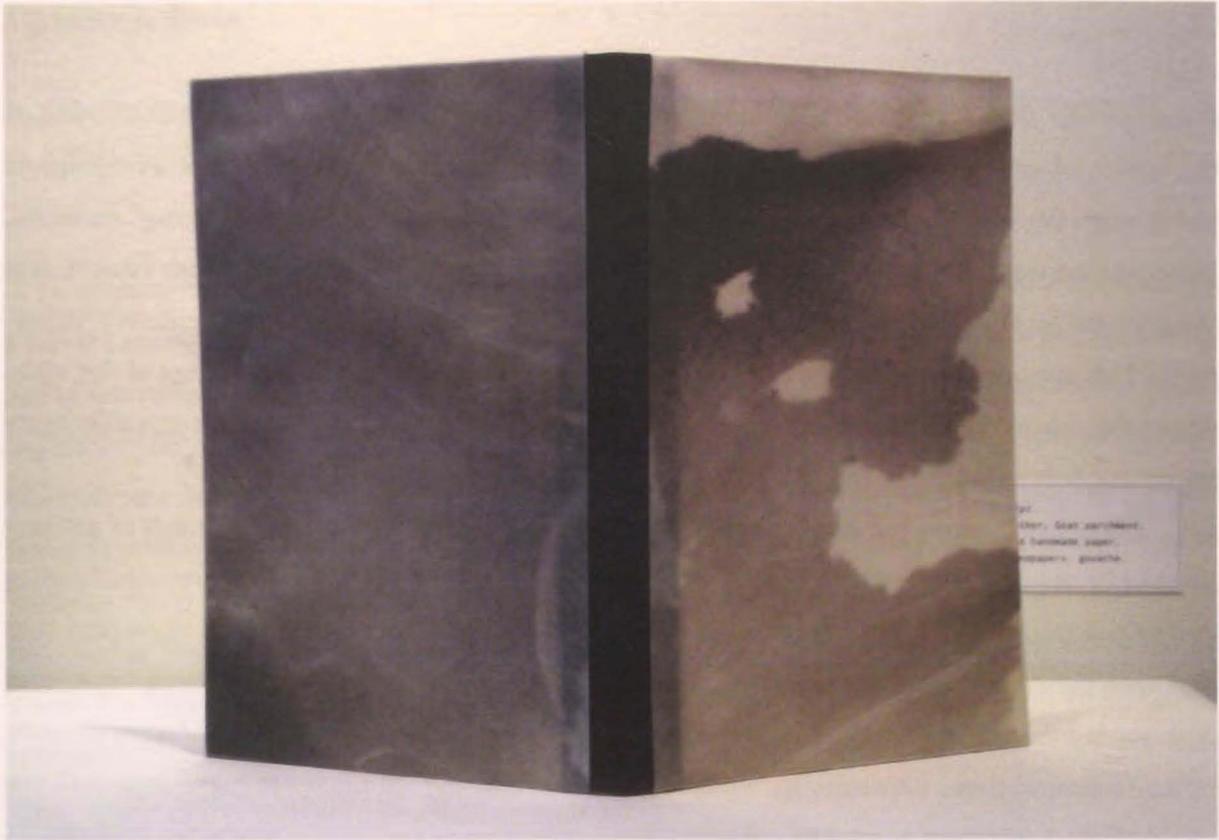
16. <http://www.shimpeitakeda.com/trace/>

* * *

Growing in the Dark started with thoughts about the ongoing and accelerated transformation of the book and wondered how book artists might choose to turn away from, or take advantage of the change. For myself, I have no interest in defending the physical book as a “living” museum, preserved so we can see what it looks like in a natural state. I would much rather have it as a “laboratory” for the creation of all kinds of artificial lives. These lives amount to Bennett’s “thing-power.” Object-oriented ontology tempers this strategic animism with its soundings of the withdrawn depths and mysteries of the “object.” Trailing along after OOO’s pluriverse seems a far more promising future for the book.

Code, as it turns out, is not an ultimate source but a way station with all kinds of distractions of its own. And even the simplest algorithm can produce very unexpected results. *Growing in the Dark* found “software structures” in Ruscha’s books, an unacknowledged algorithm that had been generating books for decades. This is what generative art brings to the book—a system with room for endless variety that lies somewhere between order and chaos. For future projects I plan to extend these experiments with *Processing* beyond the simplicity of *P_2_2_1_01* into the sophisticated workings of genetic code.

Growing in the Dark’s books are in a way a continuation of Ruscha’s work, hopefully with less of the almost instant familiarity his books seem to provoke. But my project also acknowledges the paths being cut by new materialities and object-oriented ontology. Ideally, I would like to preserve the feeling that OOO provokes in *me*—not with a book *about* those uncanny and endlessly proliferating objects but with something vibrant, existing on its own.



Manuscript, 2013. Goatskin parchment,
goatskin leather, St-Armand handmade
paper, gouache. 6¼"w x 9¾"h (closed).

Possible Codicils

“...as if pictures were alive, as if works of art had minds of their own, as if images had a power to influence human beings, demanding things from us, persuading, seducing, and leading us astray.”

(W. J. T. Mitchell 7)

I have been lucky enough to handle several medieval manuscripts. They are beautiful (plenty of aura) but so different from current books it is hard to imagine how, Latin aside, to go about reading them—what kind of preparation, what state of mind might be required? And what if you wanted to make one? Outside of pastiche what might the contemporary manuscript look to?

Spuybroek offers some guidance with his notion of the “vital machine of the Gothic.” This would be a book (finally recognizing code as the legitimate etymological offspring of the codex) grown from an algorithmic exemplar: “Coded properly, the digital would establish a type of formation that is neither completely abstract nor completely organic...” (62). My *Manuscript* attempts to work within this formation, but instead of immediately passing the instructions to a device I tried to internalize them—I became the “dumb agent” contemplating and mimicking the whorls and translucencies of the piebald goatskin, watching myself spontaneously drag and skip the path of a brush over the coarse paper. All of the algorithmic experimentation of the previous books had been a way to prepare me to enter a digital imagination that can think of the book as *both* intrinsically gothic *and* contemporary.

These are only my first tentative steps. The digital seems to return us to some version of the hand's dexterity and inquisitiveness—but what kind of hand? And extending from what kind of *strange stranger*? Detaching the manuscript from the onus of preservation, the scribe of the future, in whatever form, will free it to take up residency somewhere between the no-longer-simple dichotomy of the body's “life and death” and the device's “on and off.”

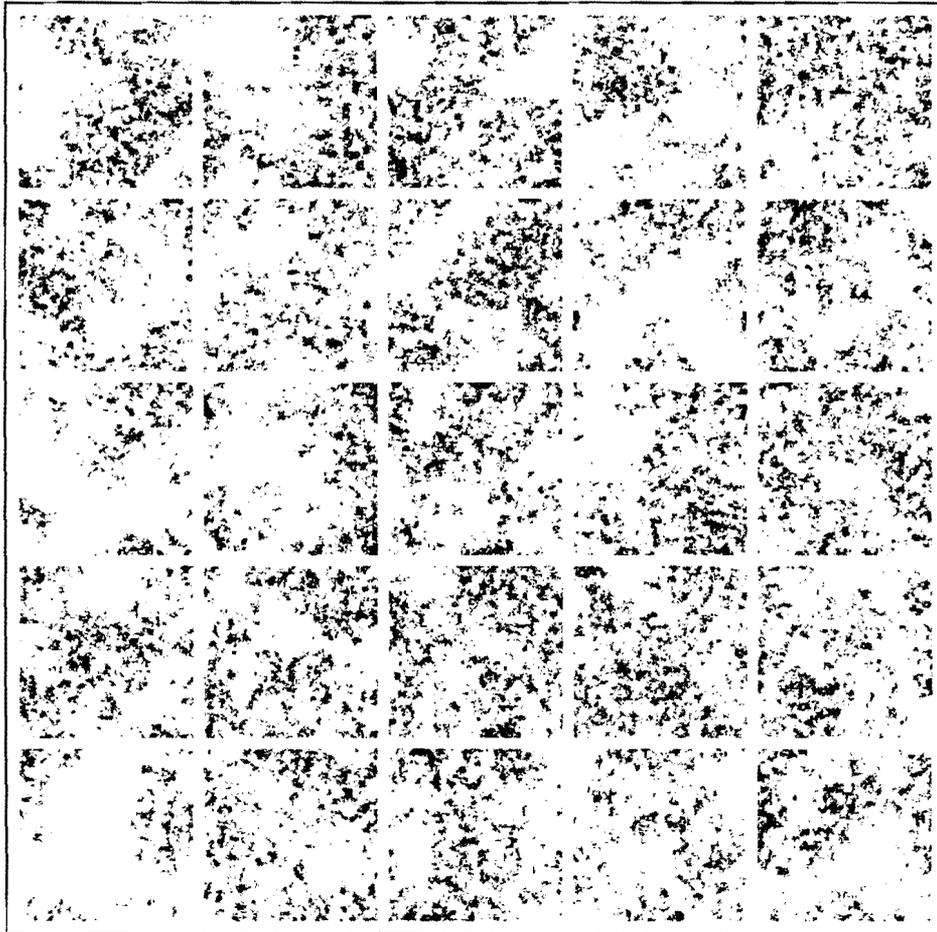


detail from *Two Scrolls*, 2013. Gampi Torinoko
Natural White by Mr. Seki, digitally printed
with archival inks. Each scroll is 9¾" x 59¾".

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Large Carpet, 2013. Gampi Torinoko Natural White by Mr. Seki, digitally printed with archival inks. 49¾" x 49¾".

Appendix

Artist's Statement (from the Exhibition)

Growing in the Dark is an exhibition that looks at the possibilities of using algorithms to make art. An algorithm is a more-or-less explicit set of instructions about how to do or make something – it could be a recipe, or directions about getting somewhere, or a few lines of code telling pixels on a computer screen to display a certain way. What interests me in particular are instructions that are generative and related to growth. I've created a number of variations based on code written by the German group Generative-gestaltung. Their code tracks the path of an agent that moves randomly, choosing from among the eight cardinal and ordinal directions of the compass. All my images have been made by slight modifications to their original algorithm.

The four books – *Carpets*, *Zygotes*, *Junk*, *Totems* – bundle up a number of snapshots from running the code. Sometimes these exposures are for a few seconds, sometimes for as long as an hour, and both wall pieces are a continuation of these collected images. The books themselves have also been made in homage to the groundbreaking bookwork from the 60s of Ed Ruscha. All the words, courtesy of a program by media theorist Ian Bogost that randomly selects Wikipedia entries, are meant to highlight the overwhelming diversity and weirdness of things. This weirdness also includes the surprising results of simple repetitive behaviour; like the accumulated effects of water droplets, the actions of worms, and the autonomous systems operating in our bodies.

Producing an artist's book somewhat arrests the constant flow of the digital as it effortlessly moves from device to device. The handmade manuscript intensifies this slowing down – somewhere nearer the pace of the scribe's concentration. I've tried to rediscover the patterning energies and confrontational presence of the physical book but *through* the lens of algorithmic experimentation, landing me somewhere between writing and drawing. *Growing in the Dark* asks if virtual agents might be able to teach us to pay closer attention to the slower time of actual bodies, whether animal bodies, plant bodies, or scribal bodies. It could make for a manuscript art that looks forward instead of backward.

The Code

```
// P_2_2_1_01.pde
//
// Generative Gestaltung, ISBN: 978-3-87439-759-9
// First Edition, Hermann Schmidt, Mainz, 2009
// Hartmut Bohnacker, Benedikt Gross, Julia Laub, Claudius Lazzeroni
// Copyright 2009 Hartmut Bohnacker, Benedikt Gross, Julia Laub, Claudius Lazzeroni
//
// http://www.generative-gestaltung.de
//
// Licensed under the Apache License, Version 2.0 (the "License");
// you may not use this file except in compliance with the License.
// You may obtain a copy of the License at http://www.apache.org/licenses/LICENSE-2.0
// Unless required by applicable law or agreed to in writing, software
// distributed under the License is distributed on an "AS IS" BASIS,
// WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
// See the License for the specific language governing permissions and
// limitations under the License.

/**
 * draw the path of a stupid agent
 *
 * MOUSE
 * position x          : drawing speed
 *
 * KEYS
 * BACKSPACE          : delete display
 * s                  : save png
 * r                  : start pdf recording
 * e                  : stop pdf recording
 */

import processing.pdf.*;
boolean recordPDF = false;

int NORTH = 0;
int NORTHEAST = 1;
int EAST = 2;
int SOUTHEAST = 3;
int SOUTH = 4;
int SOUTHWEST = 5;
int WEST = 6;
int NORTHWEST = 7;

float stepSize = 1;
float diameter = 1;

int direction;
float posX, posY;

void setup() {
  size(800, 800);
  background(255);
  smooth();
  noStroke();
  posX = width/2;
  posY = height/2;
}

void draw() {
  for (int i=0; i<=mouseX; i++) {
    direction = (int) random(0, 8);

    if (direction == NORTH) {
      posY -= stepSize;
    }
    else if (direction == NORTHEAST) {
      posX += stepSize;
      posY -= stepSize;
    }
    else if (direction == EAST) {
      posX += stepSize;
    }
  }
}
```

```

else if (direction == SOUTHEAST) {
    posX += stepSize;
    posY += stepSize;
}
else if (direction == SOUTH) {
    posY += stepSize;
}
else if (direction == SOUTHWEST) {
    posX -= stepSize;
    posY += stepSize;
}
else if (direction == WEST) {
    posX -= stepSize;
}
else if (direction == NORTHWEST) {
    posX -= stepSize;
    posY -= stepSize;
}

if (posX > width) posX = 0;
if (posX < 0) posX = width;
if (posY < 0) posY = height;
if (posY > height) posY = 0;

fill(0,40);
ellipse(posX+stepSize/2, posY+stepSize/2, diameter, diameter);
}
}
void keyReleased(){
    if (key == DELETE || key == BACKSPACE) background(255);
    if (key == 's' || key == 'S') saveFrame(timestamp()+"_###.png");

// ----- pdf export -----
// press 'r' to start pdf recording and 'e' to stop it
// ONLY by pressing 'e' the pdf is saved to disk!
if (key == 'r' || key == 'R') {
    if (recordPDF == false) {
        beginRecord(PDF, timestamp()+".pdf");
        println("recording started");
        recordPDF = true;
        background(245, 240, 200);
        noStroke();
        posX = width/2;
        posY = height/2;
    }
}
else if (key == 'e' || key == 'E') {
    if (recordPDF) {
        println("recording stopped");
        endRecord();
        recordPDF = false;
        background(255);
    }
}
}

// timestamp
String timestamp() {
    Calendar now = Calendar.getInstance();
    return String.format("%1$tY%1$tM%1$tD_%1$tH%1$tM%1$tS", now);
}
}

```

Note

This package also contains a flash drive that has pdfs of the artworks as well as electronic copies of the written material and photos of the exhibition.

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