

“Iteration, you see”: Floating Text and Chaotic Reading/Viewing in *slippingglimpse*.

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What she’s doing is, every time she works out a value for y , she is using that as her next value for x . And so on. Like a feedback. She’s feeding the solution back in the equation, and then solving it again. Iteration, you see.

Tom Stoppard, *Arcardia*, scene 4, 44.

[I]n order to understand geometric shapes, one must see them. It has very often been forgotten that geometry simply *must* have a visual component Benoit Mandelbrot, “Fractals.” (Holte 1)

“Take your pick” “use a cursor”

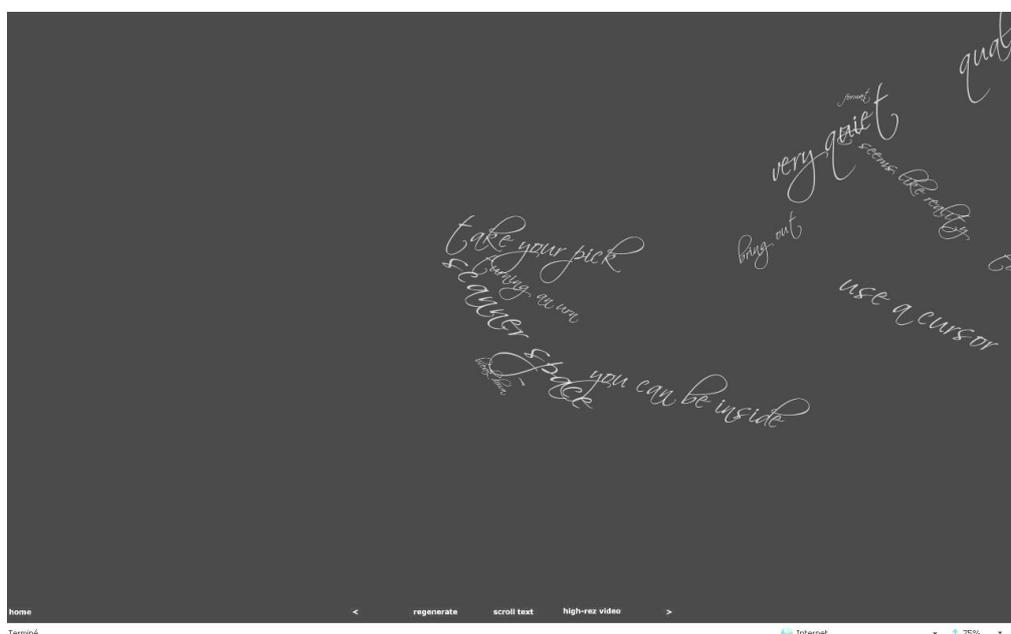
The first screen of *slippingglimpse* beckons “select one to start” (<http://slippingglimpse.org>). My emphasis and starting point will be on this selection, on the dual act of reading as selecting, of selecting as reading. *select one to start*: each reading offers a variation on the digital poem by Stephanie Strickland, Cynthia Lawson Jaramillo and Paul Ryan. My analysis starts with three variations on a reading and explores the dynamics of reading in a *non-linear system*. *Non-linear* refers to the mathematical study of complex systems, I will come back to that, but it can also be understood for now, from the perspective of “the traditional definitions of hypertext,” which, as Michael Joyce reminds us, “begin with nonlinearity” (Joyce 2000, 132).

select one to start. The reader/viewer chooses a location on the right, and selects a still image. The poem opens up—“you can be inside”—unveiling what seems to be handwritten words, floating over a video of moving water. At that stage, she is not yet aware of the instructions stating that “text in the initial ‘full-screen’ mode may be unreadable,” nor did she come across the author’s description stating: “Our mantra for this: water reads text, text reads technology, technology reads water, coming full circle” (http://collection.eliterature.org/2/works/strickland_slippingglimpse.html). What she sees are graffiti of sorts, word-images, images of writing. Or perhaps, is she mesmerized by the

moving water and lets the film come first, forgetting the tantalizing ballet of rounded letters, which form, travel, and fade away. The video recedes in the background. What is left is a black screen on which white words made of rounded typeface detach themselves. The effect is similar to what Jean-Luc Nancy develops in his analysis of images. The words become *distinct*, that is, they reveal a tension emphasizing both separation and contact:

The distinction of the distinct is therefore its separation: its tension is that of a setting apart and keeping separate which at the same time is a crossing of this separation. (Nancy, 3).

The choreography continues and the words converge toward the right half the screen. They seem to be responding to the pull of a *strange attractor*.¹ The *attractors* in this version might read “take your pick” “use a cursor.”



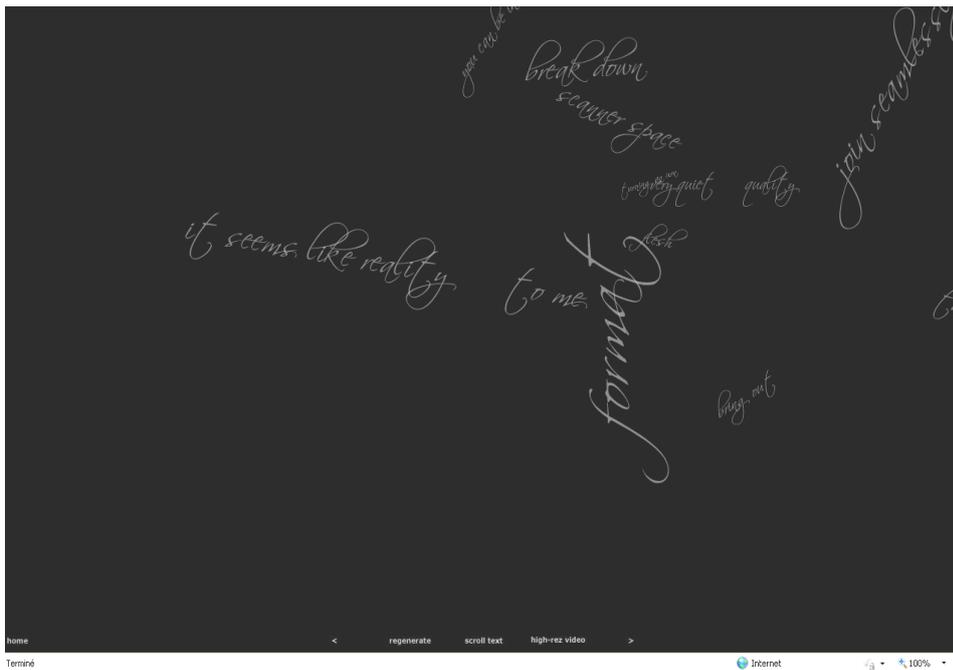
Screen shot

http://collection.eliterature.org/2/works/strickland_slippingglimpse/slippingglimpse/pages/large_5_sepia.html²

Take your pick. She clicks on regenerate. In the new version of the poem, the pull would emphasize “format.”

¹ Though the term refers to chaos theory, it can also be read metaphorically here.

² As initially published in 2007, all videos had a unique URL: <http://slippingglimpse.org>. The electronic literature collection volume 2 introduced a referencing system which assigns page numbers to the videos and differentiates between full-screen, high-resolution and text-scroll modes. I have used it here for referencing, even though it modifies the reader’s perception by anchoring her in a page system that didn’t exist in the first version of the work.



Screen shot.

http://collection.eliterature.org/2/works/strickland_slippingglimpse/slippingglimpse/pages/large_5_sepia.html

As Katherine Hayles reminds us, “to see electronic literature only through the lens of print is, in a significant sense, not to see it at all” (Hayles 2008, 3). The graffiti-like letters form a visual poem which generates a space and emphasizes spacing. Following Jean-Luc Nancy’s analysis: “The difference between text and image is flagrant. The text presents significations, the image presents forms” (Nancy 63). What happens then, when the image is textualized and the text becomes a “form”? What happens when it becomes a geometry?

Take your pick. Our reader heads “Home” and decides that the introduction is perhaps the place to start. She learns that this “10-part interactive regenerative Flash poem” is an experiment in reading:

In a round robin of reading, the water “reads” the poem text (full-screen),
the poem text “reads” image/capture technologies (scroll-text),
and the image-capture video “reads” the water (hi-rez).

<http://www.cynthialawson.com/sg/pages/introduction.html>

The introduction does not alleviate her confusion it only adds to it. What is reading, if it no longer is what she does to make the text *signify*? In an essay on their work, Stephanie Strickland and Cynthia Lawson Jaramillo state that

The system functions and—regardless of content—*signifies*, through the actual processes of coding. Even if code does ‘nothing’, there is still a lot happening—writing,

reading, compiling, executing—that expends machine time and energy. Such signifying is supplementary to the content with which it may or may not be at-odds.

<http://www.slippingglimpse.org/pocode>

If coding *signifies*, does traditional reading still signify?

Take your pick. She exits and points “Home.” This time, she opts for shade, choosing color over spatial arrangement—green beckons perhaps. The video presents a loop of images displaying a single green wave breaking on the same rock over and over again, except that it does so with a twist, first in forward motion and then in reverse motion. Is that meant as an aesthetic experience or as a self-reflexive loop? She discovers that “greenness not a color,” and thinks she is told “please don’t touch.” Where does that leave her, in a theoretical experiment in reading, in a self-reflexive visual loop, in an interactive poem (“use your cursor”) or in a performance where viewers are encouraged to remain passive (“please don’t touch”)?

I chose to introduce this paper with a multidirectional reading to underscore the confusion and divergence that stem from non-linearity. The slightest change in the sequence of reading/viewing, the slightest *bifurcation*³ unveils a whole new poem. The overall effect, in that sense, is close to the findings of chaos theory and to what has commonly been referred to as “the Butterfly Effect” after Edward Lorenz’s paper “Predictability: Does the flap of a butterfly’s wings in Brazil set off a tornado in Texas?” Just as a single flap of a butterfly’s wing might cause a tornado six thousand miles away, a single *bifurcation* in reading might lead to an entirely new reading experience. My aim here is to cross the tools of fluid dynamics with those of literary criticism and (re)read *slippingglimpse* as a complex, nonlinear turbulent system.

Intersections.

In a paper entitled “What is Chaos,” Steve Smale, a mathematician who was awarded the Fields Medal⁴ in 1966, starts by defining chaos, as sensitive dependence on initial conditions: “Certainly the typical answer, “sensitive dependence on initial conditions,” is reasonable” (Holte 90). It seems to me that this definition of chaos applies equally well to *slippingglimpse*, and that, along the same line of thought, what Katherine Hayles calls

³ I am referring here the mathematical concept of bifurcation.

⁴ The Fields Medal is generally regarded as the equivalent of a Nobel Prize for mathematics.

“contemporary” electronic literature⁵ can be considered as dynamical systems. As such they call for a form of *chaotic reading* that I would like to explore here. I am interested in the way the loss of stability impacts both the text and the way we read the work.

I do not intend an incursion into the field of fluid turbulence, which would far outreach both my training and the scope of this essay, but hope to stand at the point where fluid dynamics and electronic literature converge, to place this analysis at a point of intersection where chaos theory sheds light on our reading practices. As Tom Stoppard stated in a conference at Caltech:

There’s an activity which we call art and an activity which we call science, and to some degree and in certain ways and in different places, they converge; elsewhere they diverge, and elsewhere they interact, and they also intersect. (Stoppard 1994, 8)

I would like to consider two intersections between chaos theory and electronic literature. The first one involves nonlinear dynamical systems, and the second one the relation between deterministic chaos and what Stephanie Strickland and Cynthia Lawson Jaramillo describe as videos of “costal chreods” (<http://www.slippingglimpse.org/pocode>). Their use refers to the term “chreods” coined by biologist C.H. Waddington and later taken up and expanded to mathematics and catastrophe theory by René Thom.⁶

Reading water, un-reading text.

Let me first backtrack and return to the way the introduction to *slimppnglimpse* presents reading. In the description, water and text seem to be interchangeable. They are at once the object to be read and the reader itself. In *Rhizome*, programmer Cynthia Lawson Jaramillo explains further,

In fullscreen mode, we track the water reading the poem text by using motion capture coding that assigns the text to locations of movement in the water. The metaphor is that the water's motions provide a scanning, as our eyes scan text.

<http://rhizome.org/artbase/artwork/48135/>

Text thus appears in a liquid form, and not simply from a metaphorical perspective—strings of words and individual words are coded to be embedded in water. What I am interested in, then, is the change of phase from solid to liquid. The flow is not that of a current or river

⁵ Katherine Hayles distinguishes two generations of electronic literature: “classical” works which were written in Storyspace and which contain blocks of texts, and works from a “later period” which “might be called ‘contemporary’ or ‘postmodern’ (at least until it too appears to reach some kind of culmination and new phase appear).” (Hayles 2008, 7)

⁶ René Thom is a French mathematician who developed what came to be known as catastrophe theory. He received the Fields Medal in 1958.

running in but one direction, quite the reverse, the embedded words exhibit the randomness of a fluid particles in motion. This change of phase, and the multidirectional flow it entails, leaves us to wonder what happens to reading when we move away from a solid print text with a fixed structure, and encounter a liquid flowing text. Conversely, in the turbulence thus created, does water become a text?

According to mathematician and physicist Mitchell J Feigenbaum, the study of “fluid in turbulent motion” is an archetypal form, in the field of physics, for the study of chaos, which is itself “part of a larger program of study the so-called “strongly” nonlinear systems” (Holte 45). In fluid dynamics, chaos stems from nonlinearity, or as Benoit Mandelbrot states “non-linearity is the key word of the new meaning of chaos” (Holte 12). This is what seems to me, to be relevant for electronic literature. Electronic literature has often been defined as nonlinear before, to express how the screen narrative expands through hyperlinks and flashbacks. My aim is to show that *slimppimglimpse* calls for a mathematically-defined nonlinear reading experience that distinguishes it both from print text and from “classical” electronic works.

Let me elucidate my intent. Feigenbaum clarifies mathematical nonlinearity by defining linearity as “the rule that determines what a piece in the system is going to do next is not influenced by what it is doing now.” (Holte 45). Following that definition, reading a print text can be described as a linear activity, in so far as most readers would read page $n+1$ after having read page n . I am not suggesting that print texts present a linear storyline, nor am I implying that the narratives lack complexity. As Katherine Hayles reminds us, Robert Coover’s short story, ‘The babysitter’, exhibits hypertextual characteristics, “by juxtaposing contradictory nonsequential events suggesting many simultaneously existing time lines and narrative unfoldings” (Hayles 2002 26). My focus is on the *reading arrow*, and on the fact that books as physical objects offer but one reading direction. Likewise, “classical” electronic works written in Storyspace software distort linearity but are not truly non-linear. While there is no predetermined sequence of reading, hyperlinks create a multiplicity of paths which re-introduce a form of linearity. The writer decides which *lexia* are linked, and by doing so compels the reader to walk through one of the routes she coded. In *Othermindedness*, Michael Joyce presents the way he conducts “workshops with writers exploring hypertext fiction.” His description of a four part story he uses in his workshops sheds light on what I mean by distorted linearity:

A writer may decide that having read his story and reached its reconciliation, her reader should reread the second section in which the two characters fall in love. Obviously a variant of this strategy (not necessarily requiring that the exact text be reread) is of course what constitutes a flashback. With Storyspace this link involves a visual stitch, in

the case of this example a line between the fourth and second boxes on the screen. For a later reader this stitch will offer a way back into the sequence of text and beyond. (Joyce 134)

Though the writer cannot know which path the reader will choose, the writing specifies a limited number of possible paths, and encodes an end space, or “metanode.” (Joyce 134).

Conversely *slimmpingglimpse* offers fourteen stating places,⁷ has no end, and refrains from presenting the reader with a spectrum of predetermined configurations. In that sense, it is a truly nonlinear dynamical system, which, what is more, questions its own nonlinearity. This questioning providing a first element of analysis on reading in a nonlinear environment. The self-reflexivity permeates verbal and non-verbal elements, and is unveiled, as I will show, through image loops and through the options available to the reader both via the regenerate button, and via the scroll-text mode.

In scroll-text mode, a scrolling text comes into view and the reader is given several options. The first one is to read stable words. Yet, the text is displayed within a frame, which comes into view as a double page, separated by a vertical line. “The layout and lineation invites reading on both the horizontal and vertical axes.” (http://collection.eliterature.org/2/works/strickland_slippingglimpse.html). The second option is to use the pointer.

In screens with scrolling text, click and drag the pointer to move text forward and back. Use "0" to stop it.



<http://www.cynthialawson.com/sg/pages/introduction.html>

The pointer allows the reader to change both the direction and the speed at which the text is displayed. She can slow the text-scroll, freeze it, or conversely choose to haste through it. At its fastest the text is impossible to read and looks like accelerated film credits. The device also allows for the possibility of replay, thus giving her the opportunity to notice that the words floating over the video are a sampling of the scrolling text. The combined effect of the slow replay and the accelerated motion gives her the impression that the scroll-text is to be used for reference only. But the most interesting feature resides in the possibility of playing the text backwards.

⁷ The title screen can be clicked in fourteen places: the reader can choose one of the ten still-images, follow the links associated with each of the three authors or decide to select the introduction.

In “Dovetailing Details Fly Apart—All Over, Again, in Code, in Poetry, in Chreods” Stephanie Strickland and Cynthia Lawson Jaramillo, contend that “Poetry and code—and mathematics—make us read differently from other forms of writing.” *slippinglimpse* makes us read differently. Upon first encountering the work, in full-screen mode, the “choreography” of words floating over the video calls for a form of passive multidirectional reading. Yet, in scroll-text mode, the reader is given the possibility of intervention, she can choose a reading direction, and decide to reverse the generally admitted *arrow of reading*. Encoding this possibility has two upshots; the most immediate one is that provides us with a reading in performance, the second one is that it calls our attention to the act of reading and to the reading trajectory. In reverse mode, Stephanie Strickland is asking us in effect to unread in order to (re)read.

Un-reading *slippinglimpse* is also paradoxically what happens, in full-screen mode, when you hit the “regenerate” button. Comparing print and electronic text, Michael Joyce sees the difference in the fact that “print stays itself” while “electronic text replaces itself” (132). *slippinglimpse* does not even replace itself. The option given is to *re-generate* the page, not to *refresh* it, that is, to create not to restore or update. Instead of offering a replay mode, as is the case in the scroll-down text, the *regenerate* button, proposes a new configuration, where a novel dance is choreographed each time. An algorithm “looks for colour changes within the moving images; when the colour change extends over a number of pixels, that location is tagged and randomly matched with a word or phrase drawn from the accompanying poem text” (Hayles 2008 *Frames*, 19). Even more so than in print fiction, re-reading involves un-reading and creating a new work.

In an essay entitled “To Be Both in Touch and in Control,” Stephanie Strickland wanders “how and to what extent can a dynamical system be represented by a symbolic one?” (<http://altx.com/ebr/ebr9/9strick.htm>). *slippinglimpse* provides an indirect answer to that query by instilling a theoretical questioning within a dynamical system.

Loops and chreods.

Let me *regenerate* and return to the video of the green wave in full-screen mode. While regenerating brings to the fore a new textual configuration, the video presenting what

another screen calls an “infinite image loop onscreen.”⁸ The wave breaks on the rocks and then *un-breaks* in reverse, calling our attention to the loop and the infinite reiteration of the same. The fixed structure of the video thus contrasts with free-flowing, loose, textual format. Somewhat paradoxically, the wave provides stability by being stuck in an image loop while the text forsakes its solidity to flow and re-generate. Jean-Luc Nancy’s analysis of text and image can help us understand what is at stake here. For Nancy, text and image “show” and “By showing, each one shows itself, and therefore also shows the other across from it and facing it” (63). He explains further

They show, and in showing, they show that there are at least two kinds of showing, heterogeneous and yet struck to one another, collated, pressed and compressed together (like the stones in an arch) attracting and repelling one another. Each is both pleasing and repelling one another. (Nancy 64)

slippingglimpse combines two forms of showing, which comment upon one another, blending recurrence with unpredictability. It seems to me that this blending is what defines *slippingglimpse*. Paul Ryan’s videos, his “coastal chreods,” are intended to be globally stable loops⁹. The use of the term “chreods,” as Stephanie Strickland and Cynthia Lawson Jaramillo explain, derives from the concept developed by René Thom in his catastrophe theory. In their rendering of Thom’s theory:

Chreods are certain kind of loop in the physical world. Some dynamical systems return, not to their same state, but to their 'same flow', reestablishing their pattern, manifesting stability within change.

Yet, the videos are but one part of a more complex system, they present one form of “showing” which is “collated, pressed and compressed” (Nancy 64) with other modes of showing. What is essential is the attraction/repulsion that different modes exert on one another.

René Thom’s conceptualization of chreods highlights this duality. If “chreods” present a structural stability, they do so, within a morphogenetic field. They are “islands of determinism” within zones of greater indeterminacy:

For any natural morphological process, it is very important to isolate first those parts of the process which are the support of morphogenetic fields, to find out the *chreods* of the

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http://collection.eliterature.org/2/works/strickland_slippingglimpse/slippingglimpse/pages/scroll_4_bladderwrack.html

⁹ In her essay on *slippingglimpse*, Katherine Hayles examines Ryan’s use of chreods patterns as a form of topological mapping of complex systems (Frame 21.1 (2008), 15-29). Though my outlook is different here, I am indebted to her analysis.

process. They form kinds of islands of determinism, separated by zones of instability or indeterminacy.
(Thom 13)

The complex systems he considers allows for *bifurcations* and *catastrophes*. *Chreods* manifest themselves only by the *bifurcations* or *catastrophes* they undergo.

This apparent oxymoron is also what defines mathematical chaos. As John Holte¹⁰ explains the mathematical definition of chaos—“stochastic behavior occurring in a deterministic system”—combines “randomness and determinism” (Holte viii). So how do *chreods* and chaos help us read *slippingglimpse*?

In full-screen mode, “language is undergoing physical movement imposed by the 'chreod' pattern of the Atlantic waves,” (http://collection.eliterature.org/2/works/strickland_slippingglimpse.html), yet it also responds to the reader’s choices. She might choose to *regenerate*, scroll back or exit the frame. Her intervention thus introduces *catastrophes* or perturbations. The chaotic behavior of the system therefore stems from the act of reading/viewing. For Stephanie Strickland and Cynthia Lawson Jaramillo,

Reading chreods in the spaces of 'network topology' is in some ways like the silent reading of poetry, giving rise to unspoken but experienced spaces of various transversions. (<http://www.slippingglimpse.org/pocode>)

Chreods are not just “necessary paths”¹¹ they are one element of chaotic system. They need to be viewed as one type of “showing” in contact with other modes. Reading chreods thus gives rise to “transversions,” that is, it generates mutations to the structure itself.

Iteration as transversion.

I would like to *regenerate* once again, and examine the *un-readability* of text in full-screen mode. The rounded lettered words are moving images whose meaning or perhaps whose unreadable meaning is embedded in *chreods*. As text is assigned a location in *chreods*, language gets embedded in code. Instead of standing out as would an image on a background, it is blended into a different semiotic system. Analyzing words found in paintings, Nancy highlights that they

¹⁰ John Holte is professor of mathematics and computer science, and was the chair of the Nobel Conference on Chaos.

¹¹ The word “chreod” comes the two Greek words: *chreon* meaning “necessity” and *odos* meaning “path.”

make sense, their ordinary sense—“pipe” or “I am the painter”—but they do so by absenting this sense in their image: they are their own graphism, their graphite and their graffiti, its matter, its paste, its color; they are the images in the image, insisting on their absent sense, giving rise to the unheard and the unintelligible, distinct from all received sense.

(Nancy 72)

Text in *slippingglimpse* “images itself” (Nancy 72) as it does in a painting, producing a *distinct* experience, one which gives rise to the “unheard” and the unintelligible.” But contrary to what happens in painting, the reader can choose to *regenerate* “the unheard and the unintelligible,” and thus to *iterate* her reading, as she would an algorithm:

What she’s doing is, every time she works out a value for *y*, she’s using *that* as her next value for *x*. And so on. Like a feedback. She’s feeding the solution back in the equation, and then solving it again. Iteration, you see.

(*Arcadia*, 44)

This quote, taken from Tom Stoppard’s *Arcadia* describes iterated algorithms, and iteration toward chaos, but could equally well be describing the reading process of *slippingglimpse*. An iterated algorithm constantly feeds the results of an algorithm back into itself, never allowing the system to return to its initial state. Likewise, each reading fosters the next one.

In fact, *slippingglimpse* functions as would an iterated algorithm. The poem is created by “sampling and recombining words of visual artists.” Strickland appropriates the descriptions and weaves them into her work in scroll-text mode. The sampling is then fed back into the “coastal chreods,” where the video stream interferes with the strings of sampled words to produce a new artistic creation, one where words fleetingly “hang on screen”. In turn, the words are iterated by the reader. She feeds them “back in the equation,” regenerates, and reads them again, in scroll-text mode, full-screen mode or hi-rez mode.

Reading *slippingglimpse* is reading feedback as iteration, it requires following bifurcations into chaos and as such it also calls for a form of chaotic reading/viewing. As Benoit Mandelbrot contends, “the process of iteration effectively builds up an increasingly complicated transform” (Holte 26). It is this complexity which Strickland, Lawson and Ryan capture, by creating an esthetic experience of iteration. Even though re-reading is not specific to electronic literature, *slippingglimpse* question (re)-reading as iteration in a way print literature cannot.

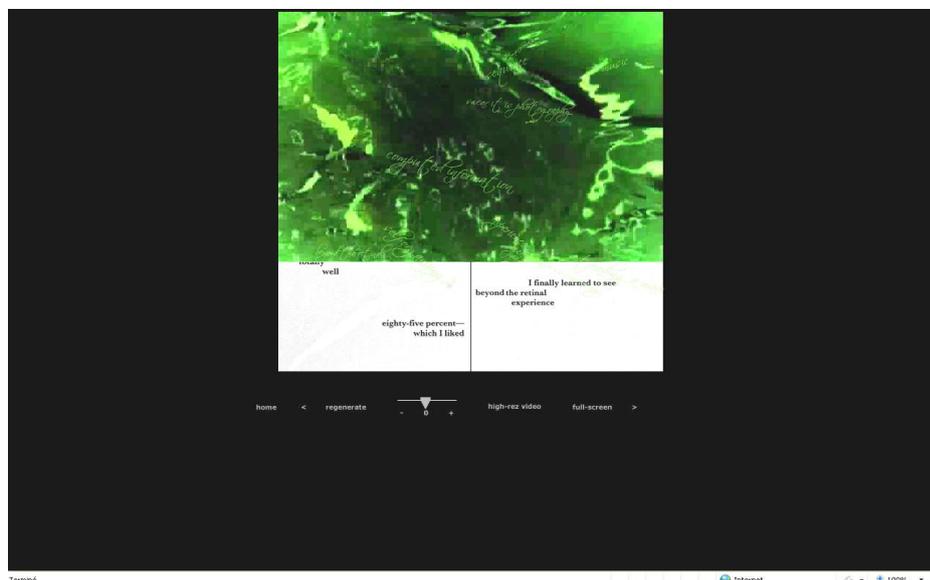
regenerate.



The doubled consonant can now be read as the equivalent of the “//” in URLs, a punctuation of sorts in a title that would read “slip in glimpse.” The work beckons us to let go, it asks us to slip, to lose our footing, and like Alice, fall in “glimpse.” That is, it requires both that the reader accepts a form of evanescent viewing, and that she forego control.

In *Ninfa moderna: Essai sur le drapé tombé* (2002), Georges Didi-Huberman explains that in order to be able to see at all one must learn to close one’s eyes and look away.¹² Our gaze here has to float along with the words. It has to change scale, to zoom in or out, to retreat in the background. It is not just that meaning cannot be grasped, the words themselves escape us. In order to truly read, we have to give up being anchored in a text, accept words that slip away (slippingglimpse).

The choreography in green full-screen mode enigmatically dances to a word-image graffiti which states “learned to see.” So the reader scrolls the text, and discovers that “I finally learned to see/ beyond the retinal/ experience”



http://collection.eliterature.org/2/works/strickland_slippingglimpse/slippingglimpse/pages/scroll_3_green.html

¹² « Pour ouvrir les yeux, il faut aussi savoir les fermer. L’œil toujours ouvert, toujours en éveil–fantasme d’Argus–, devient sec . Un œil sec verrait peut être tout, tout le temps. Mais il regarderait mal. Pour bien regarder il nous faut–paradoxe d’expérience–toutes nos larmes» (Didi-Huberman 127)

So what is there “beyond the retinal experience”? Perhaps is it a textual geometry, or one last fractal loop. In their essay on *slippingglimpse*, Strickland and Lawson examine the coding constraints linked to reading and viewing, and consider the timing needed to allow fractal details to be taken in:

[...] timing to present text is very different from that used for video or image. If we want a viewer to read text, we must consider layered temporalities in which the detail of a detail can begin to resonate. (<http://www.slippingglimpse.org/pocode>.)

In the constantly shifting text “onscreen,” the reader stumbles upon a doubled “image” made of the sequence of words “numerical image zone,” and “image loop.”



http://collection.eliterature.org/2/works/strickland_slippingglimpse/slippingglimpse/pages/large_4_bladderwrack.html

The doubling of the word “image”, suggests an image stuck in typographic and video loops (“image loop”) of rounded letters (l, g, h, z). The graffiti-like written “image” presents itself as both text and image. Thus by embedding text in water chreods and image loops, Strickland, Lawson and Ryan blend textual and visual elements. Text images itself while the video images textualize themselves. This blending suspends what text and image are, and folds them into a new text-image pattern. As one of the voices in Steve Tomasula’s *VAS: an opera in Flatland* remarks: “Of course you would have to know/ how to read the patterns. Which isn’t easy. Even for good readers.” (Tomasula 299)

Just as chaos theory involved paradigm shift in physics, so too, reading and writing in a dynamical environment involves a similar paradigm shift. Following Nancy's analysis of sense,

Sense consists only in being woven or knit together. Text is textile; it is the material of sense. But sense as such has no material, no fibers or consistency, no grain or thickness. Sense "as such" consists precisely in nothing other than weaving together of an "as such" [...] (Nancy, 66)

I would like to contend that *slippingglimpse* is to be seen and read as an iterated weaving.

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