Contents

FROM THE EDITOR

Image from Animated Pages

WELCOME to the inaugural issue of *Openings: Studies in Book Art*, the new journal of the College Book Art Association (CBAA). This peer-reviewed journal provides a forum to examine the book as a work of art and to understand the broader context in which book art is situated, ranging from related fields in the visual arts to the practices of collecting libraries. With an especial focus on pedagogy in the book art field, CBAA brings together book artists, scholars, and students to foster teaching, scholarship, and artistic practice. *Openings* is one product of the dynamic interaction between these constituents and will serve as a conduit for the ongoing re-evaluation of the nature and teaching of book art.

From the start, *Openings* was conceived of as an online journal. While this may seem counter-intuitive for a field that is predominately anchored in the physical object, this decision reflects the radical and responsive nature of the CBAA membership and their interest in engaging with many different modes of expression, choosing whatever is appropriate for the task at hand. In the case of this journal, there is a fundamental interest in bringing the discourse around book art into the tradition of scholarship that has been

long established in other visual art fields. Considering the modern researcher's tendency to want to copy, share, and cite digital texts, it made sense to embrace the online environment as a critical element for examining the nature of the book. Publishing in digital form accrues several advantages: images can retain their color without undue expense, issue length can be untethered from the practical constraints of the printing process, and supplemental materials in the form of multimedia can enhance the traditional critical written essay.

Online publication also facilitates a modified open access policy for the journal. Balancing the desire to offer the journal as a benefit of CBAA membership and the goal of widespread dissemination of critical thought around book art, issues of the journal will become freely available on the web two years after their publication date.

As an editor, I am excited by the range of topics covered in this first issue. The articles range from the contemporary to the historical, from multimedia to trade publications. We will continue to seek engaging articles representing a wide variety of interests and points of view. This first issue includes an analysis of a work by a well-known book artist, an exploration of electronic media and how they expand the idea of the book, an inquiry into the symbolism of pictorial depictions of the library, and a structural exposition of the bibliographic, linguistic, and narrative coding of a complex work of fiction.

I hope you find yourself challenged, stimulated, and inspired by the articles in this first issue. If it can serve in the book art classroom the journal has done its job; if you are motivated to submit your own article, then I have done mine. We are seeking new perspectives and voices and welcome submissions. In addition to the types of content in this first issue, the editorial board would welcome shorter articles on the theme of Teaching with Books and additional formats such as interviews or exhibition reviews. I look forward to an ongoing collaboration with authors to create a journal that expands how we think about book art.

I would like to thank the people who have helped bring this inaugural issue into being. First and foremost the members of the CBAA Publication Committee and the Editorial Board (past and present) who defined the intellectual scope of the journal, developed a management structure and workflow, and guided the naming and design process. In addition to the current Editorial Board members listed on the masthead page, I'd like to include mention of Bonnie O'Connell (former chair of the Publication Committee) and Clifton Meador (former Editorial Board member). Invaluable assistance was also provided by Sara Sauers whose expert eye caught myriad errors in the final stages of proofing. ∎

Fig. 1. Angelus novus: On the concept of history *by Walter Benjamin. Woodcuts by Heribert Ottersbach, 1993. 28 pages. Relief, planographic woodcut, photolithograph, letterpress. Edition 60, 47.6 x 40.4 in. Published by Kaldewey Press.*

ANIMATED PAGES: THE VIRTUAL (R)EVOLUTION OF THE BOOK

By Deborah Cornell

ABOUT THE AUTHOR

Deborah Cornell is Chair of Printmaking at Boston University. This paper was based on a public lecture delivered for Pyramid Atlantic Book Arts Fair, November 2010.

THE CONCEPTS OF "BOOK" AND "PAGE" ARE ON THE MOVE, and are being reinvented in new forms. As electronic methodologies develop, established qualities of book and page more fully capture both time and space. This paper will expand the idea of the book and investigate its extended connection with various electronic media, specifically certain approaches to works in video and virtual reality. I used Johanna Drucker's characterization of a "book" as a working premise for this article. She defines something as a book "when it functions as a book, when it provides a reading or viewing experience sequenced into a finite space of text or images."[1]

1 (Drucker 1995, 14)

Sequenced experiential space is a key element in this view of the book and as this element relates to time-based media, it often becomes virtual or dematerialized. The experiential space of a book depends heavily on progression and the concept of the page; thus one can use these terms to focus the book-like elements in the "non-book" works of six very different artists. This paper will refer to lively video and still works by Patricia Lobos Echeverria, Christiane Baumgartner, the Indonesian collaborative Tromarama, William Kentridge, and Edward Bernstein. It ends/concludes with one of my works in virtual reality. This is a varied menu, but quite amazingly all these works maintain a strong dialogue with Drucker's description of the book, and especially with time-based concepts of the page. These artists will be introduced by an example of an artist's book that closely embodies their book-like ideas.

Animated pages are exemplified in popular film by the moving pages often seen in Harry Potter movies. These video-like planes have become a metaphor for the absorbing effects of time-and-narrative based experience. Their fascination stems from our embedded "knowledge" of the printed page—mixed with a dose of technological imagination—and combined with the temporal progressions and narrative development we have come to expect from a book of pages.

Fig. 2. Images of moving pages from Harry Potter films.

Animation may seem like an unconventional place to find page-like characteristics. Nevertheless, six separate aspects of the page lend themselves to this expanded view, and are worth mentioning at the outset.

- The page represents a sort of internal parsed architecture that determines the form of the book's experience (Fig. 3).

- The page represents a division or interval of experience into a visually expressed series (Fig. 1).

- Sequenced pages create the space of a staged, imaginary narrative where their proximity is a key issue (Fig. 4).

- The page can accelerate in time to create a new form through transformation (Fig. 5).

- The page is a collector or repository of superimposed meanings. It is a place where juxtaposed or overlaid meanings can configure outward to become a larger narrative or whole (Fig. 6).

- Finally, the page can be a place where narrative is sometimes not related to order but to spatial experience. In this case, the association of meaning results from a total experience as opposed to a progression (Fig. 7).

THE PAGE AS A PARSED ARCHITECTURE

Elements of the folded book in *Star Poems* by Karen Hanmer parallel many of the book-like elements in the work of Patricia Villalobos Echeverria. For both artists, imagery
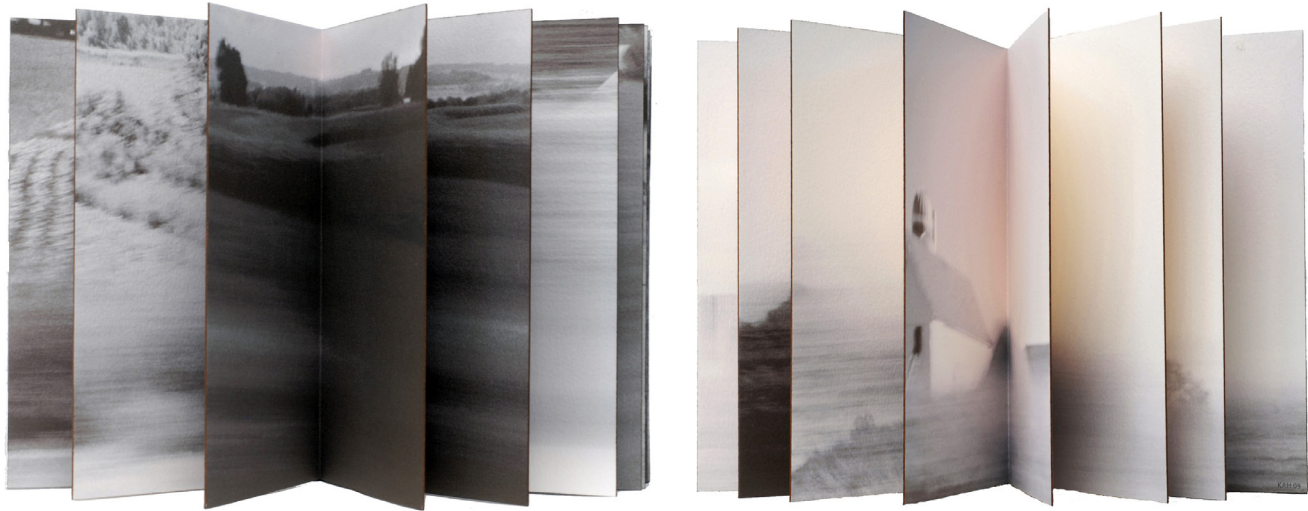
Fig. 3. Karen Hanmer Mirage *2009. 5.25 x 7 in. 16 pages.*

Fig. 4. Frans Masereel Die Sonne *1927. Illustrated with 63 black and white woodcuts.*

Fig. 5. Edward Muybridge The Horse In Motion *1878. Automatic electro-photographs.*

Fig. 6. Marcel Duchamp
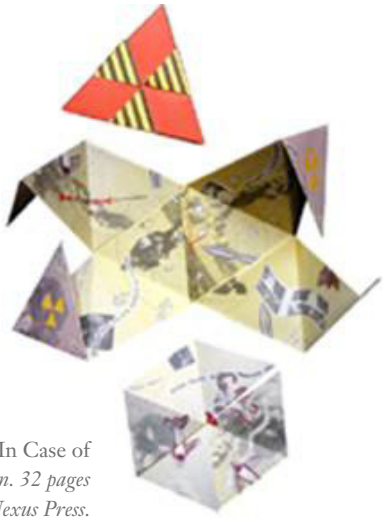The Green Box *1934.*
13 x 11 x 1 in.

Fig. 7. Scott McCarney In Case of
Emergency *1985. 6 x 6 x 6 in. 32 pages
offset edition of 500. Published by Nexus Press.*

depends on the fold, where the pages employ disjuncture, and where the internal parsing of the image determines the actual form of the book's experience.

Patricia Villalobos Echeverria is an American artist with Nicaraguan ties, who currently directs the School of Art at Western Michigan University. Her work concerns migration and displacement within cultures. Her installations tend toward book-like forms. For example, Echeverria's actual book, *Convergencia*, is linked conceptually to video installations that use elements of visual collapse and expansion, revelation and cutting-off, as their primary methodology of both delivering and effecting content.

Hoverings from 2005 is one of several installations that inform the images in *Convergencia*. It uses video projected on foam, with images of a body in water. Echeverria's architectural installation *Aquasmalas (Blackwaters)* from 2008 especially speaks to her book. It is a double video projection onto EPS foam objects suspended in space and flows continuously over the room's wall surfaces and corners.

The original six-minute video loop for *Aquasmalas* (www.patriciavillalobos.com/PVE/aguasmalasvideo.html) gives a succinct picture of Echeverria's imagery. The installation's projections emphasize forward movement, but are divided by architectural elements, seeming to fold around corners as the motion of the video emphasizes visual connection and simultaneous disjunction.

Convergencia itself is an accordion fold book (7 inches high by 36 inches wide) with the paper pages printed on both sides. Its ten individual pages also function as a continuous page. One side depicts an unbroken image of a torso floating in the Pacific near Nicaragua. The other side emphasizes disjunction with individual images sequenced onto pages, each divided by a fold—a torso floating, a body on the beach, and suggestions of water and earth.

Echeverria writes, "I'm intrigued by the folding nature of cultural sites, within the context of globalization and a transnational economy . . . and how these have transformed the way that the body, the community, and nations function. There is a constant system of exchange between the margin and the center in a post-capitalist economy. This transcultural condition has become more universal due to the expanded nature of ourselves into virtualness and our multiple entrances and exits to various spheres. . . ."[2]

Echeverria refers to her combination of water, culture, and the body as an exchange that is "mutually contaminating."[3] This contamination extends as a formal element into the various structures in her work. Ideas of division and continuity are found throughout her media, as interdependent expressions of her perception. The visual architecture of both

Fig. 8. Karen Hanmer Star Poems *2008.
Edition of 30, 6.75 x 5.75 x .75 in. 36 pages.
Pigment inkjet prints.*

Fig. 9. Patricia Villalobos Echeverria
Convergencia *2008. Edition of 5, 7 x 7 in.
10 pages.*

2 *(Echeverria 2010)*

3 *Ibid.*

Fig. 10. Patricia Villalobos Echeverria Hoverings *2005. Double video projection onto EPS foam. Installation view at Artist Image Resource.*
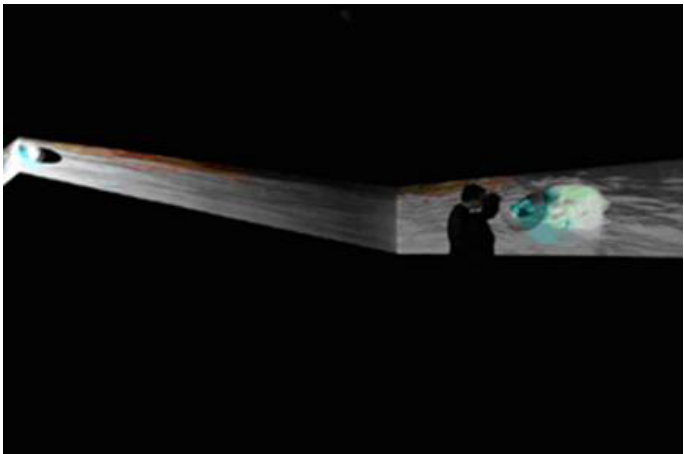

Fig. 11. Patricia Villalobos Echeverria Aquasmalas (Blackwaters) *2008. Double video projection onto EPS foam. Installation view at MediaNoche NY.*

Fig. 12. Patricia Villalobos Echeverria Aquasmalas (Black Waters) *2008. Double video projection onto EPS foam. Installation view at MediaNoche NY.*
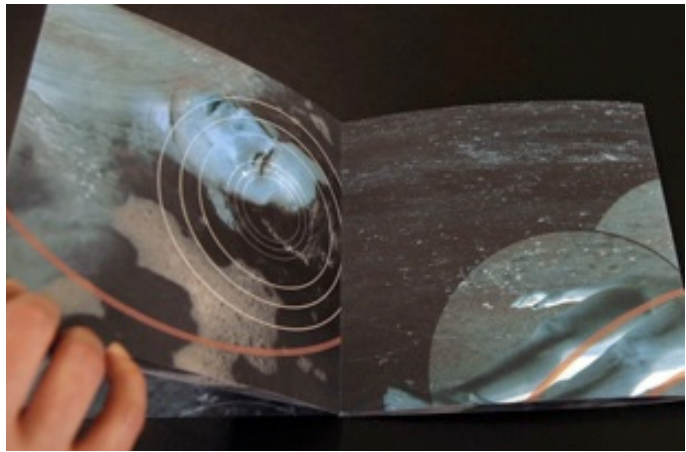

Fig. 13. Patricia Villalobos Echeverria Convergencia *2008. Edition of 5, 7 x 7 in. 10 pages.*

installation and book have a close relationship to the internal and external functions of connected concertina pages.

THE PAGE AS A MEASURED EXPERIENCE

In a great many book forms, the page divides experience into regular, visually generated, continuous time sequences. Similarly, in a book-like sequence by Rimer Cardillo, observation becomes a divided narrative. In this series, Cardillo photographed an owl he collected that had been hit by a car. He used six of these digital photographs, and projected them in a sequence of digital light boxes. He shaped the progression of wings in flight, transforming the single still animal into a series, so that the images attained the transformative function of sequenced pages.[4]

Likewise, Christiane Baumgartner's sequenced series are strongly tied to this idea of staged pagination. Baumgartner lives and works in Leipzig, Germany. She was a Master-scholar at the Leipzig Academy of Visual Arts where she learned printmaking, and then worked at the Royal College of Art in London, where she later adopted the video camera.[5]

Tryptichon is a sequence of large woodcuts from 2005 taken from a passage of video. Like Cardillo, Baumgartner is inspired by the visual play of projected sequenced images, but her interest is in the temporal transformation that occurs within the electronic signals of moving media. She sequences images to develop minute changes of position that differentiate moments of perception and movement, in staged presentation.

Baumgartner had the idea to combine the oldest technique of reproduction with the newest. She takes video of speedy and seemingly mundane situations, slows them down and divides them into page-like stages. Early on, she experimented with the rate of information density in both film and video stills (72 dots per inch at 25 frames per second), and with how low resolution of an image can go before the eye sees no image. (According to Baumgartner, 3 dots per inch can create an image at a distance.)[6]

In *Eine Sekunde*, from 2004, Baumgartner used video footage taken from a moving vehicle. Since the human eye sees more than the brain can quickly perceive, the whole is more than its perceived parts. She isolated one second of material into its separate 25

Fig. 14. Rimer Cardillo The Barred Owl *2007. Six digital photographs mounted in black light boxes.*
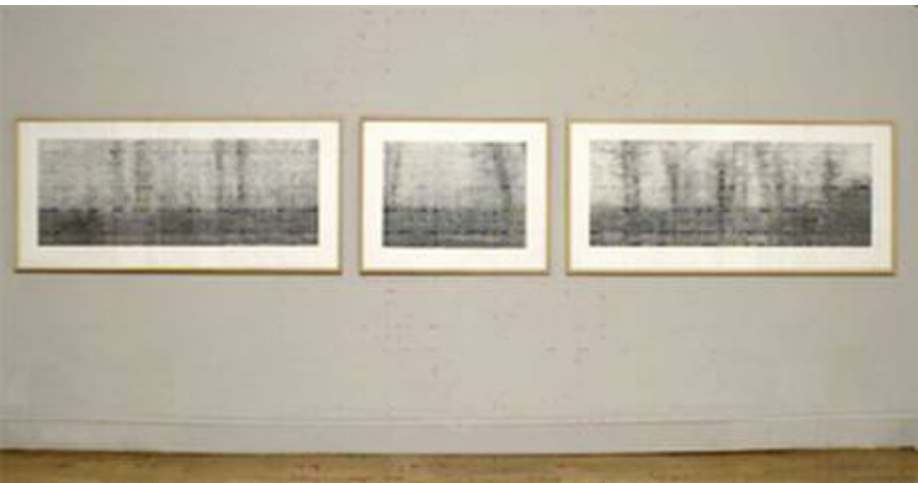

Fig. 15. Christiane Baumgartner Tryptichon *2005. Three woodcuts.*

4 (Cardillo n.d.)

5 (Merritt n.d.)

6 Ibid.

Fig. 16. Christiane Baumgartner Installation view of
Fahrt II, *2004. Series of 8 woodcuts on Kozo paper,*
57 x 73 inches each.

Fig. 17. Christiane Baumgartner Eine Secunde *detail*
2004. Woodcut.

Fig. 18. Christiane Baumgartner
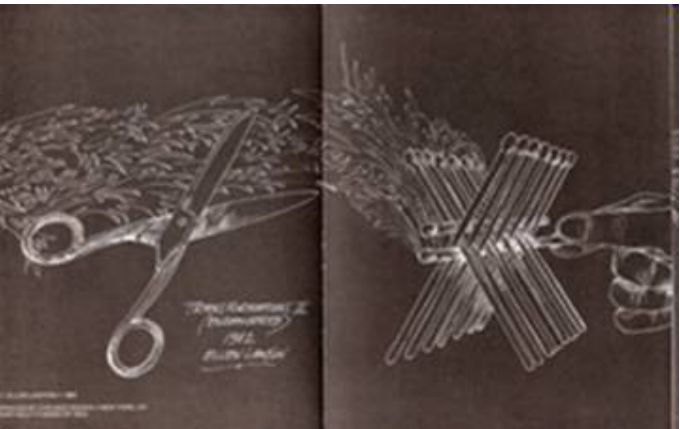Eine Sekunde *2004. 25 woodcuts.*

Fig. 19. Ellen Lanyon Transformations II
(Extinction) *1977. Printed in Italy by Grafiche*
G.V. Milano. Top image is the cover illustration.
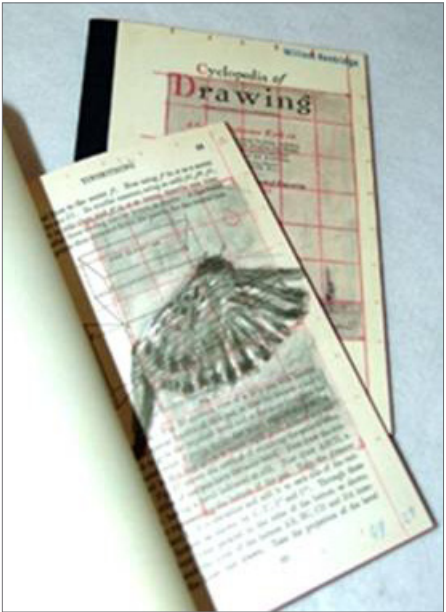
Fig. 20. William
Kentridge Cyclopedia
of Drawing 2004.
Edition of 100.

frames and then made one independent woodcut from each (total 25 prints) creating a regularly divided device for depicting time.

The images are low-grade and sequentially degenerated. Generalized, familiar images of woodland suggest the increasing speed of fragmentary glimpses. The composite creates a complete whole, in the same way that pages of a book inform the mind in pieces and by the moment.

PAGE AS A TRANSFORMATIVE NARRATIVE

The page thus provides a mechanism for temporal experience, but it also provides narrative in a changing, transformative process. An example of this in a traditional book is *Transformations II (Endangered)* by Ellen Lanyon from 1982, printed by Chicago Books, New York. The pages are about 8 inches wide by 10 inches high and form an accordion style book. On each of the 16 pages a central hand-drawn image blends into the central image on the following page, thus converting the image to story.

William Kentridge is especially interested in such transformations. He also parses drawing into narrative, extending this approach to multiple forms of expression. Born in 1955 in Johannesburg, Kentridge studied politics, African studies, art, and theatre. His exhibitions have been displayed in the Hirshorn, the New Museum, MoMA in New York, and the Serpentine Gallery, London. In 2010, he staged and directed the opera "The Nose" at the Metropolitan Opera in New York.

Kentridge's animations use a continually revised charcoal drawing, recorded in stop-motion. He says: "I cast a wide net . . . Some of my works start as videos, turn into drawings, then film and back to video to projection, to photographs, to photogravures."[7] Drawings and the book page are closely related for Kentridge, as is seen in his book project *Cyclopedia of Drawing*, from 2004.

Kentridge's insistence on the imperative of time de-materializes the act of drawing and re-actualizes it as the result of a trajectory of moments of equal value.[8] His temporal sequences use the trace of the hand as the page-like indication of interval.

Fig. 21. William Kentridge Still image from the
film Stereoscope 1999.

Modifying the page between shots, Kentridge uses stop-motion photography to sequence his charcoal drawings into narrative videos. Erasure and reworking evoke the passing

7 (Sterling 2002)

8 (Tone n.d.)

Fig. 22. William Kentridge in studio.

of time. Each image thus represents the current stage in a succession of marks like a narrative. As quoted by Charlie Gere, the literary scholar An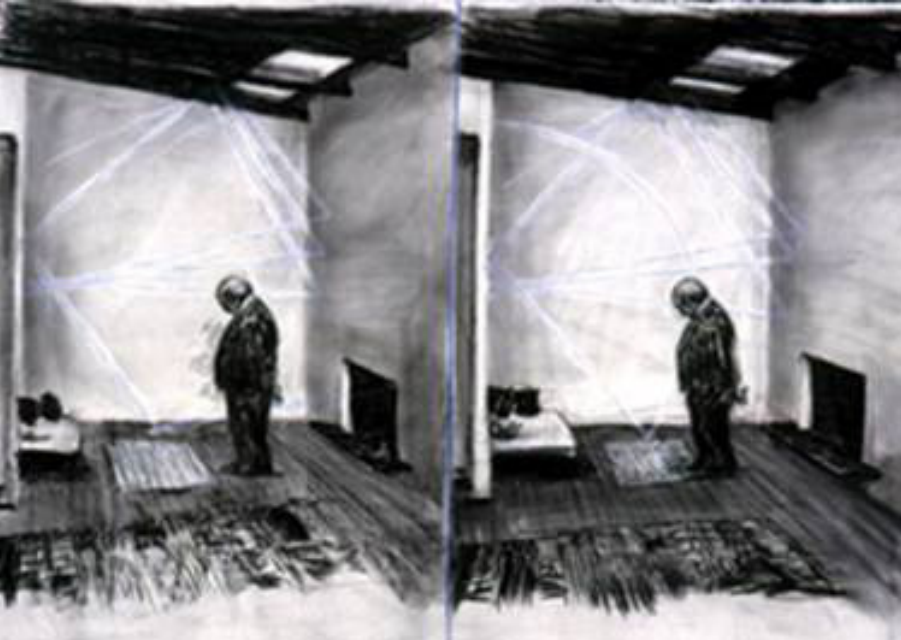dreas Huyssen notes: "Our obsession with memory functions as a reaction formation (sic) against the accelerating technical processes . . . [Memory] represents the attempt to slow down information processing, to resist the dissolution of time . . . to recover a mode of contemplation outside the universe of simulation, and fast-speed information and cable networks. . . ."[9]

Speaking of immaterial works of art Oliver Grau states, "Fixed artworks preserve ideas and concepts, becoming statements of individuals and epochs. Open artworks depend on interaction with a contemporary present audience, which changes the methodology by which they can be historical memory."[10] Books function as fixed cultural artifacts but the narrative transformations achieved by animatronics are more fluid and depend on the transient present. Kentridge fuses these ways of delineating time in his animations.

Kentridge's one-to-the-next approach of page-like sequence can be seen in the 2003 film *Automatic Writing*. (An excerpt of Kentridge's film *Automatic Writing* is typical and can be viewed at http://vodpod.com/watch/2234231-automatic-writing-william-kentridge.) It is a lyrical animated story about the intersection of language and yearning. In it, letters extend to lines which connect with (and then obscure) the object of desire—time is evoked in the memory and trace of what went before. The recurring motifs of calligraphy, man and woman, word and line, create a story of both tactility and removal.
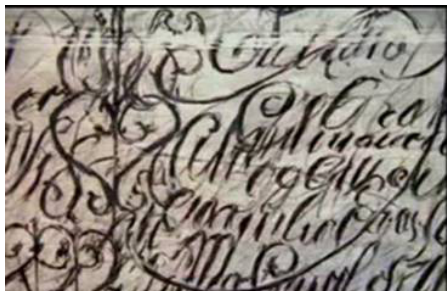

Fig. 23. William Kentridge still from the film Automatic Writing *2003.*

PAGES AS ACCELERATING TRANSFORMATION

Transformation, the essence of the sequenced page, is especially emphasized in the flip book, where compounded images become one unbroken experience. Figure 24 shows flip books by Julia Featheringill. (Animated clips can be seen at http://www.uncertainty-principle.com/julia/.)

Flip books are tightly sequenced sets of progressively related visual images, meant to be seen quickly. Usually in the small scale of a notebook—originally stapled, but mostly bound today—the pages flip over with the thumb. The rolling sequence divides time into equal segments, where each separate image becomes indistinguishable and a continuous whole results in an unbroken movement. The pace of metamorphosis changes with the speed of the flip. Originally termed "pocket cinema," the flip book links the page, and the animated picture frame, the ancestor of the cinematograph.[11]

Contemporary video often alludes to the flip-book structure as the stepped frame-like image accelerates to create new transformations. An especially interesting case is the music video *SERIGALA MILITIA* from 2006. (The video may be seen at http://universes-in-universe.org/eng/nafas/articles/2008/tromarama/photos/11.) It was created by an Indonesian design collaborative called Tromarama, founded in 2004, and consisting of Febie Babyrose, Ruddy Hatumena, and Herbert Hans. The stop-motion activity of carving
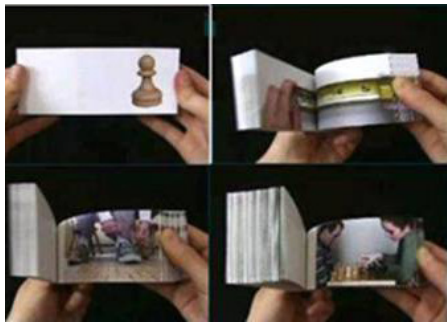

Fig. 24. Julia Featheringill flip books.

9 *(Gere 2004)*

10 *(Grau 2003, 2007)*

11 *(Fouche 2011)*

woodcuts combines with the stop-motion framing of animation, suggesting the stop-motion of the flip book.

According to Joselina Cruz, former curator of the Singapore Art Museum, and co-curator if the 2008 Singapore Biennial, "Their video was produced for a thrash metal band from Jakarta, *Seringai* (which means 'grin' in Bahasa Indonesia). Their music—heavy, noisy and gritty—is a sub-genre of heavy metal music."[12] Tromarama's video for *Seringai* used 450 carved woodcuts for the animation.

In the Singapore Biennial, the woodblocks and the video were installed together, and "the whole room became the storyboard for the video."[13] This physical presentation of what can be considered the "pages" of the video unfolds its sequences for the viewer. Because of Tromarama's display of multiple sequenced objects, their work extends beyond being an electronic flip book, and the blocks collapse back into a tactile, physical page-like system where the visual flipping can occur in any direction. In the video, the woodcuts can only be experienced in a single cascading order—the video format provides the "binding" in the same way that staples in a flip book control the sequence.

THE PAGE AS COLLECTED MEANING

In the flip book, the simple motion of the image creates the meaning. In a traditional book, the surfaces and the sequences can be amplified to include overlay and depth, so that the pages can be configured in a more complex way. The cut book *Your House*, by the installation artist Olafur Eliasson, is a traditional codex book, an example of the extension of overlaid meanings that can re-form into a larger whole.

The lasercuts follow the angularity of the architecture of the house, adding a layer of visual meaning by foregrounding edge and sharpness. In the codex, the parts are never seen all at once, but the experience is an accumulation of slivers of time and discovery, where motifs are introduced, built, and recur. Physical overlay creates the deepening layers in Eliasson's book. Since images can be made to layer within a work, association and shape are built through proximity. The collection of pages becomes a repository of meanings that creates a deeper space than any one image would. Meanings thus configure outward in the temporal experience.

Edward Bernstein's video work relates to this aspect of the codex. Bernstein is a professor of printmaking at Indiana University in Bloomington, with works in the collections of Museum Nacional de Belas Artes (Brazil), Pushkin Museum (Russia), and National Art Museum (China). Prints are the center of Bernstein's practice, but his recent work in digital video mines interests combined from other forms. In his 8 ½ minute video *Chiaroscuro*, Bernstein relies on both experience and imagination as he reflects on the effect of current events in human lives. (URL of full video under construction.) *Chiaroscuro* collects many threads from his other works and binds them in a temporal experience, the way a book

Fig. 25. Tromarama still from SERIGALA MILITIA *2006.*

Fig. 26. Tromarama SERIGALA MILITIA. *Stop motion animation with 402 wood cut plywood 4 min. 22 sec. 2006. Photo courtesy of Mori Art Museum, Tokyo.*
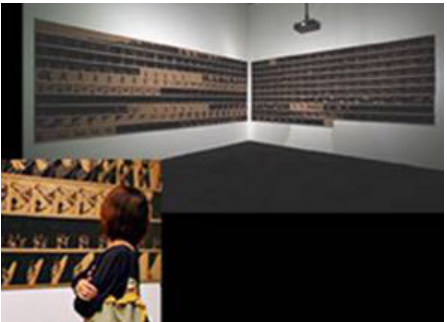

Fig. 27. Tromarama SERIGALA MILITIA. *Stop motion animation with 402 wood cut plywood. 4 min. 22 sec. 2006. Photo courtesy of Mori Art Museum, Tokyo.*

12 *(Cruz 2008)*

13 *Ibid.*

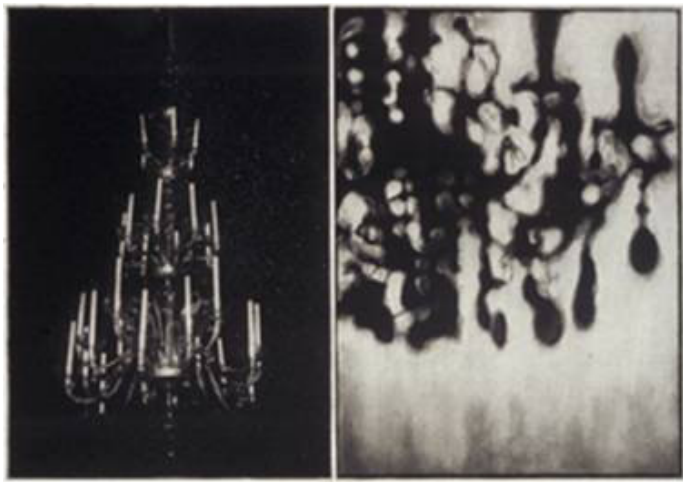*Fig. 28. Olafur Eliasson* Your House *2006. Lasercut book 908 pages.*

Fig. 29. Edward Bernstein Memoria *2002. Etching and photogravure diptych 8.75 x 12 in.*
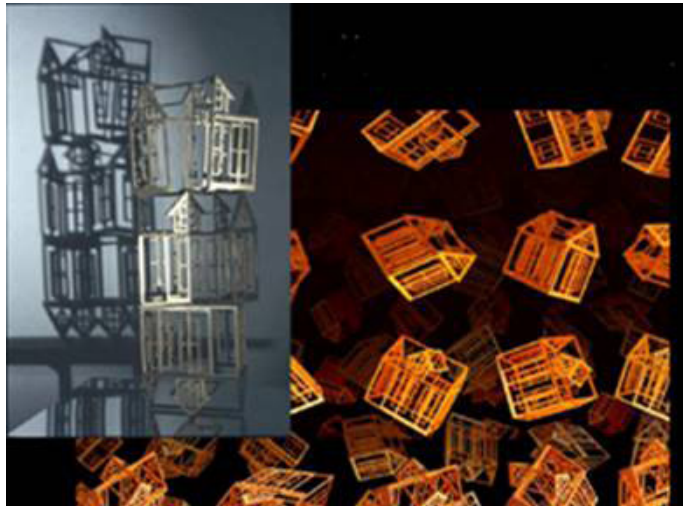
Fig. 30. Edward Bernstein wire sculpture and still from the video Chiaroscuro.
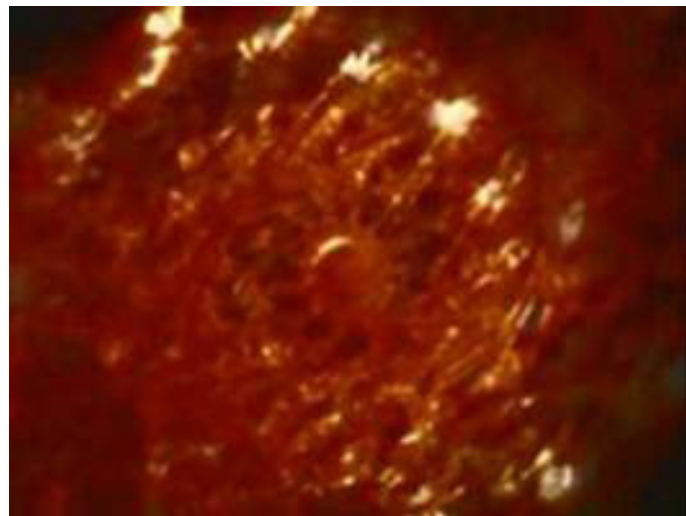
Figs. 31 and 31a. Edward Bernstein wire sculpture and still from the video Chiaroscuro.

holds its pages as a sequential unit. *Memoria* is a source work in intaglio that provides content for the "pages" of the video. This diptych was part of a body of work created in the aftermath of 9/11 from material collected in Italy of traditional glass and chandeliers, which are commonly found there. It has become a symbol for the idea of home or refuge, a contrast of warmth and darkness, safety and risk. Besides image references, Bernstein also built tactile objects for the work, such as a small wire sculpture of a house.

In the video, this image is multiplied and relates to other Bernstein images, creating meanings and relationships well beyond the objective existence of the small frame house. Bernstein's wire sculptures of houses and chairs and his images evoking the warmth of focused light of chandeliers and flames build an experience that is then interrupted by the flashing, jutting choreography of Talia Pura, his collaborator, in a dance that suggests violence.[14]

Unlike the flowing progression of Kentridge's sequences, the elements used by Bernstein are jarringly combined from disparate unconnected sources. The video orders them in a determined array. In the same way as a bound object, the video postulates their relationship through their proximity and pacing. The video speaks to book syntax through its arranged succession, whereby irresolvable differences are joined together to form a cohesive (though challenging) construction.

THE PAGE AS THE SPACE OF EXTENDED EXPERIENCE

The bound book thus generally fixes a sequence of experience. However, many non-bound books use random arrangement as a device to amplify experience. Johanna Drucker claims, "The farthest extreme of a codex can be termed an accumulation of non-uniform pages in an unfixed sequence."[15] The page can thus become a place where the narrative is sometimes not related to order, but rather to an unsystematic but continuous spatial experience. In Rauschenberg's *Shades*, the set of six Plexiglas pages are set into random slots by the viewer. The slots act as the cover, or container, that unifies experience no matter how revised the sequence of panels becomes.

My own work in prints, installation and virtual reality constructions references the concept of an unfixed sequence of pages, where an idea exists as if it were a binding, the connector for the ideas in the works holding the images together. This containment is not visible or articulated, but results from the accumulation of contents.

In my virtual reality pieces, the content becomes episodic within a larger space. Segmented experience unfolds in spatial proximity and over time. This page-like character of temporal and spatial experience speaks to the possibilities of electronically creating 3D works in a virtual space. (http://www.deborahcornell.com/Tracer_video.html)

Tracer is a virtual environment using 3D animation and computing. It was created for the ImmersaDesk, a scientific visualization device at Boston University's Computer Graphics

Fig. 32. Robert Rauschenberg Shades 1964. Six lithographs on Plexiglas panels: one permanent and five interchangeable, with light, in a slotted aluminum frame. 14 x 14 in. Published by Universal Limited Art Editions.

14 *The sound is a composition by William Pura, a Canadian composer.*

15 *(Drucker 1995, 123)*
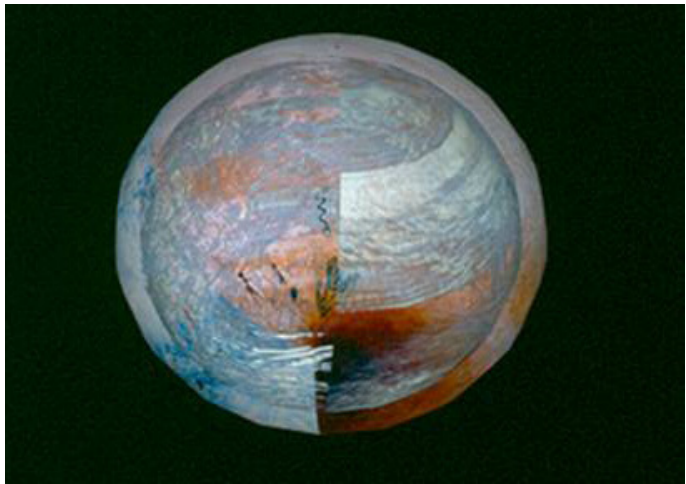
Fig. 33. Deborah Cornell
Tracer *2003. Still from*
virtual reality work.

Fig. 34. Deborah Cornell
Surge *2007. Viewers*
navigating virtual reality.

Lab. The display differed from a video because the images were constantly being recomputed in real time.[16]

Specific views from *Tracer* suggest page-like elements in space in an electronically generated environment; a floating matrix of information not linked by story strings or sequence, but by affinity. *Tracer* is about lines and symbols, writing and drawing, archeology, and the traces of time on human culture and environment.[17]

The planes of text in Fig. 35 hold antiquated, unreadable languages. The snake images on the right are extrapolated from the shape of the Great Snake Mound in Ohio. These images are a stand-in for human culture within the piece. The sources for the floating figures in Fig. 36 were certain ancient aboriginal wall paintings in Australia.

Tracer's visual relationships to the page are sustained by the visual thinness of the objects. And, like a printed object, the projection relies on a matrix of saved information to be recast multiple times. In *Tracer*, narrative is random. It is not related to order but rather to episodes of experience that populate the space of an overarching environment. The experience unfolds as an accumulation of moves from one surface to another rather than in any particular image sequence. In this environment, the viewer can assume both internal and external positions, traveling inside and outside the space of the images. This is the defined environment of "within and without" that parallels the space of a traditional book.

16 *The display responded to the viewer's position with relation to the objects so each person's experience was unique. The entire environment was projected in stereo; viewers wore 3D glasses. Navigation was with a simple gaming device, and resembled flying.*

17 Tracer *has a sound environment that was created by my collaborator-composer, Richard Cornell. The sound was originally electronic, but Boston Musica Viva subsequently commissioned an adaptation of the work for video and chamber players. Presented in this way,* Tracer *is staged as a 20-foot video image, with a live performance by five players. It has been performed thus in Boston, New York, and Taipei.*

CONCLUSION

Though neither *Tracer, Aguasmalas, Automatic Writing, Chiaroscuro*, nor *SERIGALA MILITIA* can even remotely be termed books, they nevertheless contain the language of the animated page, and thus share important attributes with the book form. By animating the page, electronic media are creating new configurations from book elements, expanding the definition of the book as we know it. Though not tactile books, these dematerialized forms of the book generate an exciting cross-disciplinary dynamic for artists. This dynamic migrates among tactile and nonmaterial page forms, and creates an evocative conversation that extends and enriches the current territory of both book and animation. ∎

Fig. 36. Deborah Cornell Tracer. *Files for texture map.*

Fig. 35. Deborah Cornell Tracer *2003. Stills from virtual reality work.*

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+8 = **8** (+28) = **36** (+1) = **37** (+28) = **65** (+231) = **296** (+28) = **324** (+1) = **325** (+28) = **353** (+7) = 360

8 – 28 – 1 – 28 – 231 – 28 – 1 – 28 – 7

	S		H	
Wind (16) / **F**lash (19)	S8		H8	**F**lash (16) / **W**ind (19)
Wind (20) / **F**lash (2)	S36 / S37		H36 / H37	**F**lash (20) / **W**ind (2)
Wind (16) / **F**lash (18)	S65		H65	**F**lash (16) / **W**ind (18)
Chimes! **C**hime! **C**himes! (4) / **T**huu**UUU**u**U**u**UUU**uunder. (6)	S296		H296	**T**huu**UUU**u**U**u**UUU**uunder. (4) / **C**himes! **C**hime! **C**himes! (6)
Chimes! **C**hime! **C**himes! (13)	S324		H324	**T**huu**UUU**u**U**u**UUU**uunder. (13)
Thuu**UUU**u**U**u**UUU**uunder. (2)	S325		H325	**C**himes! **C**hime! **C**himes! (2)
Chimes! **C**hime! **C**himes! (4) / **T**huu**UUU**u**U**u**UUU**uunder. (6)	S353		H353	**T**huu**UUU**u**U**u**UUU**uunder. (4) / **C**himes! **C**hime! **C**himes! (6)
	S		H	

THE BOOK AS COMPUTER: A NUMERICAL AND TOPOLOGICAL ANALYSIS OF *ONLY REVOLUTIONS*

by Manuel Portela

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THE NOVEL *ONLY REVOLUTIONS: The Democracy of Two Set Out & Chronologically Arranged* (2006), by Mark Z. Danielewski, establishes a relationship between its bibliographic coding (graphical and material form as a book made of letters, pages, and openings with a specific typographic design), its linguistic coding (phonetic, syntactic, semantic, and pragmatic verbal form), and its narrative coding (form as story).

Only Revolutions uses the Möbius strip and the circle, in their multiple material and symbolic manifestations—including letter and number shapes—as the organizing principle of this triple universe of signs. Circularity and mirror symmetry function simultaneously as the structure of the book, the structure of language, and the structure of narrative. This article describes the book's numerical and topological form as a mechanism for creating feedback loops between those structures.[1]

> Our cycle allways / putting everyone out of work. (S192)
> Our cycle allways / putting everyone out to work. (H192)

1. INFINITY IS ROUND

Potential literature can be defined as the process of textual generation by the formalization of permutational rules at various levels of language: from the micro-level of grapheme, phoneme, morpheme and sentence to the macro-level of narrative sequences. The structural syntax of language, with its double articulation, is projected onto narrative syntax, creating isometries between linguistic sentence and narrative discourse. The fundamentally combinatorial nature of both language and narrative is enhanced by a method that reveals meaning as the genetic product of permutations and recombinations. Permutations and recombinations are formalized by rules or algorithms that determine constraints, iterations, substitutions and transformations of elements. In Oulipian literature, writing is redefined as a program for inventing and applying constraints and algorithms, thus laying bare generative mechanisms upon which semiotic and hermeneutic productivity depend, as if the world were a mere effect of the engine of language.

The novel-poem *Only Revolutions* (2006), by Mark Z. Danielewski, is a challenging exploration of the probabilistic potentiality of literary and bibliographic devices in the production of meaning. Two features stand out in this work: on the one hand, the link between typographic materiality and the world of hypermedia digital technology; on the other, the inventiveness of its writing, whether at the level of words and sentences or at the level of narrative sequences.[2] Danielewski's obsessive and meticulous typographic

2   Reviews published in the second half of 2006 highlighted those two features: "Mark Z. Danielewski is out to drag the novel kicking and screaming into the world of twenty-first century entertainment. House of Leaves, his first novel did an admirable job of starting the task, but Only Revolutions takes even bigger steps. Danielewski makes full use of the technology that has helped to create video games and surreal special effects in movies to create a complicated all-text reading experience. Thanks to the gift of layout programs such as the Adobe Creative Suite, with which this novel was created, the text is all over the page in a rainbow of colors. […] Oh, it's a crazy-quilt mish-mash of several kitchen sinks and more than a few collages. But get down to the level of language, engage the novel as a reading experience, and there's no doubt that Danielewski is accomplishing precisely what he intends with a level of style that has literally never before been seen or even possible." Rick Kleffel, "Only Revolutions," Bookotron.com, Dec 9, 2006, http://trashotron.com/agony/reviews/2006-old/danielewski-only_re.htm (access 31 July 2009). A similar assessment and hyperbolic tone can be found in reviews published in Kirkus Reviews (July 15, 2006), Publishers Weekly (Aug 28, 2006), Los Angeles Times (Sept 03, 2006), The Guardian (Sept 30, 2006), San Francisco Chronicle (Oct 20, 2006), The Washington Post Book World (Oct 22, 2006), The New York Times Book Review (Nov 5, 2006) and Bookmarks Magazine (Jan-Feb 2007). See, for instance: Deborah Vankin, "Psychedelic Love," Los Angeles Times, 03 September 2006, Book Review-R, p. 9; Steven Poole, "O How Clever," The Guardian, 30 September 2006, http://www.guardian.co.uk/books/2006/sep/30/featuresreviews.guardianreview16 (access 31 July 2009); Mark S. Luce, "Journey Through Time Turns Novel Upside Down. Literally," San Francisco Chronicle, 20 October 2006, http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2006/10/20/DDGFFLRRM01.DTL (access 31 July 2009); Steven Moore,

and bibliographic construction of text and book matches an equally acute sense of the combinatorial possibilities in the materiality of language and writing. The result is a work that blends a numeric and algorithmic logic—descendent from Oulipian mathematical procedures, with its formalized rules and constraints, to a Joycean paranomastic associationism—with its verbivocovisual revelations of the unconscious of language by means of phonic, graphical, and semantic attractions that explode into unexpected combinations. Whitmanian parataxis, with its uncontainable drive for ever-increasing enumerations, joins a Rabelaisian humor, replete with genital allusions.

Operations of metatextual organization add an ergodic and cybertextual layer to the discursive and bibliographic structure of Danielewski's work.[3] By suggesting several reading trajectories, they enlarge the set of syntactic and narrative permutations that readers can perform in their universe of signifiers. This compositional process turns the text into a machine for revealing the mechanism that makes the production of meaning possible. *Only Revolutions* exposes the mechanism that generates its particular bibliographic structure, that is, its material code. Through this device, it displays not only the intertwined mechanics of writing, language, and codex, but also of the novel itself as a printed and narrative genre. Designed as a textual machine, the text shows the abstractness of signs and culture, specifically, the combinatorial nature of discourse and representation. Those features enable us to investigate the connectivity and the physicality of the form's language and writing as producers of meaning: "A lot of *Only Revolutions* is interested in the mechanisms that are underlying things, the grammar, the physics of things. We're not talking about particular words but the relationship between words. Not the particular names of planets, but the nature of an ellipse and the effect of gravity on the orbit." (Danielewski, quoted in Miller 2007).

Only Revolutions confirms the architectural and stylistic ability that Danieleswki showed in his first novel, *House of Leaves* (2000). Both works are remarkable feats in the representation of various internal and external spaces, in the typographic spatialization of voices and discourses on the page and, above all, in the act of creating correspondences between the different scales and patterns into which those internal and external spaces are articulated. While *House of Leaves* was written and page-set on the basis of labyrinthine ramifications, *Only Revolutions* is materially structured on the basis of symmetric and recursive circularity.[4] A set of rules and algorithms translates the space-time of fiction into the space-time of the codex. The correspondence between referential spaces (spaces in the fictional world)

and self-referential spaces (spaces within the book itself) results in a heightened awareness of mediation that defines the experience of reading in both works. Danielewski is trying to create a homology between bibliographic form and narrative content, in order to show how recursivity works in the process of meaning production. Meaning is experienced as the result of a feedback between sequences of signifiers and their mode of material inscription.[5] Considered in its literal configuration on the page, the text takes on an iconic and indexical dimension, which creates a constant tension between a mimetic and a self-reflexive self-descriptive effect.

Like *House of Leaves*, *Only Revolutions* is not just a print emulation of the electronic writing space. This work interrogates the very topology of the codex as a multidimensional space for meaning, exploring the articulation between the page as a unit and the motions from page to page. Self-awareness of the ergonomics of codex spaces is achieved by means of internal symmetry axes at each level (graphic and bibliographic, verbal and narrative). The articulation between material spaces and conceptual spaces works through the topological and algebraic mediation of a set of geometric shapes and patterned numbers that stand out as a metacode. In this way, the codex reveals itself as a computational engine, i.e., as a mechanism that governs the distribution of letters and blanks on the page surface. Its signifying power depends upon various layers of symbolic inscription.

The symbol or logo of the work (Fig. 1), for example, can be read as a sign of those multiple inscriptions. It is a symbol for the two characters simultaneously, for stasis and motion, for union and separation, for the circularity of narrative, and even for the orbital relations between the bodies of signs and the bodies of readers created by the mechanics of book rotation and book translation. By linking graphic space to narrative space, this logo marks its own materiality as an archaeological and technological record of itself as a signifying trace. This ideogram may be said to contain a double reference: to the circle, represented in the outer ring; and to the Möbius strip, represented in the two traces. The figure of the circle is also used, in the body of the text, as a symbol for the eyes of each character—gold for Hailey, and green for Sam. The ring imitates the shape and color of the pupils of Hailey and Sam's eyes while the two traces suggest the point of entry for light. As ideograms for the eye and for the act of seeing they are symmetrically structured, both as reflections of each other, and as representations of the specular nature of the organ of sight. Their presence is multiplied and echoed in the colored letters and numbers in the text, and also in the doubly circled page numbers. The alphanumeric sign (as number zero and letter o) gains an ideographic and pictographic content by turning this particular logographic form into an identifying sign for each of the two individual characters. The color-coded O's and 0's become pictograms referring to the individual

"*Spin Cycle,*" *The* Washington Post Book World, *22 October 2006, p. 13; and Troy Patterson, "Complete 360," *The New York Times, *5 November 2006. http://www.nytimes.com/2006/11/05/books/review/ Patterson.t.html (access 31 July 2009). Since I finished this chapter in October 2009, several new studies have appeared: Assayag 2009; Leonard 2010; Aardse 2011; Hayles 2012: 221-248.*

3 *I use "ergodic" and "cybertextual" in the sense put forward by Espen Aarseth (1997), which implies both self-referential operations within the medium and readers' interventions in the construction of the semiotic field: "The concept of cybertext focuses on the mechanical organization of the text, by positing the intricacies of the medium as an integral part of the literary exchange. However, it also centers attention on the consumer, or user, of the text, as a more integrated figure than even reader-response theorists would claim. The performance of the reader takes place all in his head, while the user of cybertext also performs in an extranoematic sense." (1)*

4 *House of Leaves *as both a thematization and performance of ancient and modern figures of the labyrinth has been analyzed by Cox (2006) and Hamilton (2008). Graulund (2006) examines its rhizomatic structure as a function of textual and paratextual relations.*

5 *For an analysis of this technotextual dimension in* House of Leaves, *see N. Katherine Hayles*, Writing Machines *(Cambridge, MA: The MIT Press, 2002) pp. 109-131, and* Electronic Literature: New Horizons for the Literary *(Notre Dame, IN: Notre Dame University Press, 2008), pp. 175-185. Mark B. N. Hansen (2004) reads* House of Leaves *through the concept of digital topography, thus suggesting a retroactive effect of the computer on the printed page. These ideas are further developed by Jessica Pressman (2006) and Brian W. Chanen (2007). Both of them read the typographic composition in* House of Leaves *as a print emulation of electronic text networks. We should bear in mind however, that Danielewski has always stressed the freedoms of the paper-and-pencil medium and the three-dimensionality of the book as opposed to the two-dimensionality of the screen (cf. interview by McCaffery and Gregory 2003: 117-118). Although deeply dependent upon digital tools,* House of Leaves *and* Only Revolutions *are ultimately concerned with the multidimensionality and the dynamics of the codex form as a complex inscriptional and topological space.*

characters and suggesting the presence of the eyes in the act of reading. They are part of a series of graphical strategies for adding a visual layer to the alphabetic coding of this novel, and for involving readers in its semiotic circles.

In fact, the circle is not only a circle. It is also a model for a Möbius strip. Interior monologues of the two characters are laid out on opposite sides of the strip, as if each of them were written on the surface of the other. Inside and outside become entirely relative coordinates. Once you get to the end, the journey begins again, restarting a new circular cycle. This endlessness is expressed through the lack of hierarchy in narrative focus: each perspective has an exact counterpoint on the opposite point of the circle. Danielewski has attempted to make linguistic and narrative forms symmetrical, as if they were mirroring one another. The symbols 8 and ∞ recur as numerical and geometrical tropes of the novel.[6] On both title-pages, ∞ is used to symbolize infinity. It can be read also as a two-dimensional representation of the Möbius strip. By emulating a Möbius strip, page layout recreates the topology of this structure in the reading surface of the codex. The topographic relationship between 8 and ∞ is established by a rotation that transforms one symbol into the other. In fact, ∞ was often made in printing by typesetting an 8 type on its side. Like verbal language, which has a mathematical expression, numbers have a geometric expression, and vice versa. In addition, the symbol ∞ is also a graphical representation both of time and space within the narrative, as well as of the trajectory of reading motions. Infinity (∞) is thus a representation of the manifold dimensionalities of the codex as topological and semiotic space.

Fig. 1. Only Revolutions' *ideogram. © Mark Z. Danielewski, 2006.*

The circle and the Möbius strip are used not only metaphorically, but also as a model or meta-description of the bibliographic and typographic form that determines the linguistic and narrative composition. There is a continuous process of calculus that projects a topographic and numeric structure onto a bibliographic and typographic structure, and onto a linguistic and narrative structure. Topographical and numerical correlations work at different levels: they structure the book, the chapters and the pages; they structure the strings of alphanumeric characters, and the number of lines; they structure the font, size, style and color of type; they also work at the level of syntactic structures, narrative sequences, among chronological history. They are codified so that the structure and spaces of one level are mapped onto the structure and spaces of another level. This set of correlations can be described as the metadata for writing, page-setting and reading the work. As a device, it shows the technological nature of the book as a machine for linking writing to reading, and language to narrative. Like its predecessor *House of Leaves* (2000), *Only Revolutions* may be analyzed as a technotext in the sense proposed by N. Katherine Hayles: "Literary works that strengthen, foreground, and thematize the connections between themselves as material artifacts and the imaginative realm of verbal/semiotic signifiers they instantiate" (2002, 25).

The circle and Möbius strip, in their multiple material and symbolic occurrences (including the shape of alphanumeric characters), are the main organizers of this universe of signs. This is done by using both their geometry and a large set of numbers derived from their properties. Typographic composition and page layout make possible at least three

major reading trajectories, according to three axes of symmetry. Circularity can be experienced at the level of the book as a whole, as well as at the chapter level, and the page level, all three of which are structured as symmetrical halves. Thus narrative space desires to fully coincide with the paper space of the page and with typographic composition, i.e., with the exact shape of written characters (typeface, type size, type color, type style, line distribution, and constellation of character strings). The reader must acquire a new kind of literacy through this secondary reading code. In the following sections, geometrical and numerical circularity will be mapped considering the book as a whole, chapters, openings, single page, columns, lines, alphanumeric character strings, and type.

2.1. THE BOOK IS ROUND: RECURSIVE LAYOUT

This book's pagination and page layout are based on the projection of 360 degrees of the circle onto its bibliographic structure (Fig. 2). There is a large set of numbers that can be projected onto that structure, which works both at a numeric and a geometric level, according to several axes of symmetry. The numbers used to generate the linguistic and typographic combinations are mostly multiples and submultiples of 360 [1, 2, 3, 4, 5, 8, 9, 10, 36, 40, 45, 60, 72, 90, 180, 360, 720, etc.]. In certain instances, such numbers can be used to generate additional numeric sequences with circular and recursive properties. The book has 360 pages and it is split into two symmetrical layouts, which establish two directions for reading: one half of each page is read in one direction, while the other half is read in the opposite direction. The book has two identical title-pages, each of them identifying one narrative voice. The story is told from the perspective of Sam in one direction, and from the perspective of Hailey in the other. Thus the end of Sam's narrative coincides with the beginning of Hailey's, and vice versa. Like a Möbius strip, there seems to be no exit. The inner surface gradually becomes the outer surface, and vice versa, generating a recursive movement around itself (Fig. 3).

This form of recursivity in the act of reading becomes a material experience of the recursivity between graphical and conceptual space within the codex, and a choreographic embodiment of the hermeneutic circle created by the relationship between sign and interpreter. The need to choose between paths among constellations and networks of signs confronts the reader with his/her role in the co-constitution of the object that s/he interprets. The act of rotating the book embodies the eventual nature of meaning production. If a computational work has to be executed by a program before it becomes readable by a human reader, this bibliographic work follows a code that shows the semiotic import of the reading operations coded in its various material levels. Reading is being produced by re-producing its object as a series of coded fields. The number eight, which works as a symbol for infinity and a planar representation of both the circle and the Möbius strip, also functions as a diagram for the reading motions of the novel. Circularity and infinity are captured on the book's algebraic expression, repeated at each end: "Volume 0: 360: ∞," a formula that should be read as a mathematical representation of the endless proliferation of meaning relations generated by this codex as a discursive machine.

Fig. 2. Does a book have the properties of a circle? © Manuel Portela, 2009.

As happens with the successive levels of abstraction that link forensic materiality to formal materiality in a computer (Kirschenbaum 2008, 10-13), these procedures make explicit the multiple layers of coding contained in a printed book. This layering includes the levels of articulation of language (phonological, syntactic, lexical, and semantic), its recoding by writing (which makes it possible, for example, to explore the combinatorial and recursive
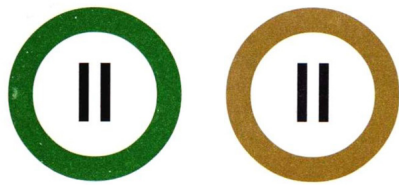
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6   *In mathematics, the symbol* ∞ *denotes an infinite limit beyond any particular assigned value. It was first introduced by John Wallis, in* De sectionibus conicis *(1655).*
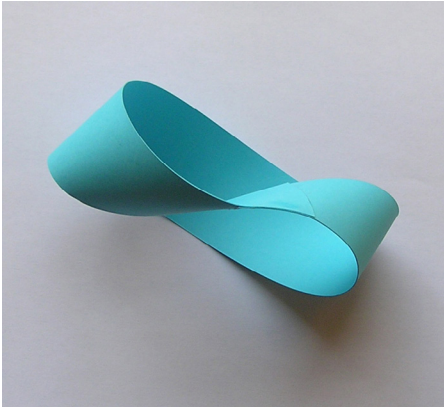
Fig. 3. Does a book have the properties of a Möbius strip? © Manuel Portela, 2009.

structures of language with a higher degree of complexity), its recoding by modes of production of cohesion and coherence in discourse (manifest, for instance, in stylistic patterns, cultural archetypes, and narrative genres), and also the typographic and bibliographic coding of all those elements (according to particular planographic and three-dimensional layouts). By giving explicit semiotic functions to all these material levels of the codex form, *Only Revolutions* delights in the multiplicity of its levels of encryption.

It activates as part of its literary form the double set of codes (linguistic and bibliographic) that characterizes the book as an artifact. It should be noted that bibliographic codes work even when they are not explicitly incorporated into the literary form of the work: their function is to socialize the text, i.e., to materialize it as an artifact. The text is dependent upon a mode of production and a set of reading protocols established by its specific bibliographic condition. The paperback edition of *Only Revolutions* (dated June 2007), for example, contains praising quotations on both covers (from the *San Francisco Chronicle* and *The Washington Post Book World*), the phrase "National bestseller," an embossed silver seal that reads "National Book Award Finalist," and a note that identifies the author as "Author of *House of Leaves*" (Fig. 4). Those four markers are repeated in similar relative positions on both covers, accommodating themselves to the principle of symmetry used in the composition and pagination of the book. To these we should add two praising quotes on each of the book flaps (from *The New York Times Book Review* and from "National Book Award Finalist Judges' Citation"), typical of book blurbs. The graphic layout of this set of markers re-enacts the principles of symmetry and circularity that are internal to the work's compositional rationale, but its pragmatic function is to promote the book as a commodity.

In this way the whole institution of literature becomes present in the socialized artifact: through book reviews in the periodical press, the system of literary awards, the network of bookstores and the author's reputation, i.e., through the whole set of markers that produce the symbolic identity and commercial value of a book in the literary market. Those markers inscribe the work in the system of literary reception in the North American book market. They link the symbolic economy of discourse to the symbolic economy of monetary value. There are therefore elements in this book's bibliographic coding that go beyond what the author can control and which depend upon a broader system of signs that re-inscribes his work in a particular mode of production and reception. These socializing elements re-contextualize the edition's illusory autonomy as bibliographic artifact. Even with the most detailed authorial planning of all areas of the book (including colophon, flaps, spine, inside cover, and bar code), the ubiquity of the author cannot overwrite the ubiquity of the market. In other words, a representation can never exhaust itself and no explicit meta-codification can escape the general processes of socialization of meaning and the codes that determine it.

Fig. 4. Mark Z. Danielewski's Only Revolutions *double cover and spine (paperback ed., 2007). © Mark Z. Danielewski, 2006.*

2.2. THE BOOK IS ROUND: SYMMETRICAL STRIPS

The circular structure, which organizes the 360-page ensemble, is re-played at each page. Each page is divided into four sectors or areas, whose limits are defined by two axes of articulation (inside/outside and upper/lower). Each of these four sectors contains an identical number of alphanumeric strings. The counting unit is the alphanumeric string of characters (and not the word): for example, the punctuation sign that follows a given word (or precedes it, such as dashes) has to be counted as part of the letter or number string.

Numbers, or numbers followed by letters, are always one single sequence. Blank spaces set the boundaries of any unit. "22 Nov 1963," for example, is counted as 3 strings. Each of the four sections of the page has exactly 90 strings. This means that each page is an analogue of the circle, with 90 + 90 + 90 + 90, or, 360 strings (Fig. 5).[7] By using character strings as counting units, instead of word strings, Danielewski points to the code of alphabetic writing as a specific and arbitrary form of recoding language. That differential and generative function of the alphabetic code is also clear when he blends words or when he gives them a phonetic twist.

Each page has two columns divided into two halves, forming four sectors. The inner column always contains references to dates and historical events, while the outer column contains the interior monologues of each character. These four sectors can be read according to several horizontal, vertical, and diagonal sequences:[8] (hH1+H1) + (hS360+S360), or (hH1+hS360) + (H1+S360), or (hH1+ S360) + (hS360+ H1), etc. The page thus becomes a mirror of the book and another analogue of the circle: the book's 360 pages are now the 360 character strings of each page. The three-dimensional space of paper gets translated into the bi-dimensional space of alphanumeric characters. An identical structure links the actual writing surface to the printed marks of writing. Each page is a replica of codex structure, thus establishing a homology between the movement within the plane (X and Y axes) and the movement within space (Z axis). The three-dimensional circularity obtained by handling the sheets and the volume of paper also occurs on the two-dimensional surface arrangement of typographic layout in each page. Readers' body movements handling the codex mirror their eye movements traversing the page, and vice versa. Hand movements are symmetrical to eye movements.

2.3. THE BOOK IS ROUND: INTERSECTING CIRCLES

The use of initial letters organizes the 360 pages in groups formed by 8 pages. There are 45 chapters in each reading direction, i.e. 90 in all. This means that motions of reading can trace three circular paths at the level of bibliographic structures: at the level of the book as a whole, at each chapter, and at each page. Reading can move around the four sectors of each page in different directions (left-right; right-left; top half/ bottom half; inside column-outside column) and in various combinations, either clockwise or counter-
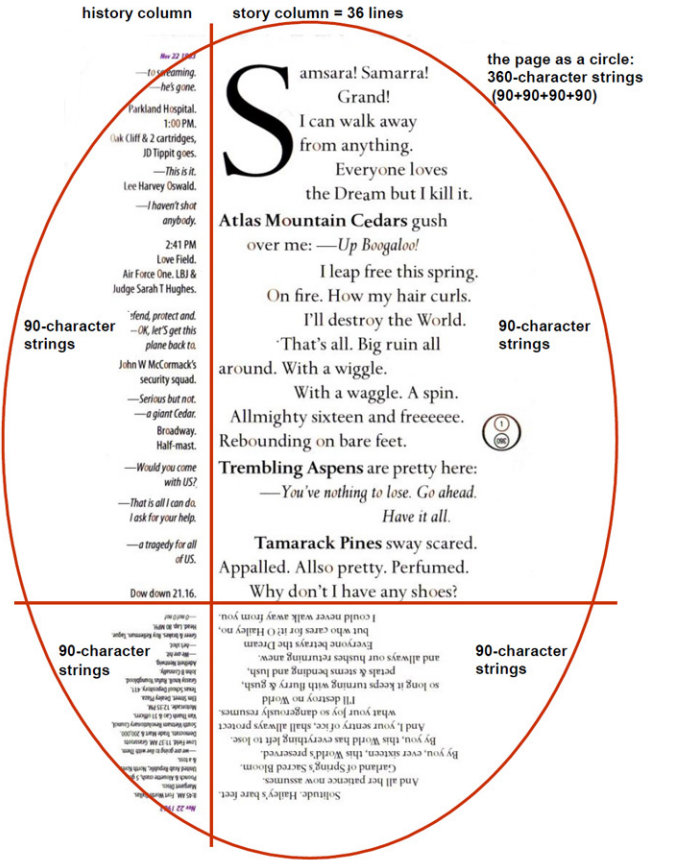
Fig. 5. Only Revolutions *page structure as a circle analogue [H1//S360]. © Manuel Portela, 2009.*

7   This pattern is only broken on those pages in which the history column has been left blank, specifically, for dates comprised between "*Jan 18 2006*" and "*Jan 19 2063*" [pages H285 to H360]. In each of these 76 pages there are only 3 character strings (those corresponding to date headers).

8   When quoting or referring to pages and columns, I will use the following conventions: H or S followed by a page number—for example, H1 refers to page 1 by Hailey, and S1 refers to page 1 by Sam; two forward slashes [//] indicate reversed pages on the same surface—for example, S1//H360; one forward slash [/] indicates reversed symmetrical pages at opposite ends of the codex—for example, H1/S1; a hyphen [-] identifies a sequence of pages, for example, S1–S8; and the letter h before S or H refers to their respective history column—for example, hH1 or hS360.
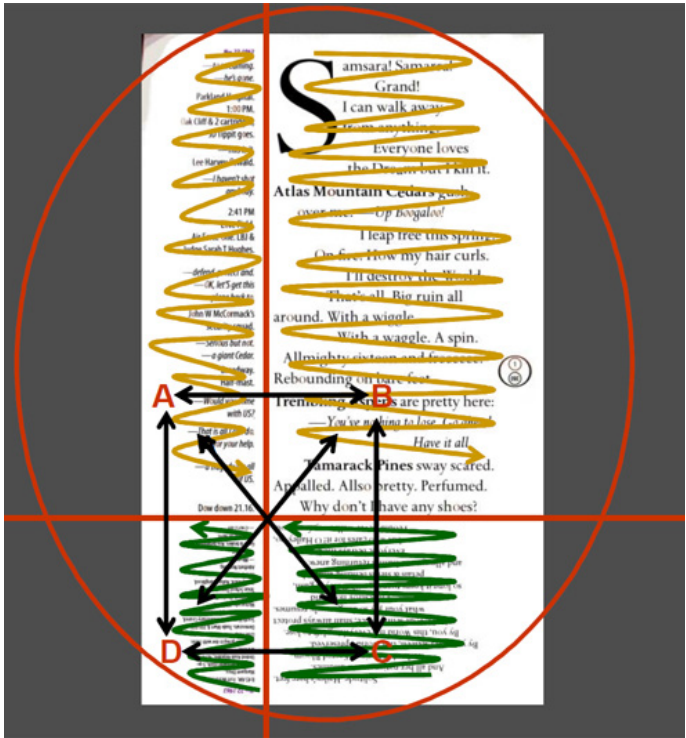
Fig. 6. The page as a circle and twelve reading directions between the four sectors [AB/BA: CD/DC; AD/DA; BC/CB; AC/CA; BD/DB]. © Manuel Portela.
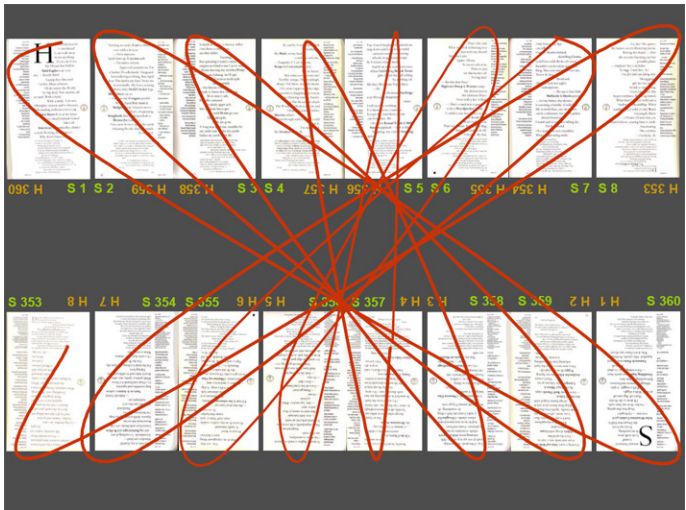
Fig. 7. Symmetrical chapters: (a) reading as a circle in space (8 full translations); (b) reading as a Möbius strip (8x2, reverse directions); (c) reading as a circle and a Möbius strip. © Manuel Portela, 2009

clockwise (H1[1/4, 2/4]//S360[3/4, 4/4]) (Fig. 6). Those same paths can also be made between diametrically opposite pages (H1[1/4, 2/4]/S1[1/4, 2/4] + H2[1/4, 2/4]/S2[1/4, 2/4] + …) (Fig. 7(a)). The reader can read 8 + 8 pages of symmetrical chapters (S1-S8 [1/4, 2/4] + H1-H8 [1/4, 2/4] …) (Fig. 7(b)) or the full 360 pages of each sequence (S1-S360 [1/4, 2/4] + H1-H360 [3/4, 4/4]) or any combination of those reading paths, moving randomly between the scale of the column, the page, the chapter, and the book (in both reading directions) at any given moment (Fig. 7(c)).

Only Revolutions is thus both multilinear, in the sense that several reading trajectories have been produced in advance as preferred courses (such as H1-H8/S1-S8, or H1-H360/S1-S360, or even H1/S1, H2/S2, etc.), and multicursal, in the sense that many other trajectories are determined by the reader according to either regular or random patterns. As a constellated constrained hypernovel—one of the most constellated and constrained novels ever written (including electronic hyperfictions)—*Only Revolutions* is an extreme instance of what Aarseth has called "cyborg aesthetics" (1997, 51-57), i.e., an aesthetic of textual machines. Table 1 represents the triple circularity in the typographic and bibliographic structures of the work, showing in diagrammatic form the relationship between the character strings that define the circle on each page, the sequence of pages that makes up each chapter, and the ensemble of pages that makes up the book. In this schematic representation, arrows mark the trajectories of reading (turning the page + rotating the page + rotating the book) which materialize the experience of circularity in the act of crossing the work's field of signs by means of those combined motions.[9]

3. TYPOGRAPHY IS ROUND: GENERATIVE LETTERS

Initial letters also form a numerical and recursive pattern which loops at each end of the book. Initial letters are legible when combined together, forming a recurring cycle that suggests the topology of the Möbius strip: "SAMANDHAILEYAND" (Table 2).[10] Reading can follow a clockwise or counter-clockwise direction. Certain properties of

the Möbius strip, whose structure may be described by a system of differential algebraic equations,[11] are recreated in the material and symbolic space of the book:

a) the reading of initial letters can start at either end and run continuously, as happens with the continuous unlimited surface of the Möbius strip:

SAMANDHAILEYANDSAMANDHAILEYANDSAMANDHAILEYANDSAMAND-HAILEYANDSAMANDHAILEYANDSAMANDHAILEYANDSAMANDHAILEY-ANDSAMANDHAILEYANDSAMANDHAILEYANDHAILEYANDSAMANDHAI-LEYANDSAMANDHAILEYANDSMANDHAILEYANDSA-MANDHAILEYANDSAMANDHAILEYANDSAMANDHAI-LEYANDSAMANDHAILEYANDSAMANDHAILEYAN-DSAMANDSAMANDHAILEYAND…;

b) the motion of the book when reading symmetric chapters or inverted pages emulates a half-turn needed to produce a Möbius strip out of strip of paper;

c) the boundary of the Möbius strip, when projected in three dimensions, is a topological equivalent of the circle;

d) the page works as a basic rectangle and its division into two parts, with reverse reading directions, is akin to the unlimited double-face of the Möbius strip;

e) the rotation needed to obtain a Möbius strip is made around a point that is outside of the surface of the strip itself, and this is actually simulated by the rotation of the book in space.

Such symmetries (SAMAND/DNAMAS + HAILEYAND/DNAYELIAH) are a feature of the whole work, and they manifest themselves at the level of letter, number, and page sequences. This means that the bibliographic and typographic elements have a fractal structure. Recurrences at the scale of the book as a whole are repeated at the scale of the chapter, the page, the line, the word, and the letter and number strings. The textual machine designed by Mark. Z. Danielewski produces iterations that are homologous in each of those levels of meaning production. What is performed by the surface of inscription is also being performed by the inscription marks. The overall structure becomes an

Table 1. Circle analogues: page circularity; chapter circularity; and book circularity. Symmetrical reading sequences at page level, chapter level, and book level. A numerical analysis of character strings in the novel. © Manuel Portela, 2009.

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9 Events for historical dates between "Jan 18 2006" and "Jan 19 2063" [pages bH285-bH360] were left blank, with the exception of date headers. Out of a possible total number of 90-character strings for the history column in each of those bH pages, only 3 strings—for date headers—have been filled in. In those 76 pages, there will be a total of 228 strings [=76x3] instead of the expected 6840 [=76x90]. Therefore this column has less 6612 strings [=6840-228] than its equivalent in Sam's pages.

10 In this table, numbers correspond to chapters, green cells represent Sam's chapters (reading in one direction) and brown cells represent Hailey's (reading in reverse).

11 Here is one mathematical representation of its topology: "One way to represent the Möbius strip as a subset of R^3 is using the parametrization:

$$x(u,v) = \left(1 + \tfrac{1}{2}v \cos \tfrac{1}{2}u\right) \cos u$$
$$y(u,v) = \left(1 + \tfrac{1}{2}v \cos \tfrac{1}{2}u\right) \sin u$$
$$z(u,v) = \tfrac{1}{2}v \sin \tfrac{1}{2}u$$

,where $0 \le u < 2\pi$ and $-1 \le v \le 1$. This creates a Möbius strip of width 1 whose center circle has radius 1, lies in the xy plane and is centered at (0, 0, 0). The parameter u runs around the strip while v moves from one edge to the other." http://en.wikipedia.org/wiki/Möbius_strip (access June 3, 2009).

Table 2. 'SAMANDHAILEYAND' [H chapters] and 'HAILEYANDSAMAND' [S chapters] as a Möbius strip (a). The initial letters form 3 groups of 15 letters [(3 x 15) x 2 = 45 x 2 = 90]. © Manuel Portela, 2009.

Table 3. 'SAMANDHAILEYAND' [H chapters] and 'HAILEYANDSAMAND' [S chapters] as a Möbius strip (b). The initial letters form 15 groups of 3 letters [45 : 3 = 15 x 2 = 30]. © Manuel Portela, 2009.

embodied equation for deriving topological spaces from alphanumeric expressions, and vice versa.

There is yet another marker that associates chapters in groups of 3, since the initial letters for chapters 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40 and 43 are set in a larger font. In the table with these chapter groups, we can isolate the four letter markers: S, A, H and L. (Table 3). The reading motion of the structure created by initial letters suggests the topology of the Möbius strip, in which the front side of Sam's story is also the back side of Hailey's story, and vice versa. The motions of reading make a retroactive path between one sequence and the other. This elliptical motion is the line drawing movement for the number eight and for the infinity symbol. As mentioned above, the book actually describes rotations and translations which turn reading into a sort of gravitational orbit between the reader and the signs (see Fig. 19). The wavy line that reverses on itself suggests both a looping without beginning or end, like a Möbius strip, and an elliptical or circular motion. Danielewski's bibliographic device models reading and writing as gravitational fields. His book is an experiment on the physical and conceptual mechanics of reading.

These three-chapter groupings produce the palindromic equivalence "AND" = "DNA," which suggests that the numerical meta-codification can also be read as a matrix or genetic code for generating certain textual occurrences and certain semiotic correlations between verbal language and mathematical language. The constraints (which determine the number of lines and character strings, font size, areas of the four page sectors, number of pages, and number of page sets) function as the code for the various permutations and combinations. The productivity of this recursive replication for generating new textual segments is a consequence of that particular code. The established correlations, which link sequences according to the symmetry axes left/right and top/bottom, generate a periodic pattern 2-3-2-3-2-3 (Table 4). Anagrammatic and anacyclic patterns (palindromes) occur both in combinations of letters, and of numbers. Thus the anacyclic principle (i.e., reading in reverse) works at the level of bibliographic structures (page, page groups, and entire codex), at the level of linguistic and narrative structures (each narrative can be read from first page to last, and from last page to first) and, in several instances, at the level of character strings (letters and numbers). The axes of symmetry that duplicate those structures operate according to specularity (mirror reflection) and self-similarity.

Besides mirror symmetries, each column provides various combinations of four or three letters. These letters suggest the

DNA code and the possibility of factorial permutations of the base elements in new strings:

a) in the first columns S and H:

- in groups of four (top-bottom), S-A-H-L, A-S-A-H, L-A-S-A, H-L-A,
- in groups of three (top-bottom), S-A-H, L-A-S, A-H-L, A-S-A, H-L-A,
- in groups of four in reverse direction (bottom-top), H-L-A-S, A-H-L-A, S-A-H-L, A-S-A,
- or in groups of three in reverse direction (bottom-top), H-L-A, S-A-H, L-A-S, A-H-L, A-S-A;

b) in the second columns S and H:

- in groups of four (top-bottom), A-N-A-E, N-A-N-A, E-N-A-N, A-E-N,
- in groups of three (top-bottom), A-N-A, E-N-A, N-A-E, N-A-N, A-E-N,
- in groups of four in reverse direction (bottom-top), A-E-N-A, N-A-E-N, A-N-A-E, N-A-N,
- or in groups of three in reverse direction (bottom-top), A-E-N, A-N-A, E-N-A, N-A-E, N-A-N;

c) in the third columns S and H:

- in groups of four (top-bottom), M-D-I-Y, D-M-D-I, Y-D-M-D, I-Y-D,
- in groups of three (top-bottom), M-D-I, Y- D-M, D-I-Y, D-M-D, I-Y-D,
- in groups of four in reverse direction (bottom-top), I-Y-D-M, D-I-Y-D, M-D-I-Y, D-M-D,
- or in groups of three in reverse direction (bottom-top), I-Y-D, M-D-I, Y-D-M, D-I-Y, D-M-D.

If initial letters are substituted for the equivalent chapter numbers, an identical generative structure can be applied to the chapter numbers (Table 5).

The bibliographic and typographical division based on the number three has a noticeable correspondence within narrative space, since it is possible to associate events in Hailey's and Sam's story into 15 sequences of three chapters. Every three chapters, each of which is 24 pages, contains a core theme, expressed in action, time and space. The following

Table 4. 'SAMANDHAILEYAND' [H chapters] and 'HAILEYANDSAMAND' [S chapters]. Reflection symmetries between groups of letters. Initial letters as a textual genetic sequence. © Manuel Portela, 2009.

Table 5. 'SAMANDHAILEYAND' and 'HAILEYANDSAMAND'. Reflection symmetries between chapter numbers. Correspondences between chapter positions and chapter numbers. Chapters 22, 23, and 24 as a central axis. © Manuel Portela, 2009.

Table 6.

Letters	#	First narrative sequence	L	R	Second narrative sequence	#	Letters
H A I	1 2 3	Sam and Hailey first meet **[1-24]** [S1-S8] [S9-S16] [S17-S24]	1	15	Hailey's lament for Sam **[337-360]** [H360-H353] [H352-H345] [H344-H337]	45 44 43	D N A
L E Y	4 5 6	Sam and Hailey reunited **[25-48]** [S25-S32] [S33-S40] [S41-S48]	2	14	Death of Sam **[313-336]** [H336-H329] [H328-H321] [H320-H313]	42 41 40	Y E L
A N D	7 8 9	First car journey **[49-72]** [S49-S56] [S57-S64] [S65-S72]	3	13	Car accident **[289-312]** [H312-H305] [H304-H297] [H296-H289]	39 38 37	I A H
S A M	10 11 12	Club party in New Orleans **[73-96]** [S73-S80] [S81-S88] [S89-S96]	4	12	Fifth car journey and fight against The Creep **[265-288]** [H288-H281] [H280-H273] [H272-H265]	36 35 34	D N A
A N D	13 14 15	Hailey in the hospital **[97-120]** [S97-S104] [S105-S112] [S113-S120]	5	11	Fourth car journey and marriage **[241-264]** [H264-H257] [H256-H249] [H248-H241]	33 32 31	M A S
H A I	16 17 18	Second car journey **[121-144]** [S121-S128] [S129-S136] [S137-S144]	6	10	Third car journey, Hailey and Sam try to get married **[217-240]** [H240-H233] [H232-H225] [H224-H217]	30 29 28	D N A
L E Y	19 20 21	Stay at St. Louis and work at the bar **[145-168]** [S145-S152] [S153-S160] [S161-S168]	7	9	Last days working at the St. Louis bar **[193-216]** [H216-H209] [H208-H201] [H200-H193]	27 26 25	Y E L
A N D	22 23 24	St. Louis, bike rides to work, Sam and Hailey in bed **[169-192]** [S169-S176] [S177-S184] [S185-S192]	8	8	St. Louis, bike rides to work, Hailey and Sam in bed **[169-192]** [H192-H185] [H184-H177] [H176-H169]	24 23 22	I A H
S A M	25 26 27	Last days working at the St. Louis bar **[193-216]** [S193-S200] [S201-S208] [S209-S216]	9	7	Stay at St. Louis and work at the bar **[145-168]** [H168-H161] [H160-H153] [H152-H145]	21 20 19	D N A
A N D	28 29 30	Third car journey, Sam and Hailey try to get married **[217-240]** [S217-S224] [S225-S232] [S233-S240]	10	6	Second car journey **[121-144]** [H144-H137] [H136-H129] [H128-H121]	18 17 16	M A S
H A I	31 32 33	Fourth car journey and marriage **[241-264]** [S241-S248] [S249-S256] [S257-S264]	11	5	Hailey in the hospital **[97-120]** [H120-H113] [H112-H105] [H104-H97]	15 14 13	D N A
L E Y	34 35 36	Fifth car journey and fight against The Creep **[265-288]** [S265-S272] [S273-S280] [S281-S288]	12	4	Club party in New Orleans **[73-96]** [H96-H89] [H88-H81] [H80-H73]	12 11 10	Y E L
A N D	37 38 39	Car accident **[289-312]** [S289-S296] [S297-S304] [S305-S312]	13	3	First car journey **[49-72]** [H72-H65] [H64-H57] [H56-H49]	9 8 7	I A H
S A M	40 41 42	Death of Hailey **[313-336]** [S313-H320] [S321-S328] [S329-S336]	14	2	Sam and Hailey reunited **[25-48]** [H48-H41] [H40-H33] [H32-H25]	6 5 4	D N A
A N D	43 44 45	Sam's lament for Hailey **[337-360]** [S337-S344] [S345-S352] [S353-S360]	15	1	Sam and Hailey first meet **[1-24]** [H24-H17] [H16-H9] [H8-H1]	3 2 1	M A S

table is an attempt at identifying those 15 narrative sequences (Table 6). In the center column, which numbers the 15 sequences from each end of the book, it is possible to find other numerical associations. For instance, number 8 stands out as both the center of the narrative and the center of the book. The 13th sequence includes the car accident that precedes the death of both characters—Hayley from a bee sting (S321), and Sam from a fall (H321). The double circle and Möbius strip are further reflected on the wheels of the bicycle that Sam and Hailey use in their daily rides to work (8th sequence). There are references to cycles and cycling in the 16 pages of chapters 22 (H169-H176/S169-S176) and 24 (H185-H192/S185-S192), and the word "Bike" is used 8 times, in the first and last pages of the bicycle sequence (S169, S170, S191, S192; and H169, H170, H191, H192).

3.2. TYPOGRAPHY IS ROUND: LOOPING TYPES

Numerical patterns also determine the number of lines in the two narrative sectors (outside column) in each page. The number of lines of the monologues by Sam and by Hailey always adds up to 36 lines. Therefore we have yet another submultiple of 360 and a reading path linking the reversed halves of each page as a projection of the circle. The number of lines is organized according to the following sums: 22+14, 21+15, 20+16, 19+17, 18+18, 17+19, 16+20, 15+21, and 14+22. The number of lines decreases when the reader moves towards the end of the book and increases when s/he moves away from the end. These changes are symmetrical since the movement towards the end of one narrative is the movement towards the beginning of the other. In the central

chapters the number of lines is the same in each half-column (18+18). In other words, the bibliographic pattern of the codex structure has a typographic equivalent in line layout.

This pattern is also replicated in font size, which decreases at regular intervals (Table 7). The font size decreases every 5 chapters, i.e., every 40 pages. This means that character size changes 8 times in each direction of reading. Changes occur, respectively, on pages H41, H81, H121, H161, H201, H241, H281 and H321, and on pages S41, S81, S121, S161, S201, S241, S281 and S321. In each group of five chapters, the number of lines in Hailey's pages increases by one line, while the number of lines in Sam's pages decreases by one line, and vice versa. Font size and number of lines in Hailey's and Sam's half pages is identical in the five central chapters of the book (pages H161-H200 and S161-S200). It is only here that the surface area of the page is divided into two equal halves. This divides the page height of 22.4 cm into approximately two halves of 11.2 cm. Changes in type size function as musical notation for a vocal performance of the monologues. They correlate with the changes in the general tone and emotional atmosphere of the various narrative sequences. The allegro vivace of the first sequences turns into the andante of the middle sections, and finally into the adagio of the last sequences. The joyful euphoria of love and car journey as filtered through individual consciousness gives way to the social transactions of Sam and Hailey with other voices and other people, and finally turns into a melancholic lament for separation and death. The size and style of type make the writing audible and they can be read as prosodic markers.

It is not only the page structure that is symmetrical. Symmetry is also a property of line layout, and font size variation. As we will see in the next section, such symmetry extends to the syntactic structure of sentences. Typesetting thus mirrors linguistic structure in the sense that typographical forms share topographic properties with the corresponding linguistic forms. Linguistic syntax becomes homologous to typographic syntax. The same syntactic structures are used by Sam and by Hailey, but with lexical variations that distinguish their voices. Moreover, each page (and, in some cases, groups of two pages) can be read as poems, because they often function as an autonomous unit, more or less independent of narrative sequence. Their rhythmic and syntactic unity often allow for a suspension of narrative continuity or, at least, for a tension between the self-enclosed page and the open-ended sequentiality of the circular codex. Syntactic structures, text lines, page sectors, single page, and page groups produce what can be best described as a voco-visual and constellated novel.

Table 7.

		outside column			
type size decreases	H	36 lines per page		S	type size increases
	H1-8	22	14	S353-360	
	H9-16	22	14	S345-352	
	H17-24	22	14	S337-344	
	H25-32	22	14	S329-336	
	H33-40	22	14	S321-228	S321
H41	H41-48	21	15	S313-320	
	H49-56	21	15	S305-312	
	H57-64	21	15	S297-304	
	H65-72	21	15	S289-296	
	H73-80	21	15	S281-288	S281
H81	H81-88	20	16	S273-280	
	H89-96	20	16	S265-272	
	H97-104	20	16	S257-264	
	H105-112	20	16	S249-256	
	H113-120	20	16	S241-248	S241
H121	H121-128	19	17	S233-240	
	H129-136	19	17	S225-232	
	H137-144	19	17	S217-224	
	H145-152	19	17	S209-216	
	H153-160	19	17	S201-208	S201
H161	H161-168	18	18	S193-200	
	H169-176	18	18	S185-192	
	H177-184	18	18	S177-184	
	H185-192	18	18	S169-176	
	H193-200	18	18	S161-168	S161
H201	H201-208	17	19	S153-160	
	H209-216	17	19	S145-152	
	H217-224	17	19	S137-144	
	H225-232	17	19	S129-136	
	H233-240	17	19	S121-128	S121
H241	H241-248	16	20	S113-120	
	H249-256	16	20	S105-112	
	H257-264	16	20	S97-104	
	H265-272	16	20	S89-96	
	H273-280	16	20	S81-88	S81
H281	H281-288	15	21	S73-80	
	H289-296	15	21	S65-72	
	H297-304	15	21	S57-64	
	H305-312	15	21	S49-56	
	H313-320	15	21	S41-48	S41
H321	H321-328	14	22	S33-40	
	H329-336	14	22	S25-32	
	H337-344	14	22	S17-24	
	H345-352	14	22	S9-16	
	H353-360	14	22	S1-8	
type size increases	H	36x360=		S	type size decreases
number of lines=6480		12960		6480=number of lines	
		outside column			

4. LANGUAGE IS ROUND

The mirroring of Sam's story in Hailey's, and vice versa, duplicates—in the material space of language and in the conceptual space of narrative—the material and conceptual space of the codex as a circle with one axis of symmetry that divides it into two topological identical parts. The permutational principle that establishes the verbal symmetry between the monologues by Sam and Hailey can be seen in the symmetrical pages of each sequence (H1/S1, H2/S2, etc.). The same syntactic and phonic structure sustains their voices, which suggests both the coincidence and the un-coincidence of their consciousness; the possibility and impossibility of union; the possibility and impossibility of identity between signifier and signified, and the necessary and the arbitrary logic of the verbal, narrative, and bibliographic associations that generate meaning. The work's narrative semantics displays itself as an effect of phonic, syntactic and lexical repetitions and variations, which in turn are reinforced by a feedback between material and linguistic space in the book. The linguistic template that supports the lexical variations has a graphic equivalent in the typographic template that determines the parameters for typesetting (Fig. 8). Symmetry at the codicological and typographic levels extends into the linguistic and narrative levels.

Fig. 8. A textual motor: linguistic and typographic symmetry in Hailey's and Sam's discourses. Lexical substitution takes place over a syntactical matrix. Typographical composition works according to a template that defines styles, justification and position of lines [H33 and S33]. © Mark Z. Danielewski, 2006.

Pages H33 and S33 (as would any other pair of symmetrical pages) exhibit one of the central stylistic features of the work: the repetition of the same syntactic and graphic structures in the discourses of Hailey and Sam. Their interior monologues are like echoes of each other, and most of the time they cancel out the possibility of determining their relative anteriority or posteriority. Although occurring at different places in the book and at different reading times, perceptions of each character are given as temporally and topographically identical. In this way, both symmetry and asymmetry are suggested, giving readers access to shared experience and to the particular perspective of each voice. All references to flora that appear in the monologue by Hailey, for example, are substituted by names of fauna in the monologue by Sam. Even the direct speech of each character or the sounds of nature follow patterns of semantic and phonetic symmetry:

New **M**ountain **Phl**o**x** and **Wild**	Every **American R**o**bin** and **Sage**
Strawberries praise pleasingly	**Thrasher** chears admurringly
my racing breeze:	my tremendous blur:
–– *Weeeeeeeeeeeeeeeeeee!*	*Whirrrrrrrrrrrrrrrrrr!*
(H33)	(S33)

When read continuously these recursions and permutations are barely noticeable, because of the vibrant phonic and oral nature of the writing. The complex relation between sound and visual patterning in the work can be appreciated when we compare a silent reading of the pages with the sound recording of the novel.[12] This recording alternates one chapter by Sam, read by a male voice, and one chapter by Hailey, read by a female voice. While it is still possible to recall echoes of Sam's in Hailey's monologues, the listener will miss the

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12 Cf. *Mark Z. Danielewski*, Only Revolutions, *Reels 1–5, Circle Round a Stone, 2007.*

highly constrained patterns visible to the reader. Tracks (chapters) have been given titles, and in several passages a musical soundtrack has been added to the voices. Conventions of audio-books have framed the recorded reading in a way that stresses both the linearity of narrative syntax and the realist and romantic aspects of the work. Certain hierarchies are restored in order to navigate what is a highly decentred text. For instance, Sam's voice is given primacy, which turns his text into a template and Hailey's into a variation on that template. Reading the symmetrical chapters also stresses continuity of time, action and place, instead of the fragmentation and incompleteness of each character's single consciousness. As the semantics of spoken discourse overpowers the semiotics of typography and codex, narrativity displaces poeticity and visual spatial tensions are resolved as aural temporal sequences. Through this recording one can see the relation between the potentiality of the novel's graphical layout, with its multicursal and multilinear possibilities as an open notation for semiotic and hermeneutic operations and a particular vocal performance as a single interactive instantiation of an event that co-constitutes its own text. As with any highly constelled work, several other equally valid performative trajectories would have been possible.

One experiment I made with my students consisted of reading aloud one sentence or short sequence of phrases by Hailey and the corresponding symmetrical sentence or sequence by Sam. The result was a significant transformation of the lyric and narrative layers into a dramatic layer. The fact that each character's text is partially identical creates a powerful dramatic effect as if they were arguing the representation of their own feelings and actions. This means that there is a reading scale below page level at which the quasi-symmetrical counterpoint of voices also works as a dramatic dialogue, particularly at those points where tension and difference between characters is marked. *Only Revolutions* thus seems to have created a bibliographic and linguistic notation for the voices of Sam and Hailey that embodies at least three modes of literature, since it can be read as novel, poem, and play, according to specific trajectories and segmentations of the reading spaces made available through its constelled visual semantics.

Paronomastic associations, puns, elliptical syntax, truncated quotes, frequent use of parataxis, removal of connectives, and repeated use of metaphors based on slang and terminology (flora and fauna)—all these techniques emphasize the presence of a character's specific point of view that creatively deforms the events through the sieve of his/her emotions and motivations. Ellipsis and juxtaposition of thoughts, speech, and memories emphasize the absence of a single focus, a narrative effect of the interior monologue technique. They also contribute to the narrative presence of objects in the uniqueness of their existence, and especially to the fullness of the rhythmic and objective presence of the words themselves. The use of many sentences without verbs and the presentation of dialogue fragments require the reader to deal with words and phrases in non-hierarchical form. Their sensorial dimensions (aural and visual) and their semantic individuality are given priority over their logical place and their syntactic function. This effect is replicated in the tension between the self-sufficient page and its projection onto the sequence of pages or chapters. The autonomy of the poetic dimension of verbal discourse has a visual equivalent in the visual patterning of each page, which can be read either as an independent unit or as an echo of its correspondent symmetrical page.

The narrative dimension of discourse, in its turn, is projected onto the eight-page chapter, onto groups of chapters, and onto corresponding chapters, symmetrically placed

in opposite positions in relation to the codex center. This tension between the plane of the page and the space of the sequence of pages also articulates the basic duality of the codex as a device for organizing information. Page unity and page sequence are the main organizational properties of the codex: the tension between the plane of the page and the space of the book, i.e., the tension between the page as self-contained area for simultaneous presence and the codex as a space for sequential presence.

This lexicalization of reading motions has a visual occurrence on the inside covers of the book, where circular and elliptical disks work as a diagrammatic echo of the bibliographic movements that determine lexical and narrative associations. A series of 16 semantic and lexical fields are laid out in the shape of circular and elliptical disks (Fig. 9). These sets represent words not found in the novel or, in a few cases, found only once. Crossed-out words deliberately point out to the combinatorial nature of this work as an explicit exploration of the generative features of language: "~~The Now Here Found~~ Concordance" (which also contains the visual rhyme "The Nowhere Found"), ~~Found Once Once Here~~ and ~~Found Once Once~~ There. Each set of words is alphabetically ordered from A to Z, and they direct the reader's attention to the dictionary and the grammar of language, but also to cultural patterns and abstract concepts as human constructs for making sense (Fig. 10). Their circular and elliptical shape is an echo of the reading motions that are required for the production of meaning as a recursive path from sign to sign.[13] Because all of the inside cover is set in reverse, the concordance can only be read by holding the book up to a mirror. This action is both an evocation of the history of typography as a specific inscription technology, and a performative analog of the various forms of symmetry embodied at linguistic, bibliographic, narrative, geometric, and numeric levels.

The reader must see him/herself reading. Consciousness of the act of reading as a particular physical motion draws attention to the ways in which this codex is made to mirror its language, and the ways in which its language is made to mirror its codex. The circular syntax of codex structures interacts with the circular syntax of language structures by bibliographically multiplying permutations that are inherent in grammatical structures. Page layout feeds back onto the language, opening up words and sentences to the potentiality of new and unexpected associations. These 16 sets are composed of shapes which superimpose, intersect, and touch each other and are evocative of various kinds of scientific graphic representations. They evoke diagrams that represent the workings within living cells, and diagrams that represent both the cosmological forces of the universe
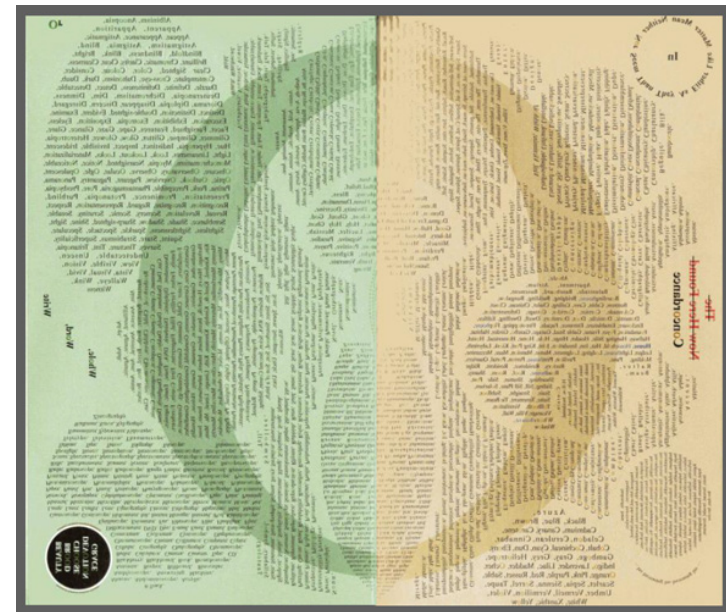
Fig. 9. The Now Here Found Concordance. The codex as a mirror of language and narrative: inside covers contain a concordance lexicon (in mirror image) of words not used in the novel. © Mark Z. Danielewski, 2006.

13 *Because 4 out of the 16 circular and elliptical disks spread across the gutter, it is very difficult to give an accurate number for the words (i.e., strings of characters beginning with capitalized words) in all sets. I believe that there is a geometric and numeric pattern at this level too. This pattern associates the disks in groups of two (one circular + one elliptical section), and the sum of each of these pairs generates numbers that repeat certain digits—for example, Eye lexicon (elliptical, 146) + Color lexicon (circular, 42) = 188; Architecture lexicon (elliptical, 111) + Into lexicon (circular, 33) = 144; etc. The total number of character strings is approximately 1800, which becomes another symbol for the circle (0) and the Möbius strip (8), for singleness (1) and union (0), for zero (0) and infinity (∞), for nothingness (0) and endlessness (0, ∞).*

and the quantum world of infra-atomic forces. One of the predominant semantic and lexical fields "found (t)here" at "the now here found concordance" is the field of language, literature, writing, and inscription technologies. Thus codex and language become equated with the basic magnetic and gravitational forces of matter, and with the genetic code of living organisms.

5. THE WORLD IS ROUND

In a work so full of self- and meta-reference, how does referentiality work? In *Only Revolutions*, reference is divided into two dimensions. On the one hand, there is the dimension of collective U.S. and world history, given as a chronological accumulation of facts. On the other hand is the dimension of individual and personal story, given as an accumulation of thoughts, feelings, perceptions, spoken words, and memories. In terms of the circular topology of the work, Sam and Hailey's stories can be seen as two half circles. At the same time the full circle of their joint story is but the half circle that relates individual story to collective history. There is an overlapping hierarchy between the two circles: circle 1 = Sam + Hailey; and circle 2 = (Sam + Hailey) + history. Or, in a different formulation: circle 1 = US; and circle 2 = (US) + U.S.

The relationship between readers and characters to the world also contains isometries between the fictional space and the semiotic space. Capitalization of "the World" occurs many times, making it possible to think about the relationship between the two characters as their knowledge of and relation to the world (Table 8). The movement from individual consciousness to collective consciousness is reflected in the double reference of the pronoun "US". For the reader, the journey in the graphic fields of the book simulates the geographic, historical, and symbolic journey in the territory of the United States. Similarly, the route of the reader in the universe of signs describing Sam and Hailey's journey has an equivalent in the journey through the history of the U.S. and of the world since 1863. The natural and political geography travelled by the characters triggers a set of associations with historical events, broadening the scope of the term "the World" and also placing the historical world within the metafictional trope of circularity. However, one aspect clearly distinguishes story from history: although the facts entered in the history column show a significant number of patterns (i.e., similarities that would suggest history as repetition), history does not exhibit the same kind of circular recurrence that we find in the fictional narrative. History is shown as a linear, time-dependent and open-ended process. Dates after 2006, for example, are necessarily blank; and the verbal symmetries do not have corresponding historical symmetries, since historical facts resist accommodation within cyclical processes.

5.1. INSCRIBING HISTORY

Representation of history is also geometrically and numerically patterned, which links the modes of typographic and bibliographic construction of fictional narrative to those of historical references. Besides the constraint of character strings in each half column, it seems possible to infer another algorithm from numbers generated by the intervals between

Fig. 10. The Now Here Found Concordance. The codex as a mirror of language and narrative: inside covers contain a concordance lexicon (in mirror image) of words not used in the novel. © Manuel Portela, 2009.

1 (+3) = 4 (+2) = 6 (+1) = 7 (+24) = 31 (+3) = 34 (+5) = 39 (+7) = 46 (+5) = 51 (+27) = 78 (+31) = 109 (+11) = 120 (+3) = 123

(+17) = 140 (+36) = 176 (+4) = 180 (+1) = 181 (+1) = 182 (+3) = 185 (+6) 191 (+8) = 199 (+16) = 215 (+10) = 225 (+13) =

238 (+3) = 241 (+5) = 246 (+6) = 252 (+26) = 278 (+5) = 283 (+13) = 296 (+14) = 310 (+1) = 311 (+4) = 315 (+5) = 321 (+1)

= 322 (+2) = 324 (+3) = 327 (+3) = 330 (+5) = 335 (+4) = 339 (+14) = 353 (+2) = 355 (+5) = 360

1 (+5) = 6 (+25) = 31 (+3) = 34 (+5) = 39 (+7) = 46 (+5) = 51 (+27) = 78 (+31) = 109 (+11) = 120 (+3) = 123 (+53) = 176 (+4)

180 (+1) = 181 (+4) = 185 (+53) = 238 (+3) = 241 (+11) = 252 (+31) = 283 (+27) = 310 (+5) = 315 (+7) = 322 (+5) = 327 (+3)

= 330 (+25) = 355 (+5) = 360

5 – 25 – 3 – 5 – 7 – 5 – 27 – 31 – 11 – 3 – 53 – 4 – 1 – 4 – 53 – 3 – 11 – 31 – 27 – 5 – 7 – 5 – 3 – 25 – 5

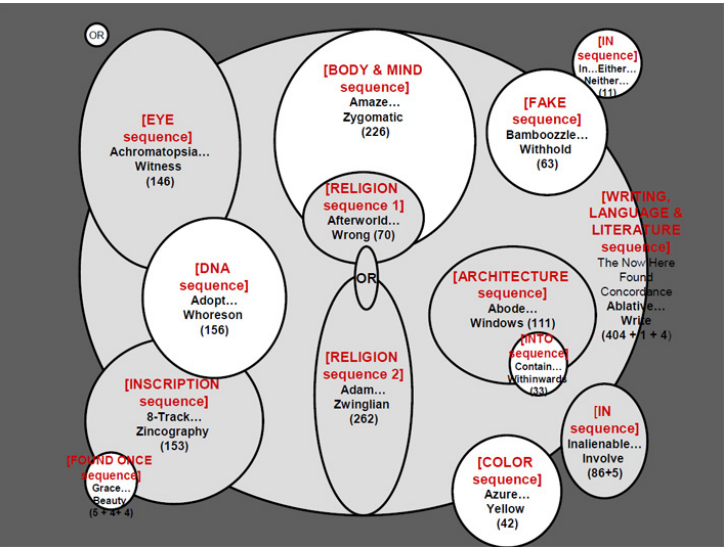| Sam	S	H	Hailey
I'll devastate the World.	S1	H1	I'll destroy the World.
I'm The Mountain which / The World climbs down from and / I laugh because it tickles.	S4	H4	I'm The World which the / The Mountain descends from.
Couldn't care less. I elect to kiss / the World away.	S6	H6	I don't give a shit. I'll nevermore/ the World with a smooch.
I stand and scorch her falling sky. / I'm her World.	S7	H7	I'm his land torching a broken sky. / I'm his World.
I'm their only World.	S31	H31	I'm their only World.
bewares me to burn / the World quick. /… Because all around me / the World rebegins.	S34	H34	daring me to crisp / the World fast. /…/ Because allways all around me / the World rebegins.
only to avoid breaking her neck, / just, with spastic hand pivots /…/ Around and around.	S39	H39	swirling the World and lifting / the sky, arches uniting /…/ Around and around.
Is it ever too late / to destroy the World?	S46	H46	Though is it ever too late / to destroy the World?
O Lucky World. / My gift.	S51	H51	O Lucky World. / My present.
All mine! / Toetickling digs, I'm so loose for	S78	H78	Move / the World, faster, faster, blast off and boogie.
I shuffle back. Round the World.	S109	H109	I pas de bourrée aside. Fouetté about.
– If it's not this World, / then it's of this World.	S120	H120	– If it don't pay rent, / kick it out.
Sticking US again to the World.	S123	H123	Sticking US again to the World.
Wondering too / of a way to continue our blitz from / the impedance of the World.	S140	H140	together wonder / of a way to continue our charge from / the persistence of the World.
The City, Our Mishishishi and US. Just two / for the World.	S176	H176	The City, Our Mishishishi and US. Just two / for the World.
Sticking US together. / Sticking US to the World.	S180	H180	Sticking US together. / Sticking US to the World.
Leaving US to the World.	S181	H181	Leaving US to the World.
– These Worlds of ours.	S182	H182	– These Worlds of ours.
Around. / With Hailey of course but also unsure, / exploring a World for just two.	S185	H185	Around. / With Hailey of course but also unsure, / exploring a World for just two.
for a World separated by five tables	S191	H191	for a World separated by five tables
– Out of this World!	S199	H199	– Going wide!
– We go to free the World. /…/ – You go to lose the World.	S215	H215	– We go to free the World. /…/ – You go to lose the World.
Hailey, all fusion ball,	S225	H225	Sam, all New World Order,
Our Aero Willys / allways easily beating the World.	S238	H238	Our Geo Metro / easily, allways, beating the World.
World's too particular for me.	S241	H241	World's too petulant.
Turns me upside down. And the World. /…/ because she spins the World, she spins me too.	S246	H246	Stands on the wind. Holds the World up. / When I tickle his ribs Adulterers split feering / the World will fall.
The World suddenly revolting.	S252	H252	The World suddenly revolting.
On the World.	S278	H278	On the World.
Ripple discs overturning our countering World / again and again.	S283	H283	Revolving rims overturning our countering World / over and over.
By / our Worldturning blur. [Sam, irascible, / wants every turn to take a / turn. H65]	S296	H296	By / our Worldhurling blur. [Still, she's flirty. / Wants at every bend to take a bend. S65]
Our present. / Lucky World.	S310	H310	Our gift. / Lucky World.
The sadness of the World before US / but we are already after US / and sadly passing even US.	S311	H311	The sadness of the World after US / but we are already before US / and sadly surpassing even US.
Because I Love her and it's never too late to keep / a World.	S315	H315	Because I Love him / and it's never too late to keep a World.
Around the World. Over the falls. Yoyo down and up.	S321	H321	Ever around. Over the World. Down, yup and up.
Around and around. / Spinning me from the World.	S322	H322	Around and around. / Spastic grabs for pivots nowhere found.
only with raggy shreds to oppose a World somehow / still ongoing without the wonder of Hailey's grin.	S324	H324	with just a tattered shawl to repel a World somehow / still ongoing without the wonder of Sam's spin.
That terrible haste reeeending a World.	S327	H327	That frightening pace reending a World.
My only World.	S330	H330	My only World.
So hacked and roped by this savage World.	S335	H335	Still harnessed to this toothy World.
Hair a thistle of icicles reaching / down to The Mountain of World.	S339	H339	Hands a claw of icicles curving / down to The Mountain of World.
Because my World's urgings over earth's want / pours from this mortal work.	S353	H353	Because by earth's urgings over World's want / all's gathered up from the partial labor of / value and need.
For him / the World spins and to blow it away / would forfeit all the World already Loves of him.	S355	H355	For her / the World turns and to blow it away / would forfeit all the World already Loves of her.
By you, ever sixteen, this World's preserved. / By you, ever sixteen, this World has everything to lose. /…/ I'll destroy no World.	S360	H360	By you, ever sixteen, this World's reserved. By you, ever sixteen, this World has everything to lose. /…/ I'll destroy no World.
	S	H	

Table 8. 'I'll destroy the World' // 'I'll destroy no World': 'World' x 90. Number sequence: 12-1-1-12. © Manuel Portela, 2009.

consecutive dates in the historical chronology. The numerical intervals between dates increase when we move from 1963 to 2063 and they decrease from 1863 to 1963 (Table 9). These number sequences, obtained by placing the numbers of the same reversed half-pages side by side, can be related to concepts of symmetry, circularity, and recursion. In this case, number sequences are not the result of an arithmetic operation, but they can be used as a matrix for deriving further sequences of repetitions of which they are the elementary constituents.[14]

Digits or numbers generated by date intervals work as a kind of genetic code for generating larger numbers which have recursive structures, axes of symmetry, and circular patterns (Table 10). The two arrays of numbers, obtained from the symmetrical double-pages of Sam and Hailey, correspond to the double helix molecule of DNA, and also to the doubling of language, narrative, and bibliographic structure. Their decoding by the act of reading—which implies reuniting what the actual page setting has set apart—is an equivalent of the replication of genetic material, when the basic building blocks of cells are put together according to a template that has to be translated by molecular mediation. In this instance, reading executes the algorithm of meaning encoded in language and typography. As far as concerns this and other templates' ability to generate a large number of unpredictable associations, we may say that they also offer a model for literature as a complex system and for meaning as an emergent phenomenon. The numbers generated

14 Numerical intervals between consecutive dates can be used as a matrix for generating palindromic and other symmetrical sequences of numbers—either digit by digit [e.g. 11, 33, 44, … 1221, 2112, 2332, 3223…], or in groups of 2, 3 or more digits. Symmetries are obtained by reading left-to-right and right-to-left; by reading groups of 2, 3, 4 or more digits as recursive units within a larger sequence; and by taking the center of the sequence as the axis for recursion [e.g. 911119/119911, 12101012/10121210, 44474744/47444447…]. I took the opening (left + right pages) as the minimum unit of reading. Each opening has four calendar dates. This lets you generate four numbers (two in the numerical intervals of dates corresponding to Hailey's narrative and two in the numerical intervals corresponding to Sam's). By treating numbers in this way we have four different reading positions [A+B/ C+D], an analogue of the four parts of the circle that structures the arrangement of columns and character-strings on each page. The only two exceptions are the first and last pages of each narrative (hH1//hS360 and hS1//hH360). In this case, only two positions were considered [A+B]. The number of calendar days between consecutive dates grows larger as one moves from hH1 to hH360, and smaller as one moves from hS1 to hS360. When those co-occurring four numbers are taken together, they can be read in three different ways (horizontally, vertically, and diagonally), and in two directions each way. If combined according to symmetrical directions of reading, the iteration of these numbers can generate new numbers that have axes of symmetry and recursive sequences, many of which are palindromic. When grouped into units of two or three digits, all numbers generated by this iteration retain their identity when read from left to right or from right to left. The permutational principle implies changing the relative position of the digits (left + right / right + left). This suggests a homology with the double direction in the reading of the book. This homology is also present in the idea of union between two numerical units (as happens with the two individual characters in the novel). This basic permutation of elements also points to syntax (numerical, alphabetical, discursive, and bibliographic) as the fundamental mechanism for producing meaning, a mechanism that works by endless repetition and variation of its units. Being a matrix of four units, with a double orientation, these numbers also emulate the four bases of the genetic code [C, G, T, A].

hH	dates	numerical intervals between dates		dates	hS
H1	Nov 22 1963	+ 1	0 +	Nov 22 1963	S360
H2	Nov 23 1963	+ 1	1 +	Nov 21 1963	S359
H3	Nov 24 1963	+ 1	2 +	Nov 19 1963	S358
H4	Nov 25 1963	+ 3	2 +	Nov 17 1963	S357
H5	Nov 28 1963	+ 3	3 +	Nov 14 1963	S356
H6	Dec 1 1963	+ 4	4 +	Nov 10 1963	S355
H7	Dec 5 1963	+ 4	5 +	Nov 5 1963	S354
H8	Dec 9 1963	+ 5	4 +	Nov 1 1963	S353
H9	Dec 14 1963	+ 5	7 +	Oct 25 1963	S352
H10	Dec 19 1963	+ 8	7 +	Oct 18 1963	S351
H11	Dec 27 1963	+ 7	6 +	Oct 12 1963	S350
H12	Jan 3 1964	+ 8	8 +	Oct 4 1963	S349
H13	Jan 11 1964	+ 9	7 +	Sept 27 1963	S348
H14	Jan 20 1964	+ 9	11 +	Sept 16 1963	S347
H15	Jan 29 1964	+ 9	10 +	Sept 6 1963	S346
H16	Feb 7 1964	+ 12	10 +	Aug 27 1963	S345
H17	Feb 19 1964 [l.y.]	+ 13	13 +	Aug 14 1963	S344
H18	March 3 1964	+ 11	12 +	Aug 2 1963	S343
H19	March 14 1964	+ 13	13 +	July 20 1963	S342
H20	March 27 1964	+ 15	14 +	July 6 1963	S341
H21	April 11 1964	+ 13	15 +	June 21 1963	S340
H22	April 24 1964	+ 17	13 +	June 8 1963	S339
H23	May 11 1964	+ 15	17 +	May 22 1963	S338
H24	May 26 1964	+ 16	16 +	May 6 1963	S337
H25	June 11 1964	+ 17	17 +	April 19 1963	S336
H26	June 28 1964	+ 17	18 +	April 1 1963	S335
H27	July 15 1964	+ 20	14 +	March 18 1963	S334
H28	Aug 4 1964	+ 18	24 +	Feb 22 1963	S333
H29	Aug 22 1964	+ 19	20 +	Feb 2 1963	S332
H30	Sept 10 1964	+ 24	21 +	Jan 12 1963	S331
H31	Oct 4 1964	+ 19	20 +	Dec 23 1962	S330
H32	Oct 23 1964	+ 27	24 +	Nov 29 1962	S329
H33	Nov 19 1964	+ 18	32 +	Oct 28 1962	S328
H34	Dec 7 1964	+ 25	17 +	Oct 11 1962	S327
H35	Jan 1 1965	+ 25	17 +	Sept 24 1962	S326
H36	Jan 26 1965	+ 25	29 +	Aug 26 1962	S325
H37	Fev 20 1965	+ 24	25 +	Aug 1 1962	S324
H38	March 16 1965	+ 26	29 +	July 3 1962	S323
H39	April 11 1965	+ 27	30 +	June 3 1962	S322
H40	May 8 1965	+ 30	24 +	May 10 1962	S321
H41	June 7 1965	+ 31	31 +	April 9 1962	S320
H42	July 8 1965	+ 27	35 +	March 5 1962	S319
H43	Aug 4 1965	+ 28	29 +	Feb 4 1962	S318
H44	Sept 1 1965	+ 32	22 +	Jan 13 1962	S317
H45	Oct 3 1965	+ 30	29 +	Dec 15 1961	S316
H46	Nov 2 1965	+ 35	36 +	Nov 9 1961	S315
H47	Dec 7 1965	+ 30	31 +	Oct 9 1961	S314
H48	Jan 6 1966	+ 35	34 +	Sept 5 1961	S313
H49	Feb 10 1966	+ 33	35 +	Aug 1 1961	S312
H50	March 15 1966	+ 34	39 +	June 23 1961	S311
H51	April 18 1966	+ 37	34 +	May 20 1961	S310
H52	May 25 1966	+ 35	36 +	April 14 1961	S309
H53	June 29 1966	+ 38	35 +	March 12 1961	S308
H54	Aug 6 1966	+ 36	40 +	Jan 31 1961	S307
H55	Sept 11 1966	+ 38	29 +	Jan 2 1961	S306
H56	Oct 19 1966	+ 42	48 +	Nov 15 1960	S305
H57	Nov 30 1966	+ 39	39 +	Oct 7 1960	S304
H58	Jan 8 1967	+ 44	47 +	Aug 21 1960	S303
H59	Feb 21 1967	+ 40	37 +	Jul 15 1960	S302
H60	April 2 1967	+ 39	53 +	May 23 1960	S301
H61	May 11 1967	+ 43	34 +	April 19 1960	S300
H62	June 23 1967	+ 44	49 +	March 1 1960	S299
H63	Aug 6 1967	+ 43	32 +	[l.y.] Jan 29 1960	S298
H64	Sept 18 1967	+ 48	40 +	Dec 20 1959	S297
H65	Nov 5 1967	+ 45	60 +	Oct 21 1959	S296
H66	Dec 20 1967	+ 45	52 +	Sept 4 1959	S295
H67	Feb 3 1968 [l.y.]	+ 48	48 +	July 18 1959	S294
H68	March 22 1968	+ 45	37 +	June 11 1959	S293
H69	May 6 1968	+ 49	47 +	April 25 1959	S292
H70	June 24 1968	+ 49	52 +	March 4 1959	S291
H71	Aug 12 1968	+ 50	49 +	Jan 14 1959	S290
H72	Oct 1 1968	+ 53	51 +	Nov 24 1958	S289
H73	Nov 23 1968	+ 40	43 +	Oct 12 1958	S288
H74	Jan 2 1969	...	...	...	...
...	...	...	...	...	...
hH	dates	numerical intervals between dates		dates	hS
...	...	...	...	...	...
...	...	...	...	July 8 1871	S10
H352	April 27 2056 [l.y]	+ 307	+ 310	Sept 1 1870	S9
H353	Feb 28 2057	+ 307	+ 292	Nov 13 1869	S8
H354	Jan 1 2058	+ 308	+ 317	Jan 1 1869	S7
H355	Nov 4 2058	+ 307	+ 302	[l.y] March 5 1868	S6
H356	Sept 7 2059	+ 308	+ 330	April 9 1867	S5
H357	July 10 2060 [l.y]	+ 308	+ 306	June 7 1866	S4
H358	May 14 2061	+ 307	+ 299	Aug 12 1865	S3
H359	March 17 2062	+ 308	+ 319	[l.y] Sept 27 1864	S2
H360	Jan 19 2063	+ 0	+ 310	Nov 22 1863	S1

Table 9. Consecutive dates in the history column, listing numerical intervals between any two consecutive dates [pages hH1//hS360 to hH73//hS288, and hH352//hS9 to hH360//hS1]. © Manuel Portela, 2009.

by the matrix of date intervals further suggest the identity between numeric and verbal language, both in terms of their permutational mechanisms, and their abstract nature.[15]

With very few exceptions, date headers were chosen not for their particular symbolism (such as November 22, 1963), but for the numeric intervals between consecutive dates.[16] As between any two consecutive dates it is possible to include any events one wants to select, Danielewski is able to make allusions to a huge slice of history (from a U.S. and world-historical perspective) between 1863 and 2006.[17] The choice of date headers is determined by the numeric pattern rather than by the selected events which tend to fall within the period set by two consecutive date headers and not necessarily on the specific calendar day. Yet, while giving the impression of randomness, the representation of history is powerfully framed within a general theme of political, social, and natural violence—history as an endless cycle of human and natural violence. The nightmare of history, with its brutal accumulation of violent events, is not so much the result of a random accumulation of dates, as it is the effect of bias for selecting certain types of events, particularly those that can be represented by death counts.

The juxtaposition of events follows a discernible set of patterns, which include references to hundreds of political revolutions and military conflicts of the past 150 years; references to many natural disasters and accidents of human origin; and references to important legal developments in the political order. Chronology seems dominated by political violence, natural disasters and human accidents, all of which confront humanity with death and violence as the fundamental condition of individual and social existence. In the representation of the history of the United States, the violence within the society and the imperialist design of the state stand out as part of the general pattern of representation of world history. Despite factual references, the history column embeds chronology in the bibliographic and narrative pattern of the story sections. Although facts and references are, in most instances, quickly identifiable, the history column follows a technique of montage and a fragmentary logic of association which are similar to the techniques governing the body of the interior monologues by Sam and Hailey. This associative logic is clear in the fragments of quotes from various historical protagonists. The sidebar excerpt exemplifies the discursive structure and the rhetorical function of the chronology in the narrative economy of *Only Revolutions*.

In this example, the early history and first battles of World War I are evoked through fragmentary and truncated quotes and names of historical significance (individuals, places, institutions). By means of an associative mnemonic the reader provides a context for these references, a cognitive operation that reveals the contextual and fragmentary nature of the

15 Besides numeric palindromes, we find several anagrammatic, homophonic and homographic relations, placed at equivalent relative positions on symmetrical pages. Some of the most frequent are "feer" and "free"; "chear" and "cheer"; "US" and "U.S."; "allone," "allways," "allmost," "allready."

16 "Nov 22 1863", for instance, was chosen so that it was 100 years before "Nov 22 1963" rather than for the first specific event listed in the column, which happened in Nov 23 1863—a message signed by North Carolina Governor Zebulon Baird Vance (1830–1894), from which Danielewski has extracted the quote "– Abolition of slavery, confiscation of property, and territorial vassalage!" (hH1).

17 In so far as part of the events included in the history column were suggested by readers of Danielewski in an electronic forum, there is a level of integration of historical facts that assimilates different perspectives and different national histories under the general framework of military violence and political revolution. The collective import of the chronology reflects, to a certain extent, this process of consultation.

July 29 1914

1,200,000 troops.

Austria & Belgrade.

– *consult her own.*

Attack Germany,

Attack France.

– *Neutrality.*

– *Impartiality.*

– *Fairness.*

– *I attack.*

Von Kluck, von Bülow

& The Marne.

– *We have lost the War.*

– *clear out of my way.*

U-9s.

Braves over Athletics.

– *woman's body belongs.*

Sydney's Emden.

Butte Mine Fight.

Hindenburg's Austro-

German forces.

Raggedy Ann.

Aerial battles over

Southend-on-the-Sea.

French to German

Trenches. Fortino Samano.

Triple Entente.

River of Doubt.

– *going out all*

over Europe.

Italy quakes, 29,500 go.

Blücher down.

Coast Guard.

800,000 to Prussia.

Champagne attack.

Total Sub Warfare.

(hS66)

Table 10. (Numerical interval matrix)

interval [Hailey] A/C	interval [Sam] B/D	two consecutive cells [R1: horizontal] AB/CD	BA/DC	two consecutive cells [R2: vertical] AC/BD	CA/DB	two consecutive cells [R3: diagonal] AD/BC	DA/CB	iteration R1 [R4] (AB)+(BA)	(BA)+(AB)	iteration R2 [R5] (AC)+(CA)	(CA)+(AC)	iteration R3 [R6] (AD)+(DA)	(DA)+(AD)
+ 1	0 +	10	01					1001	0110				
+ 1	1 +	11	11	11	11	12	21	1111	1111	1111	1111	1221	2112
+ 1	2 +	12	21	12	21	11	11	1221	2112	1221	2112	1111	1111
+ 3	2 +	32	23	33	33	33	33	3223	2332	3333	3333	3333	3333
+ 3	3 +	33	33	23	32	23	32	3333	3333	2332	3223	2332	3223
+ 4	4 +	44	44	44	44	45	54	4444	4444	4444	4444	4554	5445
+ 4	5 +	45	54	45	54	44	44	4554	5445	4554	5445	4444	4444
+ 5	4 +	54	45	55	55	57	75	5445	4554	5555	5555	5775	7557
+ 5	7 +	57	75	47	74	45	54	5775	7557	4774	7447	4554	5445
+ 8	5 +	87	78	87	78	86	68	8778	8778	8778	8778	8668	6886
+ 7	6 +	76	67	76	67	77	77	7667	6776	7667	6776	7777	7777
+ 8	7 +	88	88	89	98	87	78	8888	8888	8998	9889	8778	7887
+ 9	7 +	97	79	87	78	89	98	9779	7997	8778	7887	8998	9889
+ 9	11 +	911	119	99	99	910	109	911119	119911	9999	9999	910109	910109
+ 9	10 +	910	109	1110	1011	119	911	910109	109910	11101011	10111110	119911	911119
+ 12	10 +	1210	1012	1213	1312	1213	1312	12101012	10121210	12131312	13121213	12131312	13121213
+ 13	13 +	1313	1313	1013	1310	1013	1310	13131313	13131313	10131310	13101013	10131310	13101013
+ 11	12 +	1112	1211	1113	1311	1113	1311	11121211	12111112	11131311	13111113	11131311	13111113
+ 13	13 +	1313	1313	1213	1312	1213	1312	13131313	13131313	12131312	13121213	12131312	13121213
+ 15	14 +	1514	1415	1513	1315	1515	1515	15141415	14151514	15131315	13151513	15151515	15151515
+ 13	15 +	1315	1513	1415	1514	1413	1314	13151513	15131315	14151514	15141415	14131314	13141413
+ 17	13 +	1713	1317	1715	1517	1717	1717	17131317	13171713	17151517	15171715	17171717	17171717
+ 15	17 +	1517	1715	1317	1713	1315	1513	15171715	17151517	13171713	17131317	13151513	15131315
+ 16	16 +	1616	1616	1617	1716	1617	1716	16161616	16161616	16171716	17161617	16171716	17161617
+ 17	17 +	1717	1717	1617	1716	1617	1716	17171717	17171717	16171716	17161617	16171716	17161617
+ 17	18 +	1718	1817	1720	2017	1714	1417	17181817	18171718	17202017	20171720	17141417	14171714
+ 20	14 +	2014	1420	1814	1418	1820	2018	20141420	14202014	18141418	14181814	18202018	20181820
+ 18	24 +	1824	2418	1819	1918	1820	2018	18242418	24181824	18191918	19181819	18202018	20181820
+ 19	20 +	1920	2019	2420	2024	2419	1924	19202019	20191920	24202024	20242420	24191924	19242419
+ 24	21 +	2421	2124	2419	1924	2420	2024	24212124	21242421	24191924	19242419	24202024	20242420
+ 19	20 +	1920	2019	2120	2021	2119	1921	19202019	20191920	21202021	20212120	21191921	19212119
+ 27	24 +	2724	2427	2718	1827	2732	3227	27242427	24272724	27181827	18272718	27323227	32272732
+ 18	32 +	1832	3218	2432	3224	2418	1824	18323218	32181832	24323224	32242432	24181824	18242418
+ 25	17 +	2517	1725	2525	2525	2517	1725	25171725	17252517	25252525	25252525	25171725	17252517
+ 25	17 +	2517	1725	1717	1717	1725	2517	25171725	17252517	17171717	17171717	17252517	25171725
+ 25	29 +	2529	2925	2524	2425	2525	2525	25292925	29252529	25242425	24252524	25252525	25252525
+ 24	25 +	2425	2524	2925	2529	2924	2429	24252524	25242425	29252529	25292925	29242429	24292924
+ 26	29 +	2629	2926	2627	2726	2630	3026	26292926	29262629	26272726	27262627	26303026	30262630
+ 27	30 +	2730	3027	2930	3029	2927	2729	27303027	30272730	29303029	30292930	29272729	27292927
+ 30	24 +	3024	2430	3031	3130	3031	3130	30242430	24303024	30313130	31303031	30313130	31303031
+ 31	31 +	3131	3131	2431	3124	2431	3124	31313131	31313131	24313124	31242431	24313124	31242431
+ 27	35 +	2735	3527	2728	2827	2729	2927	27353527	35272735	27282827	28272728	27292927	29272729
+ 28	29 +	2829	2928	3529	2935	3528	2835	28292928	29282829	35292935	29353529	35282835	28353528
+ 32	22 +	3222	2232	3230	3032	3229	2932	32222232	22323222	32303032	30323230	32292932	29323229
+ 30	29 +	3029	2930	2229	2922	2230	3022	30292930	29303029	22292922	29222229	22303022	30222230
+ 35	36 +	3536	3635	3530	3035	3531	3135	35363635	36353536	35303035	30353530	35313135	31353531
+ 30	31 +	3031	3130	3631	3136	3630	3036	30313130	31303031	36313136	31363631	36303036	30363630
+ 35	34 +	3534	3435	3533	3335	3535	3535	35343435	34353534	35333335	33353533	35353535	35353535
+ 33	35 +	3335	3533	3435	3534	3433	3334	33353533	35333335	34353534	35343435	34333334	33343433
+ 34	39 +	3439	3934	3437	3734	3434	3434	34393934	39343439	34373734	37343437	34343434	34343434
+ 37	34 +	3734	3437	3934	3439	3937	3739	37343437	34373734	39343439	34393934	39373739	37393937
+ 35	36 +	3536	3635	3538	3835	3535	3536	35363635	36353536	35383835	38353538	35353536	35363535
+ 38	35 +	3835	3538	3635	3536	3638	3836	38353538	35383835	36353536	35363635	36383836	38363638
+ 36	40 +	3640	4036	3638	3836	3629	2936	36404036	40363640	36383836	38363638	36292936	29363629
+ 38	29 +	3829	2938	4029	2940	4038	3840	38292938	29383829	40292940	29404029	40383840	38404038
+ 42	48 +	4248	4842	4239	3942	4239	3942	42484842	48424248	42393942	39424239	42393942	39424239
+ 39	39 +	3939	3939	3948	4839	3948	4839	39393939	39393939	39484839	48393948	39484839	48393948
+ 44	47 +	4447	4744	4440	4044	4437	3744	44474744	47444447	44404044	40444440	44373744	37444437
+ 40	37 +	4037	3740	4737	3747	4740	4047	40373740	37404037	47373747	37474737	47404047	40474740
+ 39	53 +	3953	5339	3943	4339	3934	3439	39535339	53393953	39434339	43393943	39343439	34393934
+ 43	34 +	4334	3443	5334	3453	5343	4353	43343443	34434334	53343453	34535334	53434353	43535343
+ 44	49 +	4449	4944	4443	4344	4432	3244	44494944	49444449	44434344	43444443	44323244	32444432
+ 43	32 +	4332	3243	4932	3249	4943	4349	43323243	32434332	49323249	32494932	49434349	43494943
+ 48	40 +	4840	4048	4845	4548	4848	6048	48404048	40484840	48454548	45484845	48486048	60484848
+ 48	45 +	4560	6045	4060	6040	4045	4540	45606045	60454560	40606040	60404060	40454540	45404045
+ 45	52 +	4552	5245	4548	4548	4548	4548	45525245	52454552	45484548	45484548	45484548	45484548
+ 48	48 +	4848	4848	5248	4852	5248	4852	48484848	48484848	52484852	48525248	52484852	48525248
+ 45	45 +	4537	3745	4945	4547	4549	4945	45373745	37454537	49454547	45474945	45494945	49454549
+ 49	49 +	4947	4749	3747	3749	4947	4749	49474749	47494947	37473749	37493747	49474749	47494947
+ 49	52 +	4952	5249	4950	4949	4949	4949	49525249	52494952	49504949	49494950	49494949	49494949
+ 49	47 +	4947	4749	4950	5049	5052	5052	49474749	47494947	49505049	50494950	50525052	50525052
+ 50	49 +	5049	4950	5250	5052	5052	5250	50494950	49505049	52505052	50525250	50525250	52505052
+ 53	51 +	5351	5153	5340	4053	5343	4353	53515153	51535351	53404053	40535340	53434353	43535343

Continuation (lower part of Table 10):

interval [Hailey] A/C	interval [Sam] B/D	AB/CD	BA/DC	AC/BD	CA/DB	AD/BC	DA/CB	(AB)+(BA)	(BA)+(AB)	(AC)+(CA)	(CA)+(AC)	(AD)+(DA)	(DA)+(AD)
+ 307	310 +	307310	310307	307307	307307	307292	292307	307310310307	310307307310	307307307307	307307307307	307292292307	292307307292
+ 307	292 +	307292	292307	310292	292310	310307	307310	307292292307	292307307292	310292292310	292310310292	310307307310	307310310307
+ 308	317 +	308317	317308	308307	307308	308302	302308	308317317308	317308308317	308307307308	307308308307	308302302308	302308308302
+ 307	302 +	307302	302307	317302	302317	317307	307317	307302302307	302307307302	317302302317	302317317302	317307307317	307317317307
+ 307	330 +	307330	330307	308307	307308	306307	307306	307330330307	330307307330	308307307308	307308308307	306307307306	307306306307
+ 308	306 +	308306	306308	330306	306330	330308	308330	308306306308	306308308306	330306306330	306330330306	330308308330	308330330308
+ 307	299 +	307299	299307	308307	307308	310307	307310	307299299307	299307307299	308307307308	307308308307	310307307310	307310310307
+ 308	319 +	308319	319308	299308	308299	299308	308299	308319319308	319308308319	299308308299	308299299308	299308308299	308299299308
+ 0	310 +	0310	3100					03103100	31000310				

Table 10. Numerical intervals between dates as a matrix for generating palindromic and other symmetrical sequences of numbers—either digit by digit [e.g. '11', '33', '44', … '1221', '2112', '2332', '3223'…], or in groups of 2, 3 or more digits. Symmetries are obtained by reading left-to-right and right-to-left; by reading groups of 2, 3, 4 or more digits as recursive units within a larger sequence; and by taking the center of the sequence as the axis for recursion [e.g. '911119'/'119911', '12101012'/'10121210', '44474744'/'47444447'…]. This reading procedure has been applied to pages bH1//bS360 to bH73//bS288, and bH352//bS9 to bH360//bS1. © Manuel Portela, 2009.

semantic mechanism for meaning construction. Such fragmentation can be read as a kind of interior monologue of history, as if causal relations in the historical processes could acquire the phantasmagoric nature of a stream-of-consciousness voice without narrative mediation. Thus narrativity shows itself also as a product of association by reading. Juxtaposition predominates over hierarchy, as if the facts of history were a mere lexicon available for syntactic recombination.

Even at this documentary level, Danielewski's novel is a product of digital serendipity, which has made all sorts of documents and sources available for search, citation, and cross-reference in the electronic networked environment. History appears as a mere reservoir of discursive representations available for automated searches and verbal sampling. Many historical references, perhaps the majority of them, have been quoted or taken not from printed sources, but from electronic sources by the use of electronic tools. This form of intertextual digital historiography, that is, the many quotations from speeches and written documents woven into the history column, results from access and reorganization of personal knowledge of the historical archive by the intermediation of the computer. Moreover, several items in the chronological lists were taken from an online forum where readers of Danielewski contributed references to their own local and national histories.

5.2. INSCRIBING GEOGRAPHY

If numbers constrain reading paths in the territory of the page are there any numbers that determine the journey in geographic space? Re-construction of the geographic itinerary of the journey follows the same principle of uniting the two symmetrical half-pages. The reader has to intersperse the locations mentioned by Sam with the locations mentioned by Hailey in symmetric chapters, since their place references (towns, cities, buildings, monuments, streets, roads, natural landscape) are rarely identical. The journey goes from East to West, in several stages. It moves south from Pennsylvania and Maryland to New Orleans, then it continues from south to north, mostly along the Mississippi River and along meridian 90° W. After a prolonged stay in St. Louis (the center of the journey also coinciding with the center of the book). It continues north to Wisconsin and in the last stage, the characters travel west, to Montana, mostly along interstate highway 90 (Fig. 11). Therefore the 90º of the circle are projected onto the 90º of the four cardinal points of the geographic coordinates. In this way, what is happening in bibliographic and linguistic space is translated into the fictional geographic space. The numeric infrastructure of the work has an equivalent in the geographic coordinates that map the territory.

The first toponymic references are "Passing through Gettysburg, / Route 30 East to 134" (H50) and "Passing through Gettysburg, / Chambersburg Pike to Taneytown Road" (S50). The last references are "Past Avon, Ovando and Apgar" (H304) and "Past Missoula, Kalispell and Polson" (S304). In between, several small towns, cities, streets and roads have been mentioned. They run across 16 states: Pennsylvania, Maryland, Washington DC, Virginia, North Carolina, Tennessee, Mississippi, Louisiana, Missouri, Illinois, Iowa, Wisconsin, Minnesota, South Dakota, North Dakota, and Montana. There are also mythical coordinates and references linking East and West. The Mountain, referred to at the beginning of the journey— "I'm leaving The Mountain. / East. I am the East. / Master of the Wheel. All mine." (S49) and "I'm leaving The Mountain. / East. I am the East. / Master of the Wheel. That's me." (H49)—re-appears at the end of the journey, as the place where Sam and Hailey are separated by death— "The Wheel hers no more. /

We're stuck but she's my West. / And we've reached The Mountain" (S312) "The Wheel his no more. / We're stuck and he's my West. / But we've reached The Mountain" (H312). Like the characters, human and natural spaces extend into a mythical and symbolic dimension. The Möbius strip is also echoed in the charted itinerary, as we can see when linking the compass points (Table 11).

This archetypal dimension is evident in another central element in the flow of images of the work: the Mississippi River. The Mississippi appears as yet another analogue of the Möbius strip and of the idea of recursion. Like the Liffey in *Finnegan's Wake*, the river enacts a symbolic function in the psychic economy of the self narrating the world. The river is at the same time an image of the cycle of natural forces, in its long path between Lake Itasca and the Gulf of Mexico, an image of the flow of collective history, and an image of the force of desire within the self. Its mythical and historical place is echoed in the characters' road journey along the river. There are recurrent references to the river, both in the monologues of Sam and Hailey, and in the history column. The word Mishishishi (for Mississippi) appears in the inside and the outside columns. A major part of the journey (cf. narrative sequences 6 to 10, above) runs from south to north along the course of the Mississippi, following approximately the meridian 90 degrees West, through the states of Louisiana, Mississippi, Tennessee, Missouri, Illinois, Iowa, Wisconsin, and Minnesota. Several references to the natural and human history of the river are listed in the history column. That is the case of the historical floods of 1926–1927 (hS87: Feb 9 1927); of 1967— "Mishishishi's 30 million acres," "Mishishishi & Student riots" (hH61: May 11 1967); and of 1993— "Missouri Light. Mishishishi's 15 million acres" (hH235: June 5 1993); or a ferry accident in 1976— "New Orleans ferry, 78 go" (hH132: Oct 18 1976). The desire of the characters is sometimes personified in the river: "The Hudson L bucks on through, / around vermicular shores lapped with / waste, Our Mishishishi, hoisting a / low Paddleboat loaded with / Half a Ferris Wheel puppuppering for / Southern Fields. I am the South." (H121) and "The Ford Elite whines on / around caressing banks splashed with / refuse, Our Mishishishi, heaving a / low Barge loaded with / Half a Ferris Wheel tuttuggering for / Southern Pastures. I am the South." (H121); "The River, Our Mishishishi, / Rolling Along The Long Gone / Sadly Sliding On, / too slow to ever catch up with US." (S132) and "The River, Our Mishishishi, / Roaming Along The Long Way / Sadly Sliding On, / too slow to ever catch up with US." (H132); "And overcome by / in the distance, surrounding, fastening to U.S. / The City, Our Mishishishi and U.S. Just two / for the World" (S176) and "And overwhelmed by / on distances, encircling, fastening to U.S. / The City, Our Mishishishi and U.S. Just two / for the World." (H176).

The "Mishishishi" is one of the verbal and historical links between Hailey and Sam's story column and the history column. Other referential links between story and history are made more or less explicit through the natural and historical landscape of their journey. However, both columns seem to run on parallel sections of the page without any mutual awareness, at least from the point of view of the characters. It is up to the reader to traverse this gap between the factual record of historical events and the fictional record of mythical events, and find patterns of connection in the randomness of their co-occurrence on the same page. This representational gap increases the tension between the apparent timelessness of the fictional structure of this love narrative, on the one hand, and the time-bound uniqueness of historical events, on the other. Although the principle of anacyclic reading applies to both columns, in the end human history breaks free from the symmetry

patterns, since the future cannot be written in advance. The blank columns show the limits of cyclic representations of experience, and thus they point to the abstract and ideological nature of any mythical representation.

The tension between the absolute presence of the present in individual consciousness and the presence of signs of historical temporality may be observed in the modes of representation of the automobile. The car is metonymically transformed into many different models, as if it assumed a new identity with each new reference. Such mutations are a projection of the emotional states and desires of the characters at any given moment, but also of the technological unconscious of history. The diachrony and historicity of America show through the relentless synchronic fullness of the present in the interior monologue. Here is the first reference to the automobile in each of the monologues:

Fig. 11. Journey map. Meridian 90° W, Mississippi River and Interstate 90. St. Louis as the center of the journey. © Manuel Portela, 2009.

For now here, weirdly, where my chainsawed **Green Ash** died by Sam's murdered ride waits a Shelby Mustang. Idling (H48)	For now here, weirdly, where my butchered **Horse** died and Hailey's betrayed timber lies waits a Ford 999 Racer. Idling. (S48)

A sports car of the late 1960s and the first Ford sports car (dated 1902) seem to overlap in the same slice of time, evoking in their morphology the technological history of the twentieth century. In all the remaining occurrences, the car will assume many other forms: Cadillac One (H50) and Dodge Charger (S50); Oldsmobile Roadster (H56) and Pontiac GTO (S56); Imperial Baker (H57) and Corvette Sting Ray (S57); Model T (H57) and Corvair Monza (S57); Overland 71 (H65) and Buick Electra (S65), etc. (Fig. 12). More important than the design of the individual vehicle is the archetype of the car and the mythology it evoked. A journey in the present extends into a past that is both historical and mythical. Cars are thus one of the forms of linking American history and American myth to the story of these characters. Actual time and actual space overlap with mythical time and mythical space as the car becomes a narrative and poetical fetish.

This rhetorical operation juxtaposes historical strata to the layers of the present, linking the story column to the history column. At the same time, it also contributes to showing the 16-year-old characters as myths and archetypes. Both characters always refer to themselves as US, a self-reference that generates a level of allegorical reading in which their actions and relations stand for a narrative of American history and the American nation. This mythological projection is enhanced by the paronomastic power of phonetic and lexical associations that agglutinate words. References to flora and fauna, which are associated respectively with Hailey and Sam, perform a similar function. They form a catalogue of species and they represent a large piece of natural history as a series of Americana items. Thus, the journey through the human and natural landscape of the U.S., and the

psychology and actions of teenage lovers expose their mythic and ideological dimension as narrative-producing categories.

6. LOVE IS ROUND

The digit eight [8]—also a symbol for mathematical infinity [∞], for the Möbius strip [∞] and for a double circle [oo]—functions as a numerical matrix that generates many verbal, narrative and bibliographic permutations. It also works as the geometrical figure for structuring both the plane of the page and the space of the book. Each opening, for example, is divided in 8 parts, projecting the infinity symbol in the duplication of the circle projected onto the four sections that make up each page. The retroactive function of the signs 8 and ∞ as figures for the circuits between the different levels can be exemplified by one of the refrains of the book (Fig. 13). This refrain of the book-novel-poem consists of eight words and it has ten occurrences in each direction of reading: it is thought eight times by Sam and another eight times by Hailey; it appears twice in direct speech at the center of the book, in both the mouth of Sam (S180 and S181) and the mouth of Hailey (H180 and H181). Its double central occurrence symbolizes the coincidence of selves and bodies at the center of the circle (see below), and they define an axis of symmetry with 4 occurrences at each side. This refrain undergoes transformations as the action progresses. Its initial form—"Everyone loves / the Dream but I kill it." (S1 and H1)—is an expression of adolescent rebellion against the world, while its last occurrence—"Everyone betrays the Dream / but who cares for it?" (S360 and H360)—seems to recast, in a collective and impersonal dimension, the experience of individual and social desire as imagined forms of the real.

The tension at the heart of desire as dream and at the heart of dream as desire is symbolized in the spelling change that turns "fear" and "free" into anagrams for each other: "Everyone feers the Dream but she frees it" (S307), and "Everyone feers the Dream but he frees it" (H307). Besides the dream cycle (ideation-realization-destruction), changes in the refrain's personal pronouns suggest a cycle for human union (singleness-union-singleness): "I" is the form used until the center of the book is reached; "we" is used after the center has been reached; and then "he" and "she" are used after the death and survival of both characters. The characters' narrative development suggests a movement poised between self-consciousness, consciousness of the other, and the possibilities and limits of personal and political union. Moreover, the numbers generated by page intervals in the occurrences of the refrain create axes of geometric and numeric symmetry: 54 + 54 + 36 + 36 + 36 + 36 + 54 + 54, i.e., a division of the circle into eight parts (which are equal in 2 groups of 4). They also create a number with a central axis of symmetry, and this number shows recursion of the same elements (in units of 2 or 4) on both sides of the axis: 54 54 36 36 | 36 36 54 54, or 5454 3636 | 3636 5454.

The passage of time and the duration of love and life are symbolized in the 12 jars of honey which are consumed as the story proceeds (Fig. 14 (a)). Their duplication in both symmetrical and reversed pages can be read as a projection of the 12 (or the 24) hours of

Table 11. The four points of the compass as page numbers: East (H49 and S49), South (H121 and S121), North (H240 and S240), and West (H312 and S312). Number sequence: 49-72-119-72-48. © Manuel Portela, 2009.

the day (Fig. 14 (b)). They function as a time-keeping device which measures the passage of time. As the narrative moves on, readers are updated on the remaining fractions of honey jars. Hailey and Sam share all jars of honey. The fraction 1/2, being a narrative occurrence of half a unit, echoes the division of the page and the division of the circle. References to "honey" also occur on the reversed pages of Sam and Hailey (42//319, 43//318, 66//295, 123//238, 180//181), strengthening the connection between typographic signifier and narrative signifier. Honey jars also stand for the duration of love. Early on, honey is set up as a figure for the love relationship between Hailey and Sam:

Sunnyastounded kisses my mouth.   Sunnyastounded kisses my mouth.
Mistletoe whisks: **Storks** bliss:
– *Consume only this.*   – *Consume only this.*
HONEY!'   HONEY!'
(H42)   (S42)

    A dozen kisses unfinished.   A dozen kisses competing.
Half kisses.   Half kisses.
(H43)   (S43)

This association between honey and love is established during their first sexual intercourse on pages 42 to 48, and at the beginning of the car journey. It ends with their death and separation on pages 319 to 328, and with the end of the journey:

    Impossibly still. Just gone. Dead.   'Impossibly gone. Just still. Dead.
    To where I'm allready goinggone.   To where I'm already gonegoing.
Though over her still bawling, kissing her, plugging   Yet over him still slobbering, kissing him
her nose, compressing her heart. My breath   plugging his nose, pounding his heart. My breath
rushing. Allone. Now. Here. Left only.   pounding. Allone. Too left. Now. Here. Only.
(S328)   (H328)

Fig. 12. Transformations of the automobile (H48-H65 e S48-S65). © Manuel Portela, 2009.

Fig. 13. Repetition and variation in the novel's refrain (4 + 1 + 1 + 4) x 2. Symmetrical sequences: 54-54-36-36 \ 36-36-54-54. © Manuel Portela, 2009.

One last reference is made on pages 353: "My hand falls. I'll eat the Honey" (S353) and "My hand drops. I'll eat the Honey" (H353). At the end of the novel, narrative symmetry implies that both characters die and that both survive. Up to this point the story appeared to have a single chain of events told from two narrative perspectives. In the denouement, however, that single chain of events unfolds in two parallel sequences: in one of them, Sam dies and Hailey laments his death; in the other, Hailey dies and Sam laments her death. The myth of love occurs here in one of its more powerful *topoi*: the death of the beloved and the lamentation for that death.

Now what?

    Her death

clinging hard to Hailey's rigid lips. O! How?

Some course of course. If not at all obvious to me.

Only the saddest mystery cradled by her cold palms.

    My end denied by her end

almost ending me with all it won't harm.

    Because I can't end what I don't own.

Though there's got to be somehow I can join her?

    I freak. Shaking, streaming.

Tears unstopping globs of mess.

– O here. Let me go. Please.

So hacked and roped by this savage World.

    I'm too frightened.

    (S335)

What's this?

    A Bee?

Still clinging to Sam's swollen wrist. My poison!

His poison? With nix of even paucities left over.

Still I scratch its sad sting over my skin.

    Across my gums. My demise denied by Sam's

demise

denying me here what's my affliction.

    Because I can't start what I don't own.

Though there must be someway I can go too?

    I lose it. Skeeking, shaking.

On my back. Streaks unstopping slogs of goop.

– O here. Release me. O Please.

    Still harnessed to his toothy World.

    I'm so terrified

    (H335)

This unfolding in the chain of events suggests the overlapping of alternative temporal states and alternative individual destinies. Linguistic and typographic symmetry have an equivalent in a narrative symmetry which forks paths in the chain of events. The cycle of separation-union-separation, an analogue of the cycle life-death-life, is closed. Yet this closure is but one iteration of a recursive process that can continue in new iterations *ad infinitum*, since, whether as a circle or a Möbius strip, the book can always start over again. While it embodies death and separation, it also reaffirms the romantic myth of a union that desires to transcend death:

$$42 \ (+1)= 43 \ (+23)= 66 \ (+57) = 123 \ (+29) = 152 \ (+28) = 180 \ (+1) = 181 \ (+28)= 209 \ (+29) = 238 \ (+57) = 295 \ (+23) = 318 \ (+1) = 319 \ (+41) \ [= 360]$$
42-1-23-57-29-28-1-28-29-57-23-1-41

(S42) Jars! One dozen Jars! / (…) Honey!
    // savage separation. Our Jar over. (H319)
(S43) Half a Jar goes.
    // and retrieves for US our last jar of honey. / (…) Just half. (H318)
(S66) Spooning up honey.
    // Even though he's my honey. My everything. My me. (H295)
(S123) Honey. / 8 ½ left. / One Jar for two. Halfandhalf.
    // 3 ½ left. Sweet / Honey. (H238)
(S152) Only for US. Honey. 7 ½.
    // 4 ½. Honey. Only ours. (H209)
(S180) Our honey. With just 6 ½ Jars left.
    // With just 5 ½ Jars of honey left. (H181)
(S181) With just 5 ½ Jars of honey left. 5 ½ left.
    // Our honey. With just 6 ½ Jars left. (H180)
(S209) 4 ½. Only ours. Honey.
    // Only for US. Honey. 7 ½. (H152)
(S238) 3 ½ left. Sweet / Honey.
    // Honey. / 8 ½ left. / One Jar for two. Halfandhalf. (H123)
(S295) Even though he's my honey. My everything. My me.
    // Sam spooning up honey. (H66)
(S318) and retrieves for US our last jar of honey. / (…) Just half.
    // Half a Jar goes. (H43)
(S319) savage separation. Our Jar over.
    // Jars! One dozen Jars! / (…) Honey! (H42)

Fig. 14(a). "Honey Jars" as the passage of time. The duration of life and love (12 x ½) x 2. Symmetrical sequences: 42-1-23-57-29-28 \ 28-29-57-23-1-42. © Manuel Portela, 2009.

Hailey's my oblivion. For once. And allways.

Beyond even time's front. Because now

we are out of time. We are at once.

(S320)

    Gold Eyes with flecks of Green.

(S330)

Sam's my oblivion. For once. And allways.

Beyond even time's front. Because now

we are out of time. We are at once.

(H320)

    Green Eyes with flecks of Gold.

(H330)

Representation of sexual relations has several instances, often metaphorically transfigured by references to specific contexts, such as the flora and fauna or the automobile. Such metaphors make sexual allusions more or less explicit in language and page layout. Sex, which is omnipresent, is given many rich and inventive representations. Moreover, the copula is one of fundamental recurrences of the symbolic figure of the circle in the narrative. At a narrative level, the union of Hailey and Sam—typographically embodied in the circle around two vertical lines and also in the circle around the double numbers of the pages—enacts the geometric union of the two halves of the circle which is graphically materialized in the layout of each page and of the book as a whole. This deep link between narrative and bibliographic space is further stressed in the central chapter (pp. 177-184). Here, a coital relationship coincides with the material center of the book. The co-presence of both interior monologues is symbolized by their typographical and linguistic coincidence on pages 180-181. This coincidence is the only space-time of complete union and verbal identity between the two voices.

The relationship between the two characters manifests itself in the physicality of the book. The myth of a love fusion (which is also the topic of the conversation between Hailey and Sam during and after sexual intercourse) has a bibliographic embodiment through the momentary coincidence between the space of narrative, the space of language, and the space of the book. At this point cunnus and phallus are graphically depicted in the typographic composition of Hailey's and Sam's monologues. This process turns the typographic and phonic carnality of the letter into an erotic fetish. On pages S177//H184 and H177//S184, the penis and vagina are visually marked by their layout as salience and recession (Fig. 15). These two half-pages are, respectively, the beginning (177) and the end (184) of the coital relationship that occurs at the center of the book. Their iconic similarity to the objects of representation is a graphical symbol for the temporary fusion of love.
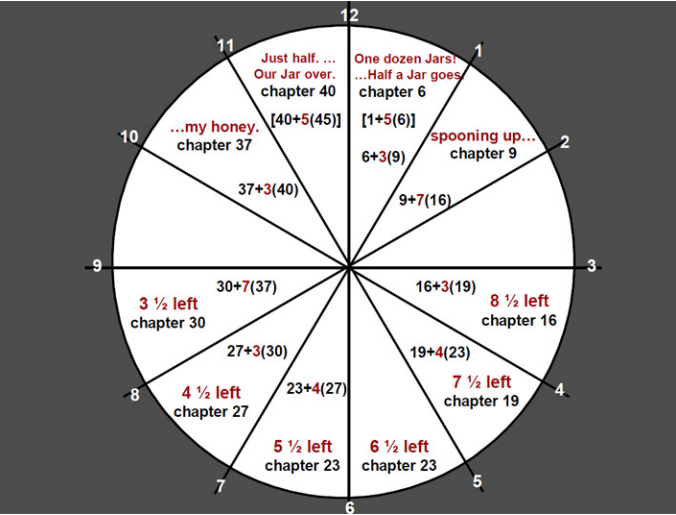

Fig. 14(b). "Honey Jars" as the passage of time. Numbers from 1 to 8: ½ and 12, 3, 4, 5, 6, 7 and 8. Symmetrical sequences: 5-3-7-3-4 \ 4-3-7-3-5. © Manuel Portela, 2009.

The symmetrical composition of the 18 lines of each of the two half-pages allows for the projection (by combining a rotation with a translation) of the half-page S177 onto the half-page H184, and vice versa. Moreover, both pages can be seen as part of a circular single text, since their linguistic structure and narrative implications lend themselves to a circular iteration. This is one of the most expressive uses of the tension between the stasis of the autonomous page and the kinetics of the syntax of turning the pages over and around. This tension reflects the tension between the lyrical and the narrative dimensions of language in the work. It also evokes the tension between the fullness of time inhabited through sensations and the inexorable passage of time, which inscribes human experience in the biological and social process of history.

The phrases "That's too easy" (S177), "That's too easy" (H177), "That's too difficult" (H184) and "That's too difficult" (S184) contain the first co-occurrence of green and golden circles in the same half-page. This co-occurrence captures in graphic terms the dilemma of the union, which is also verbally marked by the shift from first person singular to first person plural, emphasized in the eighth narrative sequence (chapters 22, 23 and 24). This temporary coincidence of Hailey and Sam is bibliographically marked by the coexistence of the two characters on the same page opening and by the identity of their thoughts and speeches (pages S180=H180 and H181=S181). Golden and green circles, pictographic representations of the eyes of each character, are used on the same half-pages (S177-S184 and H177-H184). Moreover, separateness within union and union within separateness (whether between two individuals, or between individual and community) has a lexical instance in two recurrent lexemes in the novel: "allone," which contains "all one," "alone" and "a11one" (in Spectrum MT, the typeface used for Sam and Hailey, "l" and "1" are similar); and "US", which contains "us," "United States" and the graphical symbols for reversal and recursion.

Within this vast set of symmetrical structures, symmetry breaking becomes another tool available for symbolic purposes. A break of symmetry in the networks of symbols established for Hailey and Sam occurs in one of the final pages. References to flora are placed in the speech of Sam (S357), while references to fauna appear in the speech of Hailey (H357). Each character is projecting the memory of the other onto the natural world. Both lists recapitulate 18 references from the first chapter. Sam recapitulates the following plants, first mentioned on pages H1-H7: Aster, Yarrow, Buttercups, Clover, Tarragon, Tansy, Mustards, Daisies, Flax, Catnips, Mints, Bull Thistle, Lilacs, Wild Licorice, Birches, Tamarack Pine, Trembling Aspens and Atlas Mountain Cedar. Hailey lists the following animals, first mentioned on pages S1-S7: Rough-legged Hawks, Mallards, Crows, Bighorn Sheep, Cottontails, Wasps, Milk Snakes, Toads, Brook Trout, Badgers, Ants, Cats, Deer, Crickets, Coyotes, Beavers, Golden Bears and Bald Eagles. This final sequence of references to the natural world inverts the order of their first occurrence. If each item is identified by its respective page number, the following numerical sequence is obtained in both cases: 7-7-7-6-4-4-3-3-3-2-2-2-2-2-2-1-1-1. The sum of both lists equals 36, which suggests another overlapping circle: the circle of the natural world, with animals and plants forming each half of the circle. Symmetry, circularity and reversion are lexically, graphically, and narratively reasserted. All of these patterns, or breaking of patterns, sustain various types of feedback loops between graphic and bibliographic levels (letter, line,

page, etc.), on the one hand, and language and narrative levels (words, sentences, sequence of actions, etc.), on the other.

In the central chapter (pages S178-S183 and H178-H183), Hailey's letter colors appear in Sam's half-pages, and vice versa. On pages S180-S181 and H180-H181 the color mix highlights the following words: you, Honey, Gold, Love, Horror, Gold, Honey, Everyone (x2), i.e., eight words which are repeated in each half-page (Fig. 16). These words provide a key for the interpretation of the whole work. This key links the individual layer of story to the collective layer of history. The crossover of graphic properties between Sam's and Hailey' half-pages signifies the temporary union that occurs at the center of the book. It is also there, in the eighth narrative sequence, that the center of the circle (and of the book as a circle) is reached. At that point layout and typography emphasize symmetry according to the axes inside/outside, top/bottom, left-hand page/ right-hand page. By using the opening to derive an internal axis of symmetry (4+4/ 4+4), "you" is symmetrical to "everyone," "honey" to "honey," "gold" to "gold," and "love" to "horror," in both Hailey's and Sam's pages. The experience of duality between love and horror is embodied in the individual story and in collective in history. History, as mentioned above, is often represented in the inside column through political revolutions, social uprisings, battles and wars, human accidents, and natural catastrophes. The death of both characters and the violence of history equate, individually and collectively, the experience of horror in human life.

Fig. 15. Sex on the page. Phallus and cunnus in line layout [S177//H184 and H177//S184]. © Mark Z. Danielewski, 2006.

7. WRITING IS ROUND

The written form of the central page numbers captures the conceptual tension between union and separation embodied in the book's structure. Numbers "180"/"181" and "181"/"180" can be read not only as markers of the half-sequence 1-360 and 360-1, but their actual shapes and relative positions can be read topographically, as happens with the flip-book animation of the double-numbered pages (Video 1). In this case, the digit eight [8] standing in the middle of the other two digits [1 and 0] functions as the axis of mirror symmetry, which combines either 1 and 0, or 1 and 1—the elementary units of machine-language. Furthermore, it points to the infinite [∞] possibilities unleashed by the productivity of language when subject to the joint permutational powers of writing, codex, and reading. The double articulation that makes signification possible—by cutting out symbolic space through phonemic and graphemic differences—shows its similarity with digital representation and with the principle of the numeric difference of machine-
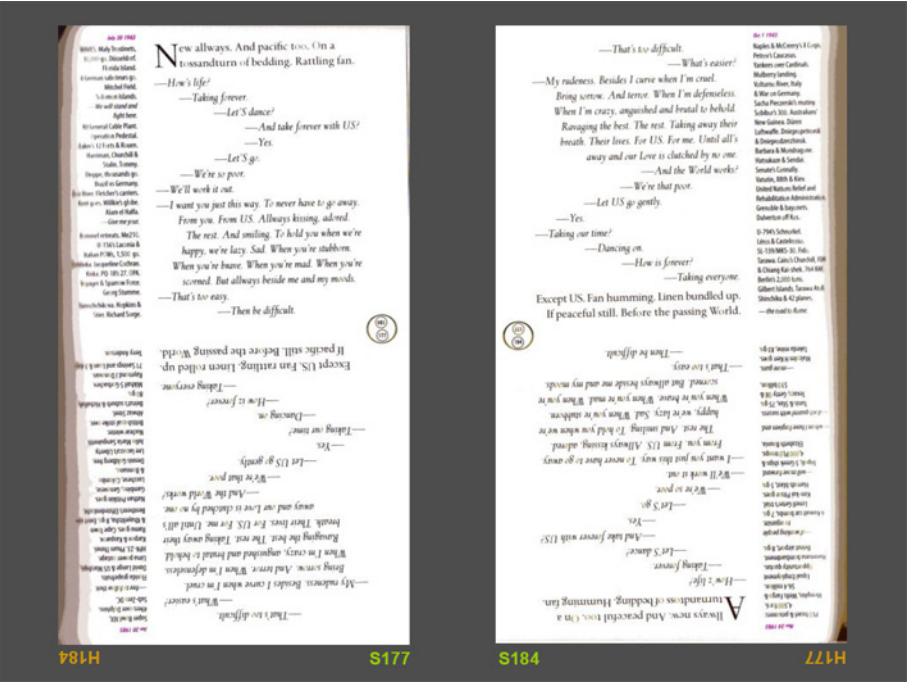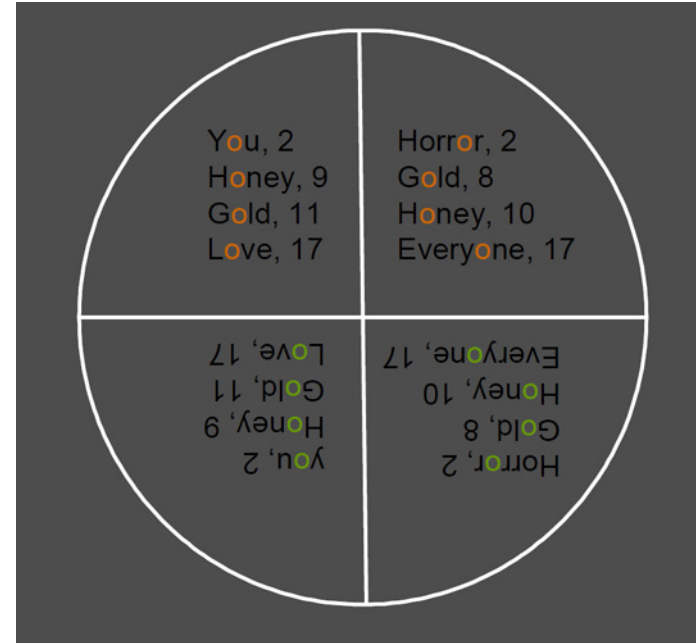
language. Verbal language and alphabetic writing operate upon algorithmic principles which make them capable of automatic processing.

Only Revolutions presents us with the book as a programmable machine, i.e. as a device with interdependent levels of coding that retroact upon each other. The codifiability of the book takes place in the topography of the page, in the syntax of pages and openings, in the typographic properties of characters and visual layout, and in the reading instructions contained in this set of performative markers. Typesetting and layout have recoded the bibliographic materiality of the informational structures of the codex in a self-reflexive form. Semiotic operations re-signify the verbal and narrative elements by activating their specific relations to the bibliographic signifiers. This creates retroactions between semantic/narrative layers and bibliographic/graphical layers. Insofar as many operations rely on reading decisions taken upon a constellated universe of signs, a substantial part of meaning in bibliographic, linguistic and narrative spaces is the result of the multiple (anticipated and unanticipated) motions of reading.

The typesetting and layout in this work reinforce associative reading paths, with a significant degree of randomness, across the codex's signifying field. The reader experiences the quantum distribution of fragments of meaning, perceiving them as a result of symmetries and broken symmetries, of overlapping alternative states, of uncertainty and incompleteness in the encounter between text and reader, and, above all, of the vast set of (conscious and unconscious) mechanisms that bind the materiality of language to the materiality of writing and codex. The rhetoric of typographic styles reinforces the schematic nature of the oppositions. But their topography affirms the notational power of codex surfaces, multiplying the reading paths between signs. The paranomastic association of multiple lexemes and the radiant constellation of alternative reading paths have the effect of showing the potentiality of meaning. As a set of potential meanings, which overlap in indeterminate ways, they point to the abstract nature of writing, language and book, and

to their formal materialities. That abstractness determines both narrativity, as the effect of a particular reading path between signs, and semiosis as the general process of translating signs into other signs.

Retroaction between linguistic and bibliographic circularity is reinforced by series of refrains that bind together the inverted half-pages. These refrains are explicit markers for the connection between the verbi-narrative and the biblio-typographic layers. At those points, the work creates a loop that allows the reader to cross fictional time and space (passing from the focalization of Sam to the focalization of Hailey, and vice versa, in divergent times) just by moving on the space of the page. This happens at least with six refrains: "the Wheel ESNW," "the Dream," "Honey Jars," "Green Eyes / Gold Eyes," "Flash / Wind / Chimes / Thunder" and "Leftwrist Twist" (Table 11 and Figs. 14(a), 14(b), and 16, above; Fig. 17 and Tables 12 and 13, below]. By rotating the page, the reader finds a variation of the refrain on the reverse page, as if that particular page opened a temporal corridor for a later or an earlier time in the narrative. This seemingly random

connection, created by the page layout, has the paradoxical effect of reinforcing the idea of circularity. However, the possibility of moving at random between sectors of each page feeds the re-constellation of pre-constituted narrative patterns, enabling the reader to explore retroactions in the search for emerging patterns and meanings. Its biblio-linguistic cyclical and recursive structure implies not a mere repetition of a single course, but an open exploration of those multicourses generated by various kinds of feedback between language and pagination.

Although they look back to the tradition of complex and dynamic print works, both novels by Danielewski should also be read as digital typographic novels. The visuality and bibliographicality of the print medium have been heightened by digital mediation in the production of the printed book. Digital mediation is reflected not only in the planning, pre-printing, and final layout, but also at the level of word processing in verbal composition. Duplication of Sam's and Hailey's monologues suggests that word-processing tools also played a role in comparing, parsing and sorting their respective texts. Syntactic and lexical parallelism of phrases and sentences, and their symmetrical segmentation in equivalent pages open them up to a labyrinthine reading, that is, to a reading that intersperses the corresponding lines of Sam's and Hailey's pages.

Therefore printedness is also a product of the flexibility of the pixel and of the page as a bitmap. As has been argued in different ways by N. Katherine Hayles (2002), Mark B. Hansen (2004), Jessica Pressman (2006), and Brian W. Chanen (2007) about his earlier novel *House of Leaves* (2000), this is a case of remediation in which the print codex re-appropriates new technologies and redefines its own materiality for the digital context. *Only Revolutions* strengthens self-referentiality and self-similarity using a bibliographical and mathematical trope that subsumes digitality in graphicality. Turning the book into a computational device, *Only Revolutions* links the digitality inherent in human language and in alphabetic writing, as permutational devices based on recursive structures, to the system of differences that sustain the material and conceptual space of the codex. *Only Revolutions* shows the book as a semiotic machine in which the operations of typesetting, layout, and binding on the one hand, and the operations of browsing and turning the pages on the other, produce reading paths that co-determine textual possibilities, at both semiotic and hermeneutic levels. The permutational function of the codex is performed through a typographical design (of letters, lines, and pages) that makes readers aware of the various layers of permutation as the basis for linguistic and bibliographic meaning. Instead of the common figure of the computer as a book, i.e., as an extension of the informational structures of the codex, Danielewski's work gives us the book as a computer, i.e., as a calculating machine that generates algorithms and geometrizes the plane and the space for writing and reading.

The website dedicated to the work is symptomatic of the new media ecology, which has extended into the electronic space all marketplace transactions, reconstituting in cyberspace the identity and modes of circulation of commodities (Fig. 18).[18] But this website is not only a place for merchandising or for meeting other fans of a book-object that has become a cult object. In the design of the website we find algorithms that are identical to those that organize the book, emphasizing the contiguity and symmetry

Fig. 16. Six keywords linking Sam and Hailey, and both of them to the temporality of national and world historical events. Symmetrical sequences: 2-9-11-17 | 17-11-9-2; 2-8-10-17 | 17-10-8-2; 22 | 22; 98 | 89; 1110| 1011; 1717|1717. Sums: You(2)+Everyone(17)=19; Honey(9)+Honey(10)=19; Gold(11)+Gold(8)=19; Love(17)+Horror(2)=19. © Manuel Portela, 2009.

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(+7) = 7 (+24)= 31 (+40) = 71 (+43) = 114 (+29) = 143 (+32) = 175 (+11) = 186 (+32) = 218 (+29)
          = 247 (+43) = 290 (+40) = 330 (+24) = 354 (+6) = 360
               7 - 24 - 40 - 43 - 29 - 32 - 11 - 32 - 29 - 43 - 40 - 24 - 6
(H7) Green Eyes with flecks of Gold.
                              // Gold Eyes with flecks of Green. (S354)
(H31) his Green Eyes with flecks of Gold.
                              // Gold Eyes with flecks of Green. (S330)
(H71) Green Eyes with flecks of Gold.
                              // Gold Eyes with flecks of Green. (S290)
(H114) with those / Green Eyes with flecks of Gold,
                              // her Gold Eyes with flecks of Green. (S247)
(H143) But still somehow / her Green Eyes with flecks of Gold
                              // And Hailey agrees, / Gold Eyes with flecks of Green. (S218)
(H175) Craving on / those Green Eyes with flecks of Gold.
                              // And / those Gold Eyes with flecks of Green. (S186)
(H186) And / those Green Eyes with flecks of Gold.
                              // Anxious for / those Gold Eyes with flecks of Green. (S175)
(H218) And Sam laughs / Green Eyes with flecks of Gold.
                              // Yet somehow still / her Gold Eyes with flecks of Green (S143)
(H247) his Green Eyes with flecks of Gold
                              // 'with those / Gold Eyes with flecks of Green, (S114)
(H290) Green Eyes with flecks of Gold.
                              // Gold Eyes with flecks of Green. (S71)
(H330) Green Eyes with flecks of Gold.
                              // her Gold Eyes with flecks of Green. (S31)
(H354) Green Eyes with flecks of Gold.
                              // Gold Eyes with flecks of Green. (S7)
```

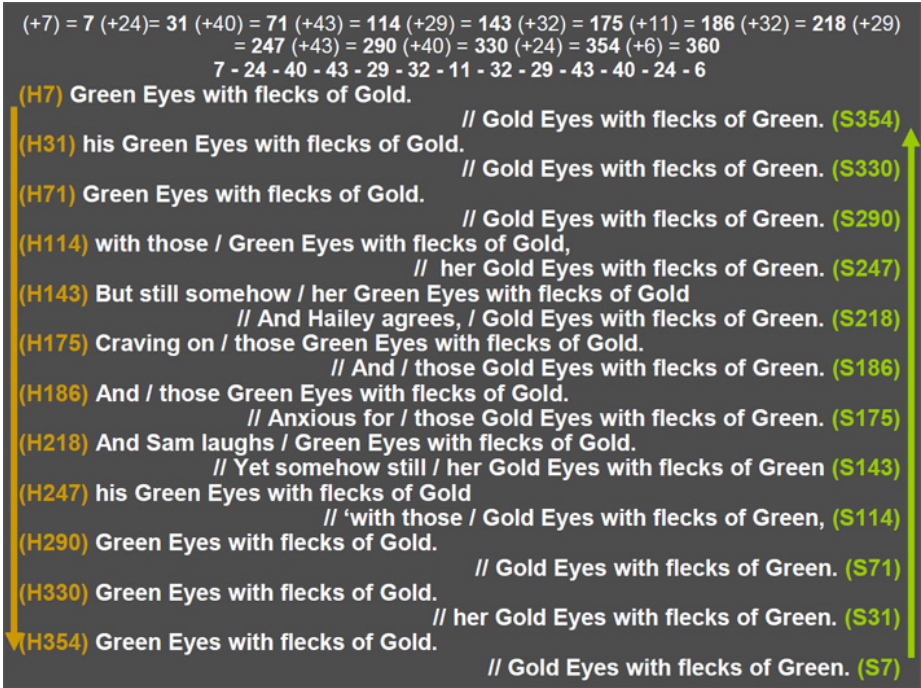*Fig. 17. 'Green Eyes' // 'Gold Eyes': reflections and symmetries, difference and repetition. © Manuel Portela, 2009.*

between the two spaces. The spinning of photos around both eyes—and the ability of each user to create his/her particular sequence of images—is a virtual simulation of the bibliographic orbits described by each reader as s/he moves around between parts of the book. The virtual spaces of the computer and of the book are hypermediated by this self-consciousness of their specific medium and of the medium they are trying to emulate. An analysis of the mediation processes involved in this work has to consider not only the book-in-the-book and the computer-in-the-book, but also the book-in-the-computer. Self- and meta-referentiality in *Only Revolutions* have transmedial implications. Codex and hypermedia are the two halves in the inter-mediating circles between book-machine, computer-machine, and reader-machine.

8. READING IS ROUND

The 180-character strings in each of the columns suggest that the circle is completed only when one reads the second half, either following the axis of symmetry of the page or the axis of symmetry of the book. Accessing the equivalent halves in each narrative requires reading the symmetrical pages and chapters. The reader has to turn the book around 360 times, if s/he chooses to read page by page, or 45 times, if s/he reads chapter by chapter. These motions create a complex articulation between space and time, since any given timeline in the story has been split into two symmetrical spaces that are apart in the book. To access the same chronological time readers have to travel between opposite spaces of the book, describing circular motions. These circles intersect at the center of the book where the center of a three-dimensional space and the center of a two-dimensional plane coincide. It is as if time and space contracted or expanded as we move towards or away from the center. Both symmetrical sides of Hailey and Sam's narratives total 180-character strings, i.e., half of the circle. The other half consists of the 180-character strings formed by the two halves of the history column. This means that the circle symbolizes not only the desire for union of the two characters, but also the relationship between individual and collective destiny. The tension in the union between two individuals replicates the tension in the union between individual and society.

Disjunction between chronological time and bibliographic space is also a disjunction between the points of view of Sam and Hailey. Producing a coherent representation of the two characters and of the events in which they participate involves joining the two corresponding halves (i.e. symmetrical pages and chapters). The gradual construction of a global representation (i.e. the construction of a coherent narrative from the genre expecta-

Table 12. 'Leftwrist Twist': reflections and symmetries, difference and repetition. © Manuel Portela, 2009.

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52 (+3) = 55 (+8) 63 (+12) = 75 (+15) = 90 (+9) = 99 (+21) = 120 (+15) = 135 (+7) = 142 (+8) = 150 (+8) = 158 (+13) = 171
(+9) = 180 (+1) = 181 (+9) = 190 (+13) = 203 (+8) = 211 (+8) = 219 (+7) = 226 (+15) = 241 (+21) = 262 (+9) = 271 (+15) =
                286 (+12) = 298 (+8) = 306 (+3) = 309 (+51) [= 360]
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52-3-8-12-15-9-21-15-7-8-8-13-9-1 // 1-9-13-8-8-7-15-21-9-15-12-8-3-51

	S	H	
'Wipe my hands and with what's left, / a Leftwrist Bracelet – / Priceless. / And there's Hailey. How sad. / Around her Leftwrist a Twist of Scat.'	S52	H309	'And though I'm by my Leftwrist a Twist of Scat / all stinking with rags, Sam's / Leftwrist Twist of Forever reassures me,'
'But my Leftwrist Wealthy Twist / stuns him.'	S55	H306	'At least Sam's Leftwrist Wealthy Twist / spins spendidly despite this accident.'
'Hailey offers her Leftwrist / Twist of Myrtle & Tamarisk.'	S63	H298	'When pinched by my Leftwrist Twist of / Myrtle & Tamarisk Sam advocates quick / a Wedding Gift.'
'Though thirsty. / Twirling my Leftwrist Diamondy Twist.'	S75	H286	And me by Sam with his / Leftwrist Diamondy Twist.'
'And despite / Hailey's Leftwrist Bronze Twist,'	S90	H271	'with just / my Leftwrist Bronze Twist.'
'At once I offer, graciously, / my Leftwrist Twist of Sapphire.'	S99	H262	'Despite Sam's Leftwrist Sapphire Twist.'
'Anyway by Hailey's / Leftwrist Tin Twist we're slimps.'	S120	H241	'Worries so plenty get / me turning my Leftwrist Tin Twist.'
'fidgeting there with / her Leftwrist Crystal Twist.'	S135	H226	'jabbing at my Leftwrist Crystal Twist.'
'Even with her Leftwrist Silver Twist.'	S142	H219	'My Leftwrist Silver Twist cooling.'
'Even with / my Leftwrist Platinumy Twist.'	S150	H211	'His/ Leftwrist Platinumy Twist spinning fortunes.'
'Hailey gripping hard her / Leftwrist Rosegold Twist.'	S158	H203	'merely twirling my / Leftwrist Rosegold Twist.'
'And though / I've my Leftwrist Twist of Silvergold, / Hailey's more.'	S171	H190	'While I Sam / with his Leftwrist Silvergold Twist / keeps earning more.'
'Our Lefwrist Twists of Gold too.'	S180	H181	'our Lefwrist Twists of Gold.'
'our Lefwrist Twists of Gold.'	S181	H180	'Our Lefwrist Twists of Gold too.'
'While I with my Leftwrist Rosegold Twist / keeping losing more.'	S190	H171	'And even though Sam's / only got his Leftwrist Twist of Rosegold, / he's more.'
'merely twirls her / Leftwrist Silvergold Twist.'	S203	H158	'Me, touched now, twirling my / Leftwrist Silvergold Twist.'
'shattering plates not even my / Leftwrist Silver Twist could afford.'	S211	H150	'And Sam, despite / his Leftwrist Silver Twist, / rakes up another broken dish.'
'Hailey's Leftwrist Platinumy Twist spooling.'	S219	H142	'Even with my Leftwrist Platinumy Twist.'
'grabbing for Hailey's Leftwrist Amethyst Twist.'	S226	H135	'clamouring there / for my Leftwrist Amethyst Twist.'
'Thrills enough to get / Hayley turning her Leftwrist Emerald Twist.'	S241	H120	'Besides, by my / Leftwrist Emerald Twist, we're rich.'
'Me and my Leftwrist Copper Twist.'	S262	H99	'Who offers immediately / his Leftwrist Twist of Copper which'
'with Hailey / and her Leftwrist Diamondy Twist.'	S271	H90	'by lips / and my Diamondy Leftwrist Twist,'
'And me with just / my Leftwrist IronTwist to toy with uneasily.'	S286	H75	'Feering fifth geer, / clutches his Leftwrist Iron Twist'
'Which is when I dig, even with Hailey's Leftwrist / Wealthy Twist, my wife deserves / a Wedding Gift.'	S298	H63	'THESE TWINKS must first put up / geech against my Leftwrist / Wealthy Twist.'
'Even my Leftwrist Twist of Myrtle & Tamarisk / mocks this accident's loss of competence.'	S306	H55	'Sam offers his Leftwrist Twist / of Myrtle & Tamarisk.'
'And if I'm by my Leftwrist Twist of Shit / allways rank & sapped, Hailey's / Leftwrist Twist of Forever astounds me,'	S309	H52	'Wipe my hands and with what's left, / a Leftwrist Bracelet – / Priceless. / And there's Sam. How pitiful. / Around his Leftwrist a Twist of Shit.'
	S	H	

+8 = 8 (+28) = 36 (+1) = 37 (+28) = 65 (+231) = 296 (+28) = 324 (+1) = 325 (+28) = 353 (+7) = 360			
8 − 28 − 1 − 28 − 231 − 28 − 1 − 28 − 7			
	S	**H**	
Wind (16) / **Flash** (19)	S8	H8	Flash (16) / **Wind** (19)
Wind (20) / **Flash** (2)	S36 / S37	H36 / H37	Flash (20) / **Wind** (2)
Wind (16) / **Flash** (18)	S65	H65	Flash (16) / **Wind** (18)
Chimes! Chime! Chimes! (4) / ThuuUUuuUuUUuunder. (6)	S296	H296	ThuuUUuuUuUUuunder. (4) / Chimes! Chime! Chimes! (6)
Chimes! Chime! Chimes! (13)	S324	H324	ThuuUUuuUuUUuunder. (13)
ThuuUUuuUuUUuunder. (2)	S325	H325	Chimes! Chime! Chimes! (2)
Chimes! Chime! Chimes! (4) / ThuuUUuuUuUUuunder. (6)	S353	H353	ThuuUUuuUuUUuunder. (4) / Chimes! Chime! Chimes! (6)
	S	**H**	

Table 13. "Wind—Flash—Chime —Thunder" [4 + 4 x 2 = 16]. Reflections and symmetries, difference and repetition. © Manuel Portela, 2009.

tions associated with the novel form or narrative poem) is obtained through the presence of the experience of reading as a series of rotational and translational motions among sets of signs. In moving from one half to its symmetric counterpart, whether at the page or chapter levels, readers have to negotiate the disjointed relationship between the sequential and the simultaneous. Simultaneous chronological times within the narrative (the times when Sam and Hailey coexist) are spatially dislocated within the book. This asymmetry between bibliographic space and narrative content foregrounds the process of mediation. Readers have an experience of the specific ergonomics of the work and of the algorithms and rules that determine recursions and associations. Reading time is translated into narrative space and narrative time is translated into bibliographic space. Narrative meaning becomes embodied in the linguistic and bibliographic signifiers themselves.

As seen in the previous sections, the calculus developed by Danielewski produces a set of numeric equivalences which translate combinations of linguistic and narrative syntax into geometric relations of the page's topography and the book's topology, and vice versa. The three- and bi-dimensional materiality of the book is foregrounded in a way that complicates the ergonomics of the physical relationship between reader and book. Self-awareness of reading paths within each page and across the book is obtained by making the act of rotating the pages or rotating the book an integral part of the novel's explicit meaning. The silent and automatic choreography of the hands in the act of reading the codex (opening the book and turning over the page) is made entirely audible by the motion of turning the book and pages around in both predetermined and random patterns. The sequence created by the organization that defines the codex form, and which creates an expected

reading direction, is multiplied by the book's symmetric structure. Its circular symmetry offers the reader multiple paths within and between pages.

The division of each page into four sections, corresponding to the 90 degrees of a quarter of a circle, and the use of reversed reading directions results in many circular readings. Such reading circles provide for multisequential trajectories at the various levels of articulation (page, set of pages, entire codex). Since the fragments of each page are, in most instances, narrative and syntactic units with a significant degree of autonomy, circles of reading can be drawn almost anywhere in the book or in the narrative. This means that the two preferred trajectories of reading (S1 to S360 and H1 to H360; or by symmetrical chapters—S1-S8/H1-H8, etc.) exist in a tension with a number of other possibilities inherent in the constellated and modularized page layout of the work. This tension can be played out either at the large scale structures (page, group of pages and entire codex) or at small scale structures (sentence, line, word, alphanumeric strings), since readers can engage the textual connectivity at any of those scales.

Bibliographic space and narrative space become homologous because the physical motion of reading inscribes meaning in the material space of the book. Inscribing the circle and the Möbius strip as conceptual figures in the rectangular form of the page and in the prismatic form of the book, *Only Revolutions* creates symmetry between syntagm and line, between text and page, and between narrative and book. In other words, inscriptions in the imaginary space of the narrative maintain internal relationships that are homologous to the internal relationships created by printed inscriptions in the graphical plane of the pages and in the topological space of the codex. Nothing seems to take place outside of the book: the whole language and the whole story happen in its typography and in its topography, as if meaning could not dematerialize from its linguistic, graphic, and bibliographic signifiers.

This retroactive circuit between the verbi-narrative and the biblio-typographic levels is further reflected in sets of explicit and implicit markers, such as circular markers on page corners and leitmotif phrases or sentences (Tables 14 and 15). Danielewski's numeric and topological structuring of the relation between verbal and biblio-typographic forms works as an encoding that translates verbal and graphic correlations into numbers and strings of numbers. These numbers and strings of numbers may be said to simulate the formal manipulation of the verbal and graphical elements carried out by the codex's algorithm (Table 16). They offer a numerical replica of recursivity, symmetry, and infinity as performed by the codex as a computing machine for talking about the endless possibilities of its own code.

The revolutions referred to in the title are the revolutions in the individual stories of Hailey and Sam—how their bodies orbit each other moved by the gravity of love

Fig. 18. Only Revolutions: a website mirroring the book [screen capture]. © Mark Z. Danielewski, 2006.

Table 14

$$= 2\,(+4) = 6\,(+68) = 74\,(+4) = 78\,(+68) = 146\,(+4) = 150\,(+68) = 218\,(+4) = 222\,(+68) = 290\,(+4) = 294\,(+68) =$$
$$= 67\,(+4) = 71\,(+68) = 139\,(+4) = 143\,(+68) = 211\,(+4) = 215\,(+68) = 283\,(+4) = 287\,(+68) = 355\,(+4) = 359\,(+68) =$$
$$-4-68-4-68-4-68-4-68-4-68-$$

Left text	Code			Code	Right text
I'm a new terror upon the land / releasing runoffs, tumbling / torrents. No sweat. / Me.	H2	‖	‖	S2	I'm a new horror upon the earth / releasing floods, sluicing rapids. / No big deal. / Me.
Kindness ever finds, spills my ear, / for a while I might / slip down and play amidst her canopies of gold.	S359			H359	Loving ever binds, spills my ear, for a while I might / slip down and play among his foals so green.
Tiptoe & Kiss the Mountain, / Tress, RudeRoot & All / Hot.	H6	●	●	S6	Kiss Hag, / Horse, Mountain & All. / A byebye. By this.
So let ice blossoms vine her hair. / And though repugnant & dour, / all she cares enough for to let go I'll spare.	S355			H355	So let ice cavalcades gallop his hair. / And though withering & wroth, / all he cares enough for to let go I'll spare.
While / Sam refuses even a taste / afraid allways to partake.	H74	●	●	S74	Though I avoid all deglutition, / disgusted by Hailey's hogging.
Only none ever follows. / We are all strays. / Allways astray.	S287			H287	Only none ever trails. / We are all trails. / Allways astray.
Leaving free / Boooooooomblastandruin / to congeal	H78	●	●	S78	with a shave and a / Boooooooooomblastandruin / haircut where
So up for this sky of billowy puff / from every bang our exhaust pipes sputter. / King Cheetahs cease on the rough.	S283			H283	Krumped out for horizons of willowy plumes / from every snort our exhaust pipes broom. / Kinnikinnik Dogwoods dead on the road.
Working / tables & chicks. / Thick swinging dick / tormenting every Geek	H146	●	●	S146	Swaggering tables & clientele. / A hick fisted prick / harrying every Hairpin
– No, we go to free you. / And we do. Shuffling off from / The St. Louis Drive Thru drugery.	S215			H215	– No, we go to free you. / And we do. Stumbling free of / The St. Louis Take Out stuckery.
Scrubbing floors, / which VIAROROPOLIS, / with sluggy kicks, / muds up.	H150	●	●	S150	Scouring floors, / which VIARFIFONACCI, / with muddy boots, / gobs up.
Hurling whatever he grabs: / mugs, saucers, flatware and bowls, / until with clenching fists he allmost squeegees me.	S211			H211	Rockets whatever he grabs: / shot glasses, platters, cutlery, allways / missing dear Sam completely.
Cool and quick. / Lubricated. / We never clutch.	H218	●	●	S218	Cool / and powerful. / Ventilated. / We never alter.
Yet somehow still / her Gold Eyes with flecks of Green / keep smiling tenderly / for me.	S143			H143	But still somehow / his Green Eyes with flecks of Gold / keep smiling tenderly / for me.
And Sam, such a gas / with our Nissan 300ZX bent	H222	●	●	S222	Hailey, such a gas, / with our Pontiac Chieftain, bent
But getting on, a tire pops, / the VW V2 hardly stocked, no longer / rocketing, soon after stops, / spilling air defeatedly.	S139			H139	Getting on, a tire blows, / the VW Rabbit, barely full, no longer / barrelling, too soon slowing, / gushing air defeatedly.
And allways we will leave US / behind US. / Because we're free.	H290	●	●	S290	And allways we will leave US / behind US. / Because we're free.
Blithe. Weedy. Except O those / Gold Eyes with flecks of Green. / – And her smile, **Carolina Parakeets** preen. / I slow. Pull over.	S71			H71	Race. Hold. Except O those / Green Eyes with flecks of Gold. / – And his smile, **Smooth Azalea** bold. / He slows. Pulls over.
Sam´s Saturn Spin, our wedding and escape.	H294	●	●	S294	Hailey's Cadillac Eldorado, our union and escape.
While Hayle's detained by some / trenchcoat CREEP	S67			H67	Sleezy breezy amidst Lithium-6. / But THE CREEP's sexy.

Table 14. Ten circular markers on page corners.
© Manuel Portela, 2009.

and desire or how their car(s) travel(s) through the territory—and the revolutions in the history of the United States and the world, but also the revolutions of the reader around the book—the way s/he describes circles and ellipses within its material and conceptual space as s/he turns the book around in her/his hands. This rotation becomes the figure for the act of reading itself and for the production of meaning as an infinitely recursive route between signs (Fig. 19).

Through a wide range of formal operations, *Only Revolutions* inscribes in its bibliographic dynamics the ergonomics of specific reading acts as paths from sign to sign and from page to page. By transforming the book into an object that is both a game and a toy, it objectifies the motions of reading. It also shows the productivity of written language as a function of the potentiality of syntactic and typographic combinations: typographic syntax enhances the potentiality of linguistic syntax because it increases the number of potential permutations of verbal signs. Numerical restrictions governing the typographic, syntactic and narrative combinations maximize the feedback loops between each of those three levels. The four sections of the page have been structured and mapped according to geometrical and numerical coordinates, whose aim is to relate the topology of the page to the topology of language and narrative. The page is a map of its own bibliographic territory and a map of a fictional narrative space.

The U-turn required for reading each of the opposing surfaces on the sheets of paper creates a choreographic analogue of the Möbius strip, which exists in the x and y axes of the page, and in the z axis of three-dimensional handling of the book. The recursivity of reading motions from sign to sign responds to the recursivity of linguistic and bibliographic structures. The object becomes highly co-constructed by the act of reading as a co-producer of the object that it interprets. The autopoietic property of bibliographic space and the probabilistic nature of permutations of signifiers, which are an essential part of the hallucinatory experience of reading, may be experienced through the multiple echoes between bibliographic and linguistic spaces. This co-determination between object and subject draws attention to the codex as a combinatorial textual machine, i.e., as a device for enhancing the digitality of language and of alphabetic writing.

Only Revolutions is an experiment with the codex as a tool for narrative and poetic notation. Recursion inside language and inside narrative is echoed and modeled on the recursions of typographic and bibliographic structures. Meaning appears as a topological function of the spatial symmetries of the book, which feedback onto the linguistic and narrative planes. What the vast ensemble of algorithms in this work makes materially perceptible is the extent to which literature can be an exploration of meaning as an emergent and probabilistic phenomenon. A constelled and networked structure of signs, organized on the basis of numerical constraints, results in a complex scripting of the chaotic motions of reading.

Ergodic textuality requires a semiotic intervention by the reader in realizing the potentialities contained in the textual algorithm. The text is a set of possibilities of meaning whose algorithms the reader has to execute. The conversion of texton (stored text whose display depends upon an algorithm) in scripton (text displayed as the result of an interaction between algorithm and reader) requires an additional level of intervention. Reading plays itself out not only as the interpretation of a code that pre-exists the work, but as a semiotic process that generates parts of the code that the reader uses for constructing and reading certain textual possibilities. Associations between signs depend upon a calculation of probabilities determined by the algorithm of reading in response to the algorithm of writing. The more constelled the work is, the greater the number of combinations and paths. More than a bundle or cloud of interpretations of pre-existing signs, reading is a bundle or cloud of motions between signs that are co-generated by the reading motion itself. For the machine-reader, the experience of reading becomes the experience of the particular algorithm that generates the code that makes it possible for him/her to read. Thanks to this code, the mo-

Table 15

'Everyone Loves the Dream' 4-1-1-4 10 x 2 20	'I'll destroy The World' / 'I'll destroy no World' 12-1-1-12 26 x 2 = 52 / 52 x 2 104	[circles on page corners] 10-10 10 x 2 = 20 / 20 x 2 40	'Green Eyes with flecks of Gold' / 'Gold Eyes with Flecks of Green' 6-6 12 x 2 24	Flash Wind Chimes Thunder 4-4 8 x 2 16	'Honey Jars' 5-1-1-5 12 x 2 24	The Wheel 'I am the East' 'I am the South' / 'S/he is my West' 4-4 4 x 2 8	'Leftwrist Twist' 12-1-1-12 26 x 2 52	144 + 144 288

(Table 15 comprises a dense grid of paired marker codes (S-/H- numbered entries) distributed across the columns above, with a final column of cumulative values.)

Table 16. Book algorithms in Only Revolutions: *a summary of the numerical and topological constraints. © Manuel Portela, 2009.*

book algorithms		
page algorithms The number of pages equals the number of degrees in a circle [360°].	**multiples and submultiples of 360** = 360	
chapter algorithms The number of chapters equals 1/8 of the circle [45°]. The sum of the number of chapters by Sam and by Hailey equals 1/4 of the circle [90°])	(360 / 8) = **45** 45 + 45 = **90**	
algorithms for chapter groups Variation on the size of initial letters associates chapters in groups of 3.	3 + 3 + 3 + 3 +3 + 3 + 3 + 3 +3 + 3 + 3 = 15	
algorithms for character strings The number of character strings in each page equals 4 x 90: each quarter of a page corresponds to a quarter of a circle [90°]	(90 + 90) + (90 + 90) **= 360**	
algorithms for lines The sum of the number of lines in Sam's and Hailey's narratives on each page equals 36, i.e., the equivalent of 1/10 of the degrees of the circle [360°]. The relative distribution of lines on each outside column is identical for every group of five chapters. This fact makes it possible to associate (in terms of the relative distribution of lines in each half-page) 5 chapters by Sam and 5 chapters by Hailey: 36 x 5 = 180. Every 180 lines the size of the font decreases on one half of the page and increases on the other.	360 / 10 = **36 lines** (22 + 14) x 5 = 180 (21 + 15) x 5 = 180 (20 + 16) x 5 = 180 (19 + 17) x 5 = 180 (18 + 18) x 5 = 180 (17 + 19) x 5 = 180 (16 + 20) x 5 = 180 (15 + 21) x 5 = 180 (14 + 22) x 5 = 180	
algorithms for initial letters Initial letters form a pattern of 15 letters ['SAMANDHAILEYAND'], i.e. , they correspond to 1/24 of the circle [15°]. The sum of all occurrences equals 90 letters, i.e., 1/4 of the circle [90°].	15 + 15 + 15 = 45 x 2 = 90	

algorithms for type	**face** 8 typefaces are used in the book, including inside cover, title-page and colophon **8**	8 replicates the symbol for infinity and the Möbius strip. Its shape also suggests two tangent circles.	
	size Font decreases every 5 chapters [i.e. every 40 pages], i.e, 8 times in each reading direction. 40-40-40-40-40-40-40-40	H41 H81 H121 H161 H201 H241 H281 H321	S41 S81 S121 S161 S201 S241 S281 S321
	style	*Italics* – direct speech and quotes **Bold** – flora and fauna SMALL CAPITALS – other characters, referred to in figurative ways and without proper names.	
	color	Hailey – gold **Sam** – green THE CREEP – violet There also colored markers (green, gold, black, violet and the logo of the novel – two vertical lines inside a circle) at the corners of 20 pages.[H2/S2; H6/S6; H74/S74; H78/S78; H146/S146; H150-S150; H218/S218; H222/S222; H290/S290; H294/S294; whose reverse pages are: H67/H67; S71/H71; S139/H139; S143/H143; S211/H211; S215/H215; S283/H283; S287/H287; S355/H355; S359/H359]. -4-68-4-68-4-68-8-4-68-	
	animation Double page numbers can be animated as a flip-book.	Page numbers for Sam's and Hailey's narratives are contained in two small circles which are then contained in a larger circle. These numbers rotate around each other, shifting their relative positions, from top to bottom, and bottom to top. Inversion occurs at the middle of the book, on pages 180-181.	

recursive numerical sequences in the novel's leitmotifs	The Dream	1.54.108.144.180.181.217.253.307.360 1-53-54-36-36-1-36-36-54-53 54-54-36-36-36-36-54-54	
	The World	1.6.31.34.39.46.51.78.109.120.123.176.180.181.186.218.241.252.283.310.315.322.327.330.355.360 5-25-3-5-7-5-27-31-11-3-53-4-14-53-3-11-31-27-5-7-5-3-25-5	
	Circles	2.6.74.78.146.150.218.222.290.294 67.71.139.143.211.215.283.287.355.359 4-68-4-68-4-68-4-68-4-68-	
	Eyes	7.31.71.114.143.175.186.218.247.290.330.354 7-24-40-43-29-31-11-32-29-43-40-24-6 [(1)6-24-40-43-29-32-11-32-29-43-40-24-6]	
	Flash Wind Chimes Thunder	8.36.37.65.296.324.325.35 8-28-1-28-231-28-1-28-7 [(1)7-28-1-28-231-28-1-28-7]	
	Honey Jars	42.43.66.123.152.180.181.209.238.295.318.319 42-1-23-57-29-28-1-28-29-57-23-1-41 [(1)41-1-23-57-29-28-1-28-29-57-23-1-41]	
	The Wheel E-S-N-W	49.121.240.312 49-72-119-72-48 [(1)48-72-119-72-48]	
	Leftwrist Twist	52.55.63.75.90.99.120.135.142.150.158.171.180.181.190.203.211.219.226.241.262.271.286.298.30 9 52-3-8-12-15-9-21-15-7-8-8-13-9-1-1-9-13-8-8-7-15-21-9-15-12-8-3-51 [[(1)51-3-8-12-15-9-21-15-7-8-8-13-9-1-1-9-13-8-8-7-15-21-9-15-12-8-3-51]	
animals (H357) and plants (S357)	Fauna (S1-S7) Flora (H1-H7)	7-7-7-6-4-4-3-3-2-2-2-2-2-1-1-1 7-7-7-6-4-4-3-3-2-2-2-2-2-1-1-1 (18 + 18) + (18+18) 36-36	
six keywords	You Honey Gold Love Horror Gold Honey Everyone	2-9-11-17 || 17-11-9-2 2-8-10-17 || 17-10-8-2 22 || 22 88 || 89 11-10 || 10-11 17-17 || 17-17 19-19-19-19	

tion between signs that reproduces the textual surface becomes interpretable.

If alphabetic writing contains an analysis of the combinatorial principles of language (from a phonetic to a syntactical level, and from a syntactic to a discursive level); and if the printed letter represents the mechanization of writing (from typeface design, font size, and font style to spacing, leading, alignment and segmentation of words, lines and sentences); the book has defined itself, since its very ancient beginnings, as a simulator of the world which enhances language and writing with its own formal materiality. As producer of the world it simulates, *Only Revolutions* works by articulating the linguistic and typographic space with the poetic and narrative space through a bibliographic encoding that establishes relationships between the various conceptual and material spaces of letter, language, and codex.

The letters S and H symbolize not only the characters and the two halves of the story, but the specific productivity of the letter as a minimum unit of a narrative machine. This productivity of the letter is also a mirror image of the productivity of reading: shapes H and S describe the reading paths that generate line and page re-combinations, either according to symmetries created by horizontal, vertical, and diagonal axes (dependent upon the motion of the eyes), or according to rotations and translations of the codex (dependent upon the motion of the hands) (Fig. 20). Reflection, rotation, and translation symmetries at the level of letter shapes are similar to those symmetries that occur at the higher levels of page layout, codex structure, and language structure. Thus geometrical self-similarity of H and S is also a diagrammatical representation of a whole series of reading motions triggered by print patterns. The narrative machine is shown here as being constituted by the recursive dynamics between the cascading levels of human language, alphabetic writing, and printed codex. The particular form of codex patterning invented by Danielewski becomes a matrix for generating emergent meanings, i.e., unanticipated meanings produced by specific actualizations of potential reading motions. The bibliographical expression of endlessness and recursion may be formalized as S + H = ∞.

Only Revolutions is not merely an attempt to represent the nightmare of human history by a random and cumulative list of facts, nor is it just an attempt to represent the nature of human desire in the brief encounter with the other and the world. *Only Revolutions* puts in the reader's hands a bibliographic emulation of the experience and the myth of love. The desire for embodied reference in linguistic communication is transferred to the materials of codex and writing. The subtitle of the book—*The*

Democracy of Two Set Out & Chronologically Arranged—suggests the political dimension of the union of love and, at the same time, puts the body politic of the nation in the sphere of desire. And that sphere, or rather that Möbius strip, morphs into the democracy of the elliptical and circular orbits formed by reader and book in their particular rotations and translations.

Signs do not suffer me to merge with them. They just allow me to move in the turbulent field of meanings with which their particular constellation seduces my desire for interpretation. I go round and round, one more time I go round and round, and in that spiral vertigo I experience the madness that there is in language. I go round and round, one more time I go round and round, and, caught in the infinitely recursive loop of reading, I am aware of the desire to read as one of the many forms of love. First an S, then an H; first an H, then an S; and in that SSSSSSSSSHHHHHHHH ʜHHHHHHHSSSSSSSSS I feel the chaos of the world reconstituting itself through the hallucinatory effect of the digit of the letter, the calculation of language, and the geometry of the codex as a recursive dispersal and proliferation of meaning in the strange looping of signs. ∎
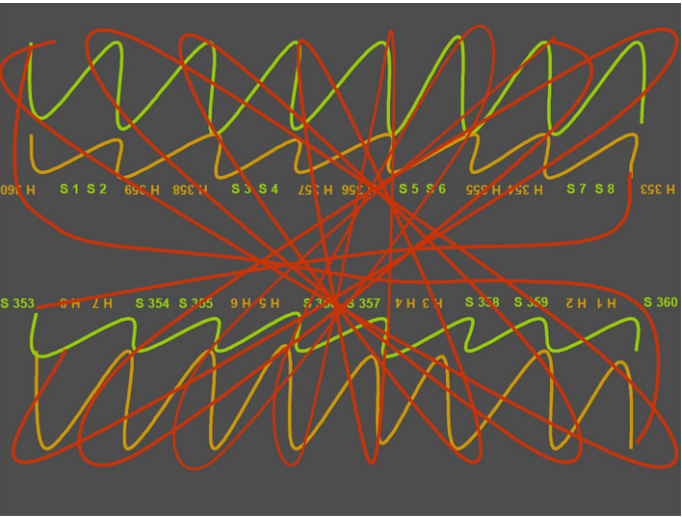

Fig. 19. Orbits of reader and book: symmetry and recursion in the motions of reading. © Manuel Portela, 2009.

Fig. 20(a). Symmetry in typeface design of the letters S and H: the symmetry of the letter S over a point, and the symmetry of the letter H over a point and two lines. © Manuel Portela, 2009.
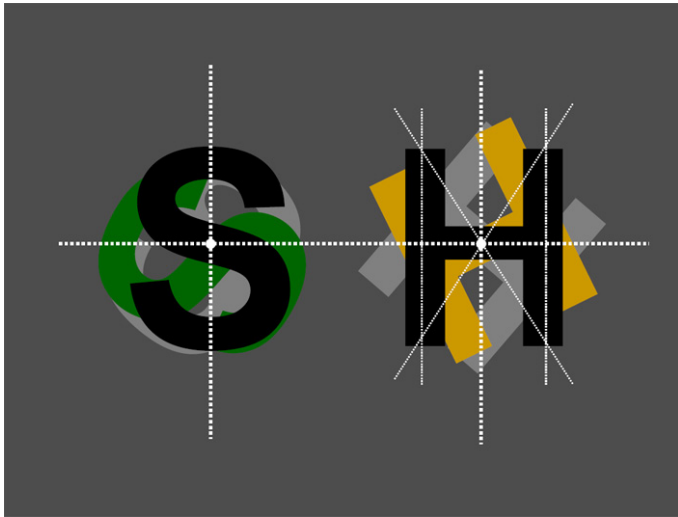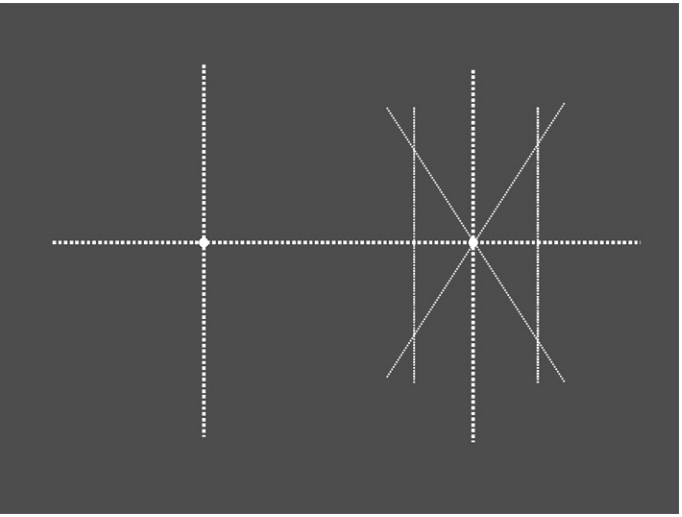
Fig. 20(b). The shapes of the letters H and S contain a representation of the recursions of reading both within each page and between pages. © Manuel Portela, 2009.
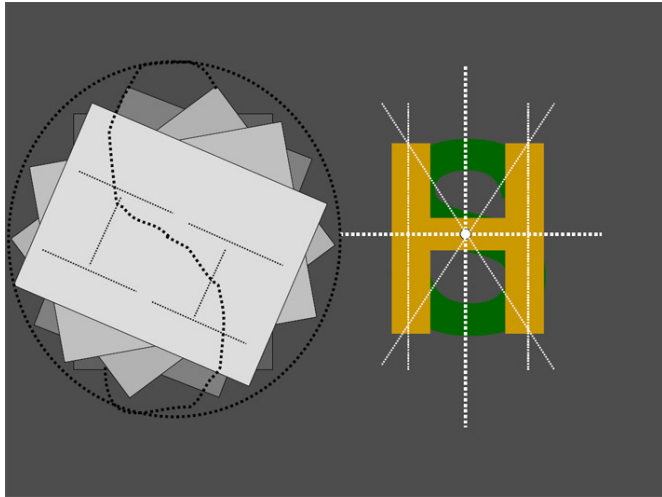
Fig. 20(c). The topographies of the shapes H and S describe the reading paths that generate line and page recombinations, either according to symmetries created by horizontal, vertical, and diagonal axes (dependent upon eye movements), or according to rotations and translations of the codex (dependent upon the motion of the hands). © Manuel Portela, 2009.

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"THE UNIQUE APPARITION OF A DISTANCE": AURA IN JULIE CHEN AND ELIZABETH McDEVITT'S *OCTOPUS*

By Michelle Strizever

THE DISTINCTION BETWEEN SEEMINGLY IDENTICAL MULTIPLES and the unique object is an important dynamic of the artist's book.[1] In the 1936 essay "The Work of Art in the Age of Its Technological Reproducibility," Walter Benjamin differentiates between the unique, auratic work of art and the technologically reproduced work of art.[2] Ostensibly, the unique bookwork and the democratic multiple fit into these categories. However, limited-edition contemporary artists' books, particularly ones that incorporate handmade or sculptural elements, complicate the binary of unique and mechanically reproduced. Benjamin associates the auratic work of art with ritual and religion. The ritualistic use and singular location of the unique work of art perpetuate distance between the work and its viewer. On the other hand, the technologies of reproduction developed over the last two hundred years, including photography, allow the work of art to become more accessible. Technological reproduction, Benjamin argues, creates the conditions for art to become political.

Benjamin's distinction between the auratic and the mechanically reproduced work of art is complicated by the book. Betty Bright writes that despite book artists' invocation of

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the aura since the 1960s, "it is questionable . . . whether Benjamin would have extended his argument to include books at all, at least those books in his own collection."[3] For Benjamin, technologies of reproduction allowed art to free itself from the constraints of place and to become a political tool able to reach a large audience. However, writing about his own books in "Unpacking My Library," Benjamin takes pleasure in their rare and object-like status. He, like other collectors, does not read the majority of the books in his library, and at one time had read none of them. Unread, they exist as objects rather than books. Benjamin values each book for its unique history and acquisition story. He writes, "the period, the region, the craftsmanship, the former ownership—for a true collector the whole background of an item adds up to a magic encyclopedia whose quintessence is the fate of his object."[4] Benjamin's language is that of the aura: the book casts a magical spell over the collector.

Benjamin does not think of his books as multiples, but as individual objects with a history and material existence. Although he sees the text as multiple, he sees the copy as singular: the book is simultaneously multiple and unique. The book is a special case, more complicated than a photograph or a reproduced painting, since it may simultaneously be unique, multiple, object, and text. A book is the sum of a text (with or without images, or perhaps images without text) and a binding. In the artist's book, the content, printing and binding are conceptualized as a whole and often created by a single artist. Most artists' books fall somewhere between the idealized poles of democratic/technologically reproduced and sculptural/auratic object. Some projects, like Tom Phillips's *Humument*, span the spectrum with different editions, costs and availability. Crafts such as letterpress printing and lithography particularly create problems for Benjamin's conception of the aura. Letterpress-printed books incorporate the physical work and touch of the artist/printer more than computer-designed and printed books. The revival of interest in and experimentation with letterpress printing of the past two decades suggests that artists are returning to letterpress as a craft, rather than a mode of reproduction. In comparison with the computer, letterpress might seem like a more auratic means of production. However, the technology of the letterpress is one that Benjamin would have recognized as a tool of mechanical reproduction. Even a technology, like letterpress, may be seen as auratic when it

Fig. 1. Julie Chen and Elizabeth McDevitt, Octopus. *The tunnel book form. Source: www.flyingfishpress.com.*

1 *A version of this paper was presented at the College Book Art Association Conference, Indiana University, Bloomington, IN, Jan. 13-16, 2011.*

2 *Walter Benjamin, "The Work of Art in the Age of Its Technical Reproducibility," in* The Work of Art in the Age of Its Technological Reproducibility and Other Writings on Media, *ed. Michael W. Jennings, Brigid Doherty, and Thomas Y. Levin, trans. Edmund Jephcott and Harry Zohn, (Cambridge, MA: Belknap Press, 2008), 19-55.*

3 *Betty Bright,* No Longer Innocent: Book Art in America, 1960-1980 *(New York: Granary Books, 2005), 113.*

4 *Walter Benjamin, "Unpacking My Library," in* Illuminations, *ed. Hannah Arendt, trans. Harry Zohn (New York: Schocken, 1968), 60.*

seems to verge on obsolescence.[5] In the artist's book, and more generally in all books, the status of an object as auratic or not may shift with historical context. Object-like sculptural bookworks may have an aura but simultaneously be multiple, rather than unique, books.

THE AURATIC BOOK/OBJECT

The auratic potential of multiples and limited-editions is exemplified by the work of Julie Chen. Wavering between books and objects, the works produced by her press, Flying Fish, combine non-traditional structures, die-cut pages, colorful letterpress printing, and poetry in a distinct style. Flying Fish books can cost up to three thousand dollars, and edition sizes range from ten to one hundred fifty copies. The experience of reading a Flying Fish book is a carefully orchestrated and surprising interaction with an unfamiliar structure in which binding and visual appearance dominate the experience of reading.

Chen and Elizabeth McDevitt collaborated on *Octopus*, a 1992 work produced by Flying Fish Press. McDevitt created a unique version of *Octopus* in 1988, when she and Chen were graduate students in the book art program at Mills College. They revisited the book four years later, creating the Flying Fish Press version in an edition of one hundred.[6] *Octopus* is a tunnel book, a form in which a three-dimensional scene is created by progressively smaller holes die-cut in each page (Fig. 1). Both sides have an accordion binding, which extends the book thirty inches deep. Although there are fourteen pages, it is impossible to turn them since the book is bound on both sides. Instead, the die-cut pages form a single image that the reader sees by peering through the front. When first removed from its clamshell enclosure, *Octopus* is large but its dimensions are similar to those of a large codex. The interior is an underwater scene that utilizes the book's depth. The pages are varying shades of blue, with a grainy texture produced through collography. At the back of the book, the orange-green tentacles of an octopus lurk behind the wavy text of a poem.

The play of visibility and invisibility, both of language and of what it signifies, comes across in the book's textual content as well as its form. Octopus consists of fourteen pages, one line of a short poem by McDevitt on every other page. In the poem, the speaker demands that another recognize the hypocrisy of his or her language:

> Who are you to talk of
> "rigorous intellectual honesty"
> you who use ink as an octopus does
> also tentacled and beaked
> you for whom words are a decoy and a disguise
> a blue cloud in which I flounder
> not finding you?

The poem speaks of disguise, particularly the disguise that language and writing provide. The book's form physically hides the text, while the poem's language simultaneously

conceals and reveals. As Chen has written, though *Octopus* is about a failing relationship, it is also about the failure of language to communicate.[7] The poem's subject, despite professing honesty, "use[s] ink as an octopus does." Ink allows the octopus to flee from predators by obscuring itself. The poem's subject also uses ink as a defense mechanism: ink metonymously signifies writing, connecting the octopus with the writer. The subject writes, but instead of demonstrating "rigorous intellectual honesty," the writing becomes "a decoy and a disguise." Language, which promises to represent clearly, is only artifice. The relationship between the subject and the speaker is like that between the signifier and the signified, between a word and its meaning. The signifier represents the signified, but that representation is indirect. Language can never transparently signify meaning. Its material nature stands in the way of direct representation. Like the signifier, the octopus-like subject can conceal and betray the signified. In *Octopus*, language comes between the speaker and the subject. Instead of transparently facilitating communication, it becomes opaque, like the inky cloud of the octopus. The poem's speaker ends up trapped in the blue cloud of words written by the subject. The octopus-like subject uses language to snare the speaker, who in turn uses the language of the poem to expose the subject. Language functions as "a decoy and a disguise," both in the subject's writing and in the poem. The subject even hides within the poem: the use of second person masks the subject's identity. "You" could be anyone—man or woman, singular or plural.

In a close reading of *Octopus*, Renée Riese Hubert and Judd D. Hubert see the dynamic between speaker and subject as obviously gendered, envisioning the speaker as a woman and the subject "as the gentleman—perhaps her husband—whom she attempts to perceive and locate."[8] Although Hubert and Hubert note that both the poem's speaker and subject are indefinable, they proceed to define the unspoken genders of the characters, and in doing so, assume that the poem is about a heterosexual romantic relationship. In their reading, the speaker is a woman upset with the way her "gentleman" acts and speaks to her. The poem, they write, sets up and subsequently dismisses a stereotype of man as logical and intellectual and woman as emotional and irrational. Despite their assumptions, *Octopus* does not identify the gender of either character. Chen's books often employ the second person, which can make them seem falsely autobiographical: "The 'you' that appears changes with each book and does not necessarily represent anyone in my life….The intimate voice, the first-person narration that appears in many of my books, is sometimes confused with my personal voice, but this is not generally the case," Chen explains.[9] Hubert and Hubert's gendered analysis of *Octopus* is one of many possible readings. This

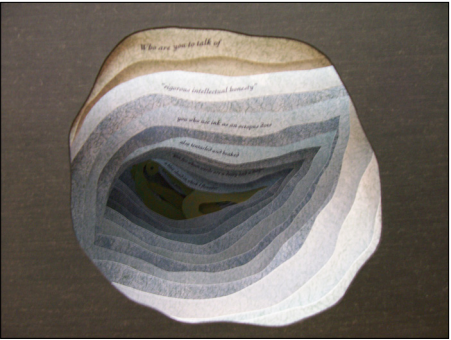*Fig. 2. Julie Chen and Elizabeth McDevitt,* Octopus. Octopus *in its flat form.*

Fig. 3. Julie Chen and Elizabeth McDevitt, Octopus. Octopus *in its extended form.*

5 See Jacques Derrida's argument about the current and future "resacrilization" of the book in "The Book to Come," in Paper Machine, *trans. Rachel Bowlby (Stanford: Stanford UP, 2005), 4-18.*

6 *Julie Chen, Interview with Cathy Courtney in* Speaking of Book Art: Interviews with British and American Book Artists *(Los Altos Hills, CA: Anderson-Lovelace, 1999), 218.*

7 *Julie Chen, Artist's Statement in* The Book as Art: Artists' Books from the National Museum of Women in the Arts, *ed. Krystyna Wasserman (New York: Princeton Architectural Press, 2007), 28.*

8 *Renée Riese Hubert and Judd D. Hubert,* The Cutting Edge of Reading: Artists' Books *(New York: Granary Books, 1999), 114.*

9 *Chen,* Speaking, *213.*

could also be the story of a reader and an author, an artist and a critic, or a signified and signifier.

The deceitfulness of language is both depicted and enacted by the poem. While McDevitt's text describes an octopus-like subject who employs language deceptively, the poem itself obscures and manipulates with words. Just as the use of the second person reflects the masked identity of the subject, the speaker's use of first person also conceals. According to the poem, the subject pretends to be honest and clear but actually uses language deceitfully. In this scenario, the speaker is a victim of the subject's hypocrisy and language's opacity. However, a closer look at the language of the poem calls the speaker's trustworthiness into question. Language is a cloud of ink in which the speaker "flounders." This verb stands out among the octopus-related metaphors. While the subject acts like the octopus, the speaker becomes associated with the flounder through the use of the verb form. The thrashing motion described by the verb "flounder" comes from the erratic motion of the fish. Although floundering is a violent, defensive movement, which certainly describes the speaker's reaction to the subject, the flounder is also notable for its camouflage, using its flat body to blend into the ocean floor. In the poem, the association of the narrator with the flounder and with floundering creates an unspoken duality: the narrator is both hidden and bare, both camouflaged and violently exposed. The speaker complains that the octopus hides behind the ink of words, but the flounder hides as well. If the subject's hypocrisy is the use of misleading language, perhaps the speaker is also guilty. The instability of the signifier (the word "flounder"), exposes the speaker's camouflage. After all, the speaker uses language to expose the failure of language.

Like the text, the form of *Octopus* disguises and reveals. The entire poem has been letter-press printed on each page with text, but because of overlapping die-cut openings, only one line is visible per page. Peering through the open top, it is possible to see that page thirteen contains the entire poem, although it is unreadable this way. The tunnel book can be transformed from a nearly flat surface to a deep dioramic space by extending the accordion sides. The form manipulates the space of the book, compressing it onto the plane of the page and then expanding it through the book's depth. When *Octopus* is flattened, its content is compressed into the space of a single page (Fig. 2). All of the text is visible, and readable, at once. Fully extended, it becomes three-dimensional. The content is spread out and seen at intervals within space (Fig. 3). There is no more textual or visual content than there was when the book was compressed, yet the depth of the tunnel form changes the book's relationship with the reader. The tunnel book is essentially a single page transformed by depth. The text, which was entirely readable when flattened, is spread out and becomes progressively more difficult to see. Overhead light, falling onto the blue pages, creates the effect of peering into deep water: the light catches the nearest pages, but the ones toward the back are murky and atmospheric. As a result, it is difficult to read the entire poem. The final line is nearly swallowed by shadow, and it seems as if the octopus's tentacles are possessively blocking the text from view. The book visually illustrates the poem: at the back of the book the octopus lurks, using language as a screen that ultimately fails and exposes it.

The form of the book reflects the content: the murky depths of the tunnel book hide part of the text, while the poem speaks of language as deception. In the poem, language undermines the speaker's indignation. The denoted and the connoted meanings of the poem

diverge. The complicated dynamics between the speaker and the subject are expressed through the connotations of language. With "flounder," for example, the signification exceeds and even betrays the primary meaning of the signifier. The textual split between denoted and connoted meanings is reflected by the structure of the tunnel book. When *Octopus* is first removed from its clamshell enclosure, the flat picture plane shows the entire poem. Once the book is extended and given a sculpture-like depth, the text becomes darker, deeper and less distinct. As it moves from two dimensions to three, simultaneously becoming more difficult to read, language seems to become more opaque. The apparent textual accessibility of the poem in the book's flat configuration is belied by its visual inaccessibility when the book is extended. The tunnel form demonstrates the irony of the work: the text that first seems transparent is exposed as having camouflaged depths.

As well as adding depth to the page, the shift from compressed to expanded form changes the reader's physical relationship with the book. A conventional codex is experienced one spread at a time, whether it is read in a linear or nonlinear manner. Although tunnel books consist of several pages, they are not seen in sequence, the way a codex is read. Instead, the entire content is presented on a single plane, which is then broken up by depth. While the form of the codex adds the element of time to a text, the tunnel book adds spatial depth. When compressed, *Octopus* can be handled like a conventional codex. It can sit flat against a table and the reader can easily pick it up to move it. However, *Octopus* rejects the physical intimacy of reading that the codex encourages. While Benjamin finds intimacy in possession, Buzz Spector focuses on the intimacy of reading. Spector points out that the codex is typically positioned against the body, on the reader's lap or chest: "Most of us read lying down or seated and most of us read at least partially unclothed," he writes. "We dress up to go out and look at art; undressed, in bed, we read. We seek greater comfort while reading than the furnishings of museums or concert halls will ever grant us."[10] Spector's intimacy comes from the open book, while Benjamin's books stay closed. Even when *Octopus* is first removed from its clamshell box, still flattened, it is unlikely that the reader will handle it like a codex. The tunnel book form does not give the reader the same sense of intimacy that Spector finds in the open book. Instead, the tunnel form creates distance, both in the way the reader handles it and in its own mechanics.

Rather than encouraging familiarity, *Octopus* inspires reverence. Due to its high cost and small edition size, the reader is likely to encounter it in a library or an exhibit, rather than own it. The structure and delicacy of Chen's works create a different atmosphere for the reader than other, more traditionally bound artists' books, even ones of comparable value. Her books require the participation of the reader because many contain moveable parts, but their apparent fragility makes the experience of reading almost intimidating. Chen's books are the only contemporary books I have encountered that librarians have opened for me, as if the act of normal reading would damage the book. Once *Octopus* is extended, the reader must change position. If the book is on a table, the reader must crouch on the floor to view the content. This posture shows the book's dominance over the body: *Octopus* requires the reader to bow down to it, like the religious, auratic art that Benjamin describes. Both the value and the structure of the book create an attitude of reverence. Tunnel books like *Octopus* are often displayed in a high case or on a shelf. The book may then be on

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10 Buzz Spector, *"The Fetishism of the Book Object," in* The Book Maker's Desire: Writings on the Art of the Book *(Pasadena: Umbrella Editions, 1995), 16.*

eye-level, but the case multiplies the distance between book and reader and transforms the book into a static, untouchable object. Although any book can function as an object when it is not read, as in Benjamin's library, the book object is a different category. The sculptural book object resembles, but does not function as, a book.

Spector identifies the most important feature of the book object as its unique status. The conventional book is characterized by its multiplicity—the belief that every copy of a book contains the same text and layout. The concept of the exact copy is idealized: from edition to edition, texts change. Printing mistakes can occur, and pirated editions may contain different text. Individual books bear the traces of past owners, as well as occasional mistakes in production. Two identical copies of a text may be housed in different bindings, which could alter the signification and function of the book. Nonetheless, an important attribute of the multiple is the idea that every copy is the same. "Multiplicity is the very nature of the book," Spector writes. The book is "the theater of language," and the event of reading is "the textual performances of a book . . . enacted over and over again." In the theater, audience members see the same play although each has a slightly different vantage point. Spector finds the collectivity of the theater audience in the multiple copies of a book. Although each reading takes place in a different environment, the book seems to enact the same performance for each reader. The unique book object is not theater, but art: as Spector writes, "it is precisely the 'uniqueness' of the book object that redefines it in terms of art."[11] The book object is similar to Benjamin's auratic work of art: it is located in only one place and inspires a sense of distance and, perhaps, reverence in the viewer. The shared experience of the theater of the multiple is unlike the private viewing of the book object. The text of the multiple seems to exist outside of its form, although textual scholars like Jerome McGann have argued that text is actually dependent on its material form.[12] However, the power of the multiple is in its promise of shared text. The unique existence of the book object means that its text, if it has one, does not exist outside of its material support. When the unique book object contains text, that text is inseparable from the book form.

Between the shared content of the multiple and the unique existence of the book object is the limited edition. Many artists' books could be characterized as limited editions. The individual copies in a limited edition can be difficult to access, depending on the edition size and availability. Although there may be several copies of an artist's book in existence, the nature of the small edition limits accessibility. Spector's description of the multiple as a theater of language is based on the assumption that the physical book is widely available. Since the copies of a limited edition are not readily available and are often found in private collections or clustered in a few library collections, its content is not shared like the ideal of the multiple. In this sense, the limited edition is closer to the unique book than the multiple.

Although *Octopus* is not a unique work, it seems to create an auratic atmosphere. The combined effect of its value, rarity, sculptural quality and the awkward, bowed position of the reader is the production of an aura. As the reader bows or kneels, *Octopus* occupies an unusual position of power. The reverence manifested in this gesture is a key part of

the book's auratic quality. In describing the aura, Johanna Drucker writes that "it is as though [auratic books] have been imbued with a power which animates them beyond their material limits generating a metaphysically charged atmosphere which surrounds the work."[13] Her description appears to situate the auratic quality within, or rather around, the book or object, as if an aura is inherent to certain works. However, it is possible to imagine the aura as an atmosphere produced by the reader and by institutional practices, rather than an attribute emanating from the work. The location of the aura may be in the viewer, not the object. Having to seek out an artist's book in a library or museum already adds a layer of mystery and ritual to the act of reading. The institutional attitude towards unconventional artists' books can seem almost religious. Works that are particularly rare, delicate or valuable will require more care and reverence in handling. *Octopus* and other expensive limited editions are housed in clamshell boxes. Delicate and/or valuable artists' books require the reader to be painstakingly gentle. They also call attention to reading as a performance because they alter normative reading practices. Unique and sculptural books transform, and refuse, reading practices much more drastically than other artists' books. As a result, they are seen and treated more like ritualistic art objects, which in turn creates the conditions for the aura. ∎

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11 *Spector, "Fetishism," 15.*

12 *See Jerome McGann,* The Textual Condition *(Princeton: Princeton University Press, 1991).*

13 *Johanna Drucker,* The Century of Artists' Books *(New York: Granary Books, 1995), 93-4.*

IMAGO LIBRARIAE

By Sonja Svoljšak

AN IMAGE OF A BOOK generally symbolizes wisdom, erudition, or author-ship. It may appear in the hands of an author, a saint, a clergyman, or a biblical person. It can also be an attribute of rhetoric, history, philosophy and grammar.[1] A personification of melancholy may be surrounded by books. There are many motives where a book is present as a symbol or an attribute. St. Jerome in his study is one of these famous timeless motives where a book, a writing desk, an armarium or books on shelves appear.

A library is most often symbolically referred to as "a temple of wisdom," "an arsenal of knowledge," "the memory of human civilization," etc. But what message does an image of a library carry apart from these almost proverbial sayings describing its spiritual essence?[2] Does it emphasize the notion of wisdom and civilization compared to an image of a single book? Is it merely an image of a place where many books are put together in an organized manner? Can it also convey some other symbolic or historical information? This article will discuss a couple of cases in which a library is used as a symbolic pictorial setting reaching beyond the simple symbolism of wisdom and erudition or in which a complex symbolism is used to depict a certain idea or a library collection.

THERESIAN ACADEMY LIBRARY GETS CLOSED, REOPENED. AND AUGMENTED: (HISTORICAL?) PICTORIAL EVIDENCE

(Johann Nepomuk Cosmas) Michael Denis (1729–1800),[3] the author of *Einleitung in die Bücherkunde*[4] was a Jesuit and a professor of literature at the Theresianum[5] in Vienna. He

Fig 1. St. Jerome in his study (Anonymous ca. 1500) Savonarola, Confessio[n]ale pro i[n]structione co[n]fessorum (Venetiis, 1517), 1.

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was also a poet and a bibliographer. He held the post until 1773 when the Society of Jesus was suppressed. Denis then became assistant librarian at the Garellian Library in Theresianum. After the academy was closed by Joseph the II's decree in 1783, he was appointed assistant librarian of the Imperial Court Library in 1784. In 1791 he was advanced to chief librarian. His *Einleitung in die Bücherkunde* is a short literary history overview from antiquity to "present times" with an emphasis on bibliographic and literary sciences development.

It contains an anonymous engraving, depicting the Garellian Library of which Denis was in charge. Bibliotheca Garellia was a private collection of Pius Nikolas Garelli (1675–1739), Prince Charles the VI's personal physician and prefect of the court library, the imperial court librarian and director of the collection of antiquities and coin cabinet. Two years after Theresianum was established, his whole collection was bought and transferred to the academy premises and thus became its core collection.[6] It contained over 10,000 books. During the Academy's closure,[7] the whole library was transferred to Lemberg,[8] was eventually dispersed and lost in the first half of the nineteenth century (Zois, 1910, 19-20). So when the academy reopened in 1797 the entire library collection had to be reestab-lished. Simultaneously, one room was added to the existing library hall.[9] The engraving in question is supposed to be evidence of the *status quo ante*.

It shows a baroque interior with stuccoed ceiling and wooden library furniture. There is also chessboard-style tile flooring and some reading tables and chairs are placed in the room. The central image is framed and there is an inscription "Bibliotheca Garellia" at the bottom of the engraving. It is a surviving image of the later lost Garellia. However, it is not all that. When one looks at the present Theresianum museum library furniture and decoration (the original pieces from the eighteenth century are still preserved), one notices that the number of shelves is not right. There is one bottom shelf (now closed) and eight more shelves for different formats in the illustration. In reality, the number of library shelves before its augmentation after 1797 must have been bigger (at least 11). The picture is therefore not the exact documentary evidence and the lacking shelves might be due to the artist's poor counting, composition or perspective problems. We may say that this image is not an exact presentation of the Garellia as it was before its content was removed from
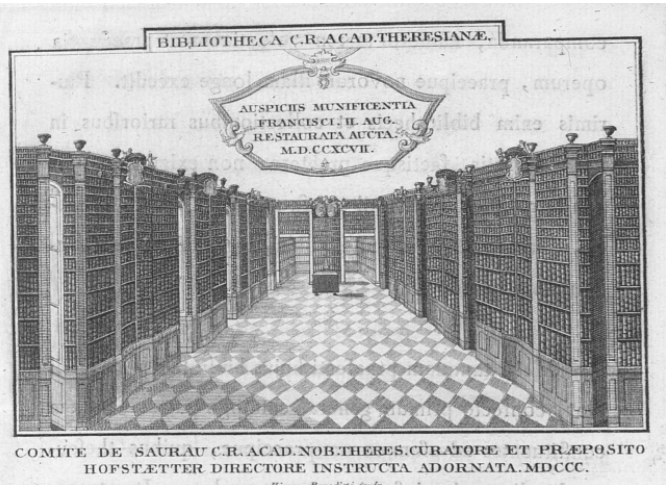

Fig. 2. Anonymous: Garellia (before 1783).

Fig. 3. Benedictus: library hall (ca. 1801).

1 *James Hall*, Dictionary of Subjects and Symbols in Art *(London: John Murray, 1996), 163.*

2 *There have been countless studies and papers dealing with the symbolism of a book as an object or a book as an artistic symbol, while the role of the library in iconography is rarely mentioned.*

3 *Arthur F. J. Remy. "Johann Nepomuk Cosmas Michael Denis." The Catholic Encyclopedia accessed March 25, 2011. http://www.newadvent.org/cathen/04721b.htm.*

4 *Michael Denis,* Einleitung in die Bücherkunde *(Wien: J. T. Trattner, 1777–1778).*

5 *Established in 1746 by Maria Theresa it was a private boarding school governed by the Jesuit order, see Michelangelo Zois,* Das Theresianum *(Brünn: s. n.), 17–8.*

6 *Eugen Guglia,* Das Theresianum in Wien. *(Wien: A. Schroll), 26.*

7 *In 1783 the Academy was disbanded by Joseph the II and in 1797 it was reopened by Franz the II. In the next couple of years the number of books exceeded 11.000 again, see Ignaz Hradil, "Nachrichten über das k. k. Theresianum und über die Entstehung der daselbst befindlichen Bibliothek,." In* Jahresbericht über das Gymnasium *der k. k. Theresianiscen Akademie für das Schuljahr 1865–1866. Wien: A Schweiger, 1866), 14–23.*

8 *Now Lwiw in Ukraine.*

9 *Hradil, "Nachrichten über das k. k. Theresianum und über die Entstehung der daselbst befindlichen Bibliothek", 14-23.*

Fig. 4. Library hall with two additional shelves on top still present (ca. 1916).

Fig. 5. A present day historical library hall at Theresianum with the two additional shelves on top removed.

Vienna as we might have concluded from the title of the engraving. It presents the baroque Garellia interior but is not to be taken as a piece of historical evidence to what the library hall really looked like before 1783.

These are minor discrepancies compared to some obvious visual reductions and exaggerations in another depiction of the same library hall, made after the library was reestablished in 1797. We find this depiction in the "Catalogus bibliographicus librorum in Bibliotheca Caes. Reg. et equestris Academiae Theresianae …",[10] a library catalogue, composed by Joseph Von Sartori which was published in 1801. The floor tiles in this depiction remain the same, but their amount is increased considerably, producing an illusion of a much broader space. The stuccoed ceiling is clearly simplified, as stucco decoration is obviously reduced and lacks a proper perspective and shortening. What is interesting is the way the library furniture and the quantity of library materials are depicted. The depiction of the furniture (namely the wooden shelving cases) together with the information about when and who did the renovation and augmentation during the last three years of the eighteenth century, which is also a part of the engraving,[11] might lead us to think that the whole library interior was quite considerably redone. This however is not true. What the image reflects is merely a contemporary, more classical taste for interior design, while the library hall stayed almost the same. Judging by some older pictures of the library hall, only two additional shelves were added on top and the lowest shelf was closed. It looks like Hieronymus Benedictus, the author of the engraving, adjusted the appearance of the library interior to new classicist trends and tastes. Besides the obvious reductions (furniture details, vases, stucco) there is an interesting exaggeration present in this image. To emphasize the augmentation of the library the two doors at the end of the library hall are opened and we are able to see a new, additional room which is packed with books. But this is not all: to support the inscription in the engraving, which is telling us that the library was considerably augmented, the number of shelves is increased to 16, while the number of shelves in the Theresianum Library hall was only increased by two.

Though they seem to depict a real library neither of the two illustrations can be regarded as historical evidence of the Theresian academy library hall development during the second half of the eighteenth century. The first image is more true to the baroque

nature of the interior and furniture, while the second one tells us more about the tastes and aspirations of the library patrons than about the real changes the library hall went through towards the end of the eighteenth century. The differences between reality and the depictions may be due to the lack of the engravers technical skills, but in the second case they may as well be an intentional modification of reality.

A LIBRARY: THE SCHOOL OF ATHENS AND A TRANSITIONAL SPACE OF WISDOM

The "Nouvelle bibliotheque des auteurs ecclesiastiques"[12] by Louis Ellies Dupin (1657–1719),[13] a French ecclesiastical historian, was the first history of Christian literature in a modern language. It is renowned for introducing new, critical, multilayered, bio-bibliographical, historical, and literary bibliographical methodology. It was fiercely criticized by many of Denis's contemporaries (Bossuet, Didier) who themselves wrote a couple of volumes, deliberating on the factual and dogmatic mistakes Dupin had made.

There is an interesting engraving on the frontispiece of the first volume: church fathers, old ecclesiastical writers and other prominent theologians have come together in a library, where their works have been placed on the shelves. They are now engaged in conversation or contemplation over some books and scrolls which, judging from the shelves' titles, seem to be their own works. The choice of a library hall interior reflects the revival of the antique architectural components;[14] the ceiling is barrel vaulted, there are some *oculi*, through which the light protrudes, and the library shelves are placed between Corinthian columns. There is an architrave around the upper zone of the walls, where busts of some important biblical figures such as Moses and Aaron are placed.

Among the "patrons" present in the composition we can make out St. Hieronymus who had even brought the lion and is now engaged in a conversation with St. Gregory. We see St. Ambrose and St. Augustine in the back. There are also some more plainly dressed men and some clergymen wearing biretta with no other distinctive attributes of their identity. Judging from the book's content, they are also ecclesiastical authors. The four fathers of the church have a long tradition of appearing together in a single composition. The peculiarity of this depiction is that they interact with each other and with other figures, like in some kind of *conversatio erudita*.

In general, the frontispiece illustration emphasizes the divine wisdom and erudition by putting so many important ecclesiastical figures together in a single room. Secondary components and motives in the picture can also be seen as a means to gradate this notion. The choice of a library hall for this anachronistic get-together is upgraded by the choice of antique and renaissance architectural elements. Further on these are complemented by the biblical figures of the prophets on the architrave, the *oculi* (the holy eyes) and finally completed by the prominent holy patrons who occupy the hall. The composition also alludes to two famous Raphael frescoes in the papal Stanzae: *The School of Athens* and

Fig. 6. "Nouvelle bibliotheque des auteurs ecclesiastiques" (frontispiece), Anonymous (ca. 1690).

10 *Joseph von Sartori*, Catalogus bibliographicus librorum in Bibliotheca Caes. Reg. et equestris Academiae Theresianae. *(Viennae: vidua Alberti, 1801–1806).*

11 *Comite de Saurau C. R. Acad. Nob. Theres. Curatore et praeposito Hoftaetter directore instructa adornata MDCCC.*

12 *Louis Ellies Dupin*, Nouvelle bibliotheque des auteurs ecclesiastiques, *(Paris: A Pralard, 1690-1711).*

13 *Paul Lejay, "Johann Nepomuk Cosmas Michael Denis." In* The Catholic Encyclopedia, *accessed March 25, 2011. http://www.newadvent.org/cathen/05204a.htm.*

14 *Peter Murray:* Renaissance Architecture *(Milano: Electa; New York Rizzoli, 1985). Frederick Hartt,.* History of Italian Renaissance Art: Painting, Sculpture, Architecture *(New York: Harry N. Abrams, 1994).*

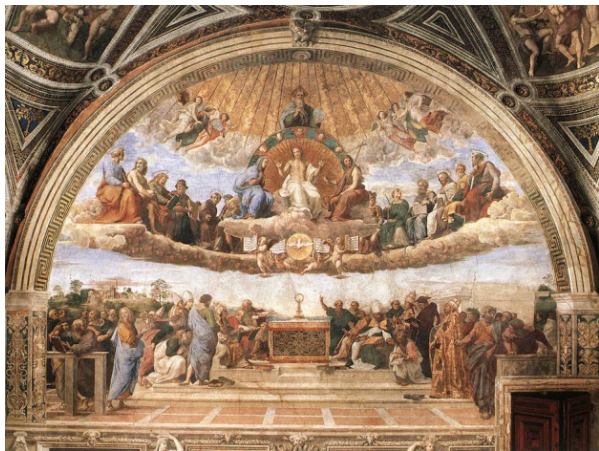*Fig. 7. Raphael: The school of Athens (1510–1511).*

Fig. 8. Raphael: Disputa (1510–1511).

Disputa. In the first one, nearly all Greek philosophers are promenading, conversing, contemplating or teaching under a barrel vaulted, Greek cross-shaped building. In the lower part of *Disputa*, we can find church fathers, saints and theologians interacting again; in this case, they are debating transubstantiation. The frontispiece of "Nouvelle bibliotheque des auteurs ecclesiastiques" looks like a blending of both paintings: the composition is less hierarchical and the distinction between the heavenly and the earthly is less evident than in the *Disputa*, while the main protagonists interact like the philosophers in Raphael's *The School of Athens*.

With regard to "Nouvelle bibliotheque des auteurs ecclesiastiques" content, the frontispiece could also simply be regarded as an illustration of the book's content or a complementary pictorial bibliography. In this case, the library space could be interpreted as a pictorial presentation of the bibliographic collection in question, while the "patrons" would represent the book's content.

While the frontispiece illustration of the "Nouvelle bibliotheque des auteurs ecclesiastiques" is an allegory of wisdom and erudition, the little head pieces at the beginnings of major chronological sections by Daniël met de Penningen bring different symbolic content, though a library is again the main setting. This time a cross-section of the library interior reveals a library hall with the repeated semicircular arcade arches, which resemble the loggia arcade from Brunelleschi's *Ospedale degli innocenti* in Florence. We can see a number of clergymen in the hall. They are engaged in various scientific and scholarly activities, namely reading, taking the books from the shelves, measuring the globes or conversating.

Fig. 9. A library. Daniël met de Penningen (ca. 1690).

Fig. 10. Piero della Francesca: "Ideal city" (ca. 1470).

The symmetrical library interior extends towards the city limits in the background. Even the shelved walls and the floor tiles almost reach the city walls. The scholars thus seem to be able to freely traverse from the realm of erudition to the metropolis. The layout, symmetry and obvious use of linear perspective look like descendants of renaissance urban utopias, like Piero della Francesca's of Fra Carnevale's ideal cities. But is the city in the background just a city or does it also carry some symbolic meaning? Could it be a specific city? We see a city wall surrounding a couple of church towers, pinnacles and a building which looks like a baptistery at a first glance. The panoramic view of the city background slightly resembles that of Oxford University with the Radcliffe Camera, an eighteenth century Bodleian Library addition.[15] This is combined with a Tuscan proto-

15 *Some earlier descriptions of the building with engravings in:* A Pocket Companion for Oxford, *1762.*

Renaissance multiple loggia-library, which resembles the loggia arcade from Brunelleschi's *Ospedale degli innocenti* in Florence. But at the same time it is possible, that according to the book's content the whole scene is a representation of an imaginary holy city. Maybe it could even be an allusion to Jerusalem. Although the tradition of depicting the Holy city as an imaginary place and the Temple as a round or polygonal building based on an image of the Dome of the Rock ceased with the introduction of new archeological and more realistic approaches to city and landscape painting during the renaissance, it would be possible that the city in the background of de Penningen's engraving is an intentional allusion to those earlier depictions. This would put the somewhat eclectic motives and architectural styles of this engraving into some sort of symbolic harmony, with the library hall being a transitory space between the worldly and the divine or a space where both realms of wisdom meet, intertwine and connect. Even if the city in the background was some kind of arbitrary depiction of Oxford University, one must keep in mind that the Radcliffe Camera was intentionally modeled upon classical architecture (circular temple), which together with the fact that what we are seeing could be a university town, yet again symbolizes human wisdom and erudition.

IDENTITIES UNCOVERED: "THEATRUM ANONYMORUM AND PSEUDONYMORUM" —AN APOLOGY OF A SCIENTIFIC METHOD

Vincent Placcius (1642–1699) was an eminent philologer from Hamburg. His *Theatrum anonymorum and pseudonymorum*[16] is the chief early research on works published anonymously or under pseudonym. It was published nine years after Placcius's death and identifies some 2,777 anonymous and pseudonymous works.

There is an anonymous engraved frontispiece in the first edition, which depicts a library interior. In the background we can see a room which could be a cabinet of curiosities with some statues of antique deities and a male bust statue (a philosopher?). From behind a curtain a small boy is peeping into the library hall and a man is just entering with his face covered with a mask.

An interesting scene is taking place in the hall. We see a person (maybe the author) taking masks from the faces of several men and attaching them to a cord overhead. The cord with the masks could represent the *Zettelkasten* to which single slips of paper with textual quotations were attached to facilitate the classification and storage of a text. As a person entering the room has his face covered with a generic face mask, the other two men, who are just being uncovered, show their real, distinctive, individual faces beneath. The masks, hanging from the cord above the men, symbolize the anonymous and pseudonymous authors (the anonymous authors might be the generic faces, while the pseudonymous authors might be those who still retained some distinctive features, such as a beard or moustache). Identified and sorted, the uncovered authors are symbolically proceeding to the front from the realm of anonymity.

Besides pointing to the content of Placcius's work, the frontispiece also illustrates a certain scientific method. The "information explosion" in the sixteenth and the seventeenth
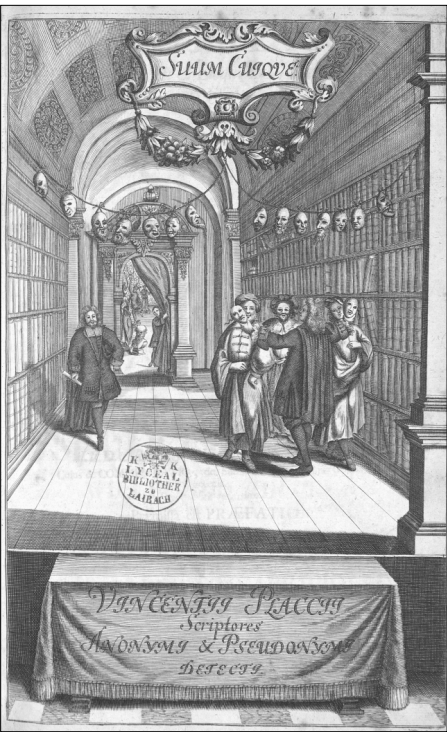

Fig. 11. Theatrum anonymorum et pseudonymorum, *frontispiece. Anonymous (ca. 1708).*

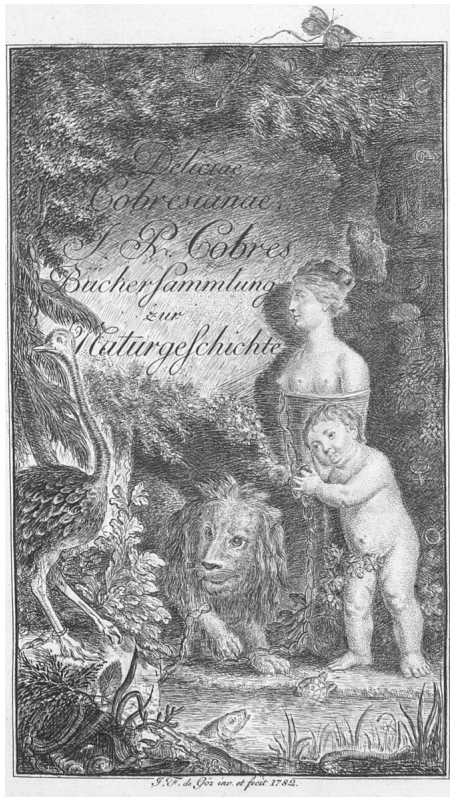16 *Vincentius Placcius*, Theatrum anonymorum et pseudonymorum. *(Hamburg: vidua G.Liebernickelii, 1708).*

Fig. 12. Deliciae Cobresianae¸ title page. J. F. de Göz (ca. 1782).

centuries was, with the help of the thriving printing presses, caused by the ever increasing production of texts. For various reasons, it became a frequent practice to publish polemical, heterodox, or somewhat explosive material anonymously or pseudonymously. This situation triggered the creation of dictionaries of anonymous and pseudonymous works in the seventeenth century, culminating in the monumental "Theatrum anonymorum et pseudonymorum." Many scholars and polyhistors have tried to resolve false or hidden identities by cross examining and classifying literary and other sources. The unmasking was a double-edged venture in that it contributed to transparency, but it could also lead to undesired disclosure of false identity or even discrediting of an author.[17] Of course, the frontispiece in question represents an apology and a justification of the noble nature of unmasking and does not refer to the unwanted disclosure the unmasking may also cause.

The anonymous authors seem to come to the disclosure point willingly and appear content when their true faces are finally revealed. The library hall[18] as an architectural entity does not seem to play any particular role, besides being a predominantly generic space with the generic volumes placed on the unmarked shelves which can in a way also signify anonymity. But symbolically it is a very important place where the truth is being revealed.

DELICIAE COBRESIANAE—HOW TO SHOW OFF AS A PROUD LIBRARY COLLECTION OWNER IN "SEVERAL PICTORIAL WAYS"

Nothing about the content of *Deliciae Cobresianae*[19] would be immediately evident from its illustrated title page if there wasn't also a subtitle, indicating that the book is actually a private natural sciences book collection catalog. The title page is full of animals and plants. There are astrological signs, a small boy holding a chain and a bust of a three-breasted woman in a plant pot. At a first glance, a majority of motives are used to indicate the collector's passion for flora, fauna and art. The little naked boy might be a putto. However, the story is not that simple.

Joseph Paul von Cobres (1737?–1825)[20] was a wealthy merchant, banker and more importantly a natural history literature collector from Augsburg. His library contained one of the most prominent, relevant and diverse natural sciences collections in 19th-century Europe. As a rich man, he also sponsored scientific ventures, research and scholars.

Kobresia is a genus of about 50 species of the *Caricoideae* subfamily of the *Cyperaceae* family. It grows in the northern Hemisphere, especially at high altitudes in the Himalayas,

China and central Asia. The genus was named after Joseph Paul von Cobres,[21] most possibly, because he also sponsored some botanical research.

The three breasted woman in a plant pot represents goddess Meenakshi, who is an avatar of the Hindu goddess Parvati and a consort of Shiva. When she was born, she had an extra breast which disappeared when she met her future husband in the Himalayas. Parvata, from where Parvati derives, is one of the Sanskrit words for "mountain"; "Parvati" translates to "She of the mountains" and refers to Parvati as the daughter of Himavan, lord of the mountains and the personification of the Himalayas. As a goddess of power and creation she is also the one who gives power to all beings.[22]

With this piece of information the riddle of the *Deliciae Cobresianae* title page is now easier to explain. While the three breasted goddess in a plant pot as a personification of the Himalayas also symbolizes Cobres himself through the Kobresia, the chain passing from the goddess through the hands of a human child and connecting the rest of the animals and plants symbolizes Parvati's creative force and the power of life. Therefore, the whole title page composition is an allegory of nature, life, natural sciences and, finally, Cobres and his natural sciences collection.

CONCLUSION

What does an image of a library symbolize? Judging from the cases presented and analyzed in this article, an image of a library does not simply mean a large number of books put together in an orderly manner. It may serve as a perfect setting for numerous allegorical scenes symbolizing worldly and divine knowledge and wisdom, erudition or even all of these noble virtues at the same time (Dupin). It can be a place of authority, where the truth is revealed (Placcius). Sometimes it reflects shifts in artistic tastes and (over) glorifies the collection content or acquisitions the owner has made (Denis, Sartori and Cobres). In case of the emblematic title page of *Deliciae Cobresianae*, the natural and mythological worlds seem to symbolize a single library collection and its proud and learned owner. A library image therefore does emphasize the notion of wisdom and scientific progress in various ways. At the same time complex allegories may also represent libraries and library collections or even scientific methods. To conclude, an image of a library can and does carry some iconographic value beyond the proverbial symbolism of wisdom and erudition. It would be very interesting to explore more potential messages a library image might carry or other roles it might play in iconography. ∎

17 Martin Mulsow, "Practices of Unmasking: Polyhistors, Correspondence, and the Birth of Dictionaries of Pseudonymity in 17th Century Germany" Journal of the History of Ideas 67, no. 2 (2006): 219-250.

18 The interior resembles the studiolo of Francesco I de' Medici in Palazzo Vecchio in Florence.

19 Joseph Paul von Cobres, Deliciae Cobresianae (Augsburg: Selbstverlag, 1708).

20 "Cobres, Joseph Paul, Ritter von." Stadtarchiv Augsburg, http://augsburg.de/index.php?id=17323.

21 Keshab Raj Rajbhandari and Hideaki Ohba, "A Revision of the Genus Kobresia Willdenow (Cyperaceae) of Nepal, The Himalayan Plants" 34, (2002), March 25, 2011. http://www.um.u-tokyo.ac.jp/publish_db/Bulletin/no34/no34008.html.

22 Davir R. Kinsley, Hindu Goddesses: Visions of the Divine Feminine in the Hindu Religious Tradition (Berkeley: Los Angeles: London: University of California Press, 1986).
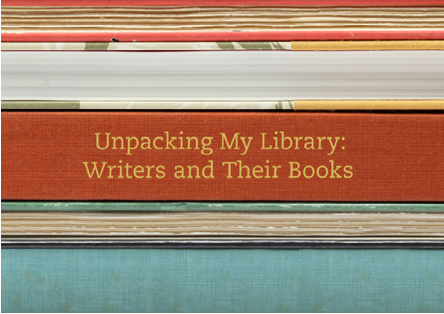
UNPACKING MY LIBRARY: WRITERS AND THEIR BOOKS

Leah Price, ed.
New Haven: Yale University Press, 2011
208 pp.
(978-0-3001-7092-4)

Review by Matthew P. Brown
UI Center for the Book, University of Iowa

A 2011 trade book from Yale University Press released just in time for the December holidays, *Unpacking My Library: Writers and Their Books* features a set of interviews with contemporary authors about their bookshelves. In the introduction, editor Leah Price writes that "shelves display our most private selves and our most public personae," a point that might serve as the volume's thesis (3). While not terribly surprising, this claim bears fruit as we leaf through a work giving equal weight to photographic page spreads of the subjects' libraries. Indeed, private and public, person and thing—the experience of reading *Unpacking My Library* inverts standard expectations of interview and image. The words give us the public self, rather than the inner life, while the photos—seemingly just the display of mass-produced objects—allow us an intimacy about the interviewee, in their exposure of domestic space and subjective arrangement.

Unpacking My Library prompts a series of important questions for book artists: what is the role of the physical book—as inspiration, as furniture, as property, as gift—in the life of its user? If book artists call attention to extra-verbal meaning in the book format—to the expressive power of all media and texture and language that go into a book, beyond solely its verbal content—then how might the reflections of word-based novelists and intellectuals seed creative work? And does the physique of *Unpacking My Library* itself resonate with book artists, prodding work in response?

Much of the commentary in the interviews is fairly predictable: sentimental advocacy for a past of dog-eared leaves, inky marginalia, and cover colors, in contrast to a present and future of e-readers. But sentiment about the past is occasionally nuanced. Interviews with couples reveal the fraught moment of separating or intermingling books as property when they first cohabit. Stories from childhood glimpse scenes of affection, trauma, or enlightenment that tell us about the symbolic power of the book. More generally, the fact that almost every library on display is a disorganized mess speaks to Walter Benjamin's larger point about personal collections, from an essay that gives this volume its title. In "Unpacking My Library: A Talk about Book Collecting," Benjamin notes that personal libraries conjure "the chaos of memories. More than that: the chance, the fate, that suffuse the past before my eyes are conspicuously present in the accustomed confusion of these books." Chance *and* fate: how better to capture the ways that the personal collection triggers our past selves and their possible and destined directions and how apt to name its present role

in this light as "accustomed confusion"? We cover more ground in this sentence than we do in most of the interviewees' commentary.

The interviewer's commentary, on the other hand, is rich in implication. Price provides an introduction that provokes throughout and is well worth exploring. From a rather randy image of a Sartre book spread-eagled on a dorm bed at the start—an image perhaps bringing certain CBAA readers back to the chaos of memories that is undergraduate life at a residential college—to the 1923 neologism "bookaflage," riffing on "camouflage" as a way to understand the lined shelf as décor, to the observation that digital heatmaps on e-books mimic past activities of indexing and commonplacing, the introduction does not disappoint.

And even in the interviews, there are choice digressions. Jonathan Lethem rightly speaks to the pleasure of the unread book, the anticipatory joy and felt promise of it sitting on the shelf. This might augur the chaos of the future, the promise and unpredictability of what we are still to become. The lack of sentimentality in a Steven Pinker, James Wood, or Edmund White is telling as well. Aside from Philip Pullman, none of the older men in the volume profess interest in the physical copy of a valued book. The following is hardly social science, but we might speculate that age predisposes these writers to lose attachment to the ever-increasing collection of stuff in their lives and that gender might dictate a detachment from the affective life of things. (And there is perhaps the faint, familiar echo of male midlife crisis: "I'll be as cool and cold about the book as the boy twitterati!") Women and younger men interviewed in the volume are more open to the emotional registers of the book as property—that is, of the book as belonging.

But what of *Unpacking My Vinyl* or *Unpacking My CDs*? Is Benjamin right, when he suggests elsewhere in his talk that all personal collections are similar in their evocation of feeling and in their temporal measure of past, present, and future? Or are there qualitative differences with book collections? For me, two differences of format immediately surface. First, contrasted with the uniformity of LPs or CDs, the scale of a variety of books makes their arrangement precarious and promiscuous. The other source for Price's title, which she hat tips in the introduction, is Buzz Spector's 1994 installation *Unpacking My Library*. Spector placed his entire personal library on a single shelf in a room big enough to fit it, with titles "arranged in order of the height of spine, from tallest to shortest" (1). Spector's gesture seems at first a comment on arbitrary classification schemes, following his Borgesian predilections. But he clearly also alludes to scale—a theme he has pursued as well of course—and to the fairly odd fact that books are almost uniformly scaled, as collections go: neither the idiosyncrasies and spatial clutter of, say, salt-and-pepper shakers nor the standardized dimensions of LP or CD. They just resist the shelf (as many interviewees note) and thus stimulate the mind: we are always unpacking our libraries.

Second, the volume of a book contrasts with an LP or CD. The external package of a book taps memories and rouses consciousness—but of course so do the exteriors of LPs and CDs. It is the dimension of volume, of interiority, that seems especially germane to the effects of book collections. Lethem hints at this with the seductive role of the unread book on the shelf. The stretch of word and image, their sequential procedure, the disposition of content from page to page—this quite literal inner life of the book format is always hovering about our experience of a closed book. Read or unread, the book's interior

is always a mystery. If read before, it encounters a new self the next time it is opened. If never read, that opening and reading is itself the beginning of a series of mysteries. These interactions—between exterior and interior, display and mystery, known and unknown—makes volume determine our response to the book format. Volume—whether actual or virtual—is a trigger for consciousness. Consciousness is retrospective and prospective in reaction to the volume's content: volume prompts the mind to fill in the inaccessible space, to misremember and invent the volume's content, to check that content against memory, to produce yet more new thought as content and memory interact, the iterations and preliminaries of search and discover—whether we do any of this with any one book we own is separate from the question of how books incite this kind of engagement.

However we might ruminate on exteriority and interiority in the book format, however we might theorize *opening* as a specific property of the book medium, a step back with some cold water might be due. For *Unpacking My Library* is in tension with itself: on the one hand, it solicits serious thought by public intellectuals and, on the other, it trades as a coffee-table prod for the year-end gift market. Along with its visual aesthetics, its breezy, chatty format, and its eminent browsability, it includes a desert-island-discs feature, where contributors list the Top Ten essential volumes from their libraries. More Nick Hornby than David Letterman, the lists—laid out on separate page spreads with a column on side of the gutter and images of the covers on the other—are conversation starters for the parlor. This is a kind of leisure-class idiom that I am as guilty of as the next reader of this journal (ok, more guilty). But this thumbs-up taste-making, this Facebook-like Likes, detracts from the more searching passages in the work.

Perhaps the point between these extremes of would-be serious reflection and idle idolizing is the photographic formatting itself. Discerningly framed portraits of shelves, with close-ups on single shelves mentioned in the verbal text, provide their own generative commentary and interpretive richness. And I overstate, describing the contributors to *Unpacking My Library* solely as "word-based" writers: the graphic memoirist Allison Bechdel takes pride of place in the volume as a book artist reflecting on her library. It's more than the alphabet that should situate her as the first voice. Relentlessly organized, Bechdel and her library have the most to say about the physical environment of books. For example, her publication date system results in a shelf where, as she puts it, "the spines create a curiously eloquent timeline of the Zeitgeist over the past thirty years—from Jill Johnston's *Lesbian Nation* (1973) to *When Gay People Get Married* (2009). I mean, really: what more is there to say?" Her wise embrace of *Roget's Thesaurus* advocates for it as a tool for discovery, rather than, as many pedagogues would have it, a shaming crutch pointing to a weak writer. And her paragraph on Edward Gorey's *The Unstrung Harp* is an allegory of the trigger of consciousness theorized above.

Two moments of *Unpacking My Library*'s visual strategy deepen the Bechdel section. A judiciously captured image of a free-standing, bookended, dedicated collection of Gorey titles—works of his that are both self-penned and design-for-hire—hints at the impress of this artist on Bechdel. There's a dissertation here, or barring that, great food for thought on how an artist animates another. Most compelling, though, is Bechdel's *Top Ten* page spread. Before we are even familiar with it, she defamiliarizes this lay-out choice by hand-drawing the covers of her ten choices, reproducing the jacket design of, say, *To the Lighthouse* or Sontag's *On Photography*. The images flicker and pulse. It is as if person and

thing, private and public—the very thesis of the Price collection—converge at this point of art-making, an uncanny evocation of the way books are mass-produced objects with shared displays, all the while subject to the deeply felt markings and memories of users.

We need more Benjamins and Bechdels and who better to play that role than the makers and thinkers in the CBAA. Good people! Might *Openings* be the place where prose criticism takes the book arts into a realm of value, where artists theorize their medium and critique a body of work in their medium? This discourse of value would of course create debate internally within the field, while beginning to make the book arts comprehensible to non-specialists. These are both good things. I mean, really. Controversy and legitimation are two sides of the same coin and, as a new organization, the CBAA might lead with such a mission. What more is there to say? Plenty. ∎
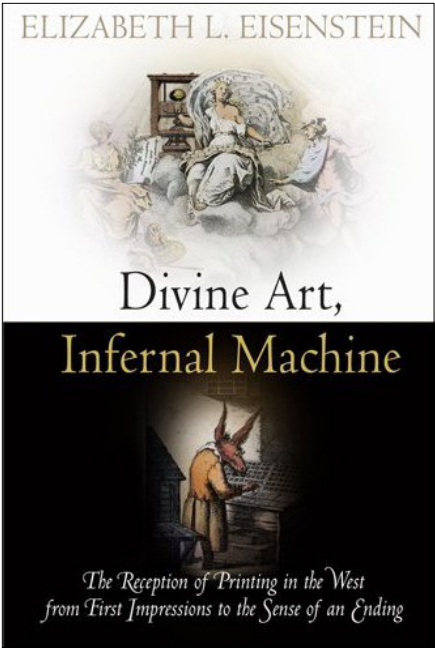
DIVINE ART, INFERNAL MACHINE: THE RECEPTION OF PRINTING IN THE WEST FROM FIRST IMPRESSIONS TO THE SENSE OF AN ENDING

Elizabeth L. Eisenstein
Philadelphia: University of Pennsylvania Press, 2011
384 pp.
(978-0-8122-4280-5)

Review by Gary Frost
Conservator Emeritus, University of Iowa Libraries

For the book artist the book is not a docile medium awaiting authorial expression. The book sets its own stage and each artistic action is haunted by embedded constructs and conventions. If you alter a codex or scroll you will find embedded connotation changing the meaning of the alteration. Book artists can be surprised to find themselves manipulated.

Because of this potent influence of format on expression (paratext on content, device display on design, and historical context on artistry) book artists can advance chances of success with an attention to book studies. To do this it is useful to be aware of trends and progressions in that field. Elizabeth Eisenstein's new book is an academic achievement but it also an advisory for the book artist.

Elizabeth L. Eisenstein studied printing as a third agent at work in production of humanist arts. Her work suggested that printing was a single communications shift that altered many systems of belief. Following her interpretation, printing proved to have strange capacity of advancing itself at the same time that it dissolved religious certainty and disconcerted sciences. Printing commerce and technology marched on and the mostly innocent printers left ruins of revolution behind them.

Bungee-like connections of intended and unintended consequence provokes other questions. Why is the classical reflex between manuscript and print or reformation and counter-reformation or textual and visual literacy so dynamic and so persistent? Is print influence at work to provide a single underlying system of religious, and scientific change? What keeps the book wedged in among other media? Will the book absorb its own latest side effect of combined print and screen delivery?

A selection of publications has recently appeared to further address such issues. These book studies pivot from retrospective views of printing and text production to suggest patterns for the future of books generally. Here is a sampling: concerning scholarly communication see *Transferred Illusions, Digital Technology and the Forms of Print* by Marilyn Deegan and Kathryn Sutherland (2009); concerning book history see *The Book in the Renaissance* by Andrew Pettegree (2010) and concerning book design see *How the Page Matters* by Bonnie Mak (2011) or *Breaking the Page, Transforming Books and the Reading Experience* by Peter Meyers (2012). The last is a forthcoming ebook with the first three chapters now available free.

Meanwhile, Elizabeth Eisenstein continues to engage the field of book studies. *Divine Art, Infernal Machine* is not an unneeded elaboration of *The Printing Press as an Agent of Change, Communications and Cultural Transformations in Early-modern Europe* (1979). The earlier work constructed the premise of interpretation of printing as an active determinant of cultural change. This new work brings out positions of historical institutions and attitudes of authors along with the witness of their publications to confirm that influence of print was also well understood in historical periods. This is not a premise of technological determinism but a story of the opportunism of conflicting belief and emerging secularism exploiting printing technologies.

The new Eisenstein book is arranged in century-like eras of printing history and in each era's special participation in the power of the press. Even more interesting authors, illustrators, printers and publishers vied to preempt the flood of print with their own floods of even more preemptive works. The success of printing became its own enemy.

The fifteenth-century advent of printing was welcomed by the conservative establishment of monastery and church institutions that were well positioned to invest and adopt the new technology. Success in the sixteenth century was increasingly capitalist and commerce driven. Darker prospects arose from realization that any polemic or any counter theology could be advanced by printing. Printing technology proved a great UN-determinant and its power of emerged as an ambiguity.

Seventeenth-century publication excelled in influence, especially as extended by illustrative engravings, maps and charts. Illustration themselves figure into this new Eisenstein work. Familiar engravings such as the print shop from the series *Nova Reperta* are given close attention as Eisenstein pursues this historical return of visual literacy that had dominated prior to printing. Meanwhile the graphic and textual power of the press created constant supper-cession of editions, constant discredits of previous works and a massive, chaotic growth of libraries that almost immobilized researchers. Strategies of deletion became crucial and a churn we now interpret as pre-cursive Internet, emerged.

Printing of the eighteenth century took on additional roles in promotion of new sciences and political philosophies. Innovative authors and innovative readerships also found a larger domain for exercise of imagination and fantasy. Eisenstein again studies implications. An interplay of enlightenment and entertainment dissipated polarized attitudes of the demonic or divine nature of the press. Enthusiasm for publishing was mixed with laments over its crass commercialization and editorial decline.

Eisenstein charges into the nineteenth century "zenith of print culture." The period produced a "tendency to dematerialize printed output". Commentators such as Victor Hugo began to see decoupling of knowledge from monuments as an engine of duplication of copies of copies produced a disembodied book. Nineteenth-century technologic determinants, so quickly discounted in wider studies of social influence, were not trivial as technology facilitated ever greater productivity. Promotion of literacy became a marketing agenda.

As the Eisenstein perspective moves on we encounter the role of the newspaper wedging apart massive literary readerships. This chapter; "The Newspaper Press: The End of Books?", felt more like an interruption than a transition. Formats of pamphlets, books, broadsides and newspapers perhaps require a fuller treatment as formats. Certainly the paratextual structures of each deserve a distinct history. Conditioned reader expecta-

tions, prior to any the sway of any content, makes a newspaper a newspaper, a magazine a magazine and book a book. Eisenstein, of course, discounts simple super-cession among media but leaves less considered any implications of their continuing accumulation.

For fans of the embodied physical book there is also another slight disappointment. Eisenstein's magisterial and influential works could be seen as encompassing the whole topic of the book as factor in culture change. Yet paper, only passingly mentioned, was certainly as crucial to realization of the book's influence as was printing. Perhaps the bias here is that progressions of printing can be correlated with reception of content while paper cannot. And what about packaging and advances in the mechanism of the codex?

The last chapter heading, "Toward a Sense of an Ending," sounds conclusive but we are bought to a firewall of the present. We do find a more focused treatment of the role of paratext. She follows McLuhan fixed precepts of newspaper paratext and overlays one of her own, mentioned throughout the book. This is that "the best of the past continues to be set against the worst of the present." Here we come to a principle of the sweep of the history of printing; the "…striking" …persistence of similar reactions to similar problems…".

Each era was "absolutely certain that its situation was completely unprecedented". One regular pop-up, for example, is that information overload always arrives as a very recent phenomenon. Instead, recurrent continuities, basic paratext and ever increasing accumulation of media are a persistent paradigm. "Being online and in print are by no means incompatible." Only Western "habits of mind" continue to portend the end of books and printing. Allures of rapture constructs or cultural cataclysm will probably continue to be misplaced.

Finally an unanticipated consequence of printing as an agent of change would surprise Eisenstein herself. As the first off-set printing was exhausted the continuing demand was met with print-on-demand production. The POD production is high-speed copier work with blackened, bold text, dithered illustration, and a glare of fuser. With some copies the work would be easier to read on an e-ink screen. The off-set version presents crystal clear illustration and sharp and even text. It is a pleasure to read and a pleasure to contemplate. Here is a contrast between dry and wet ink printing and the consequence is accentuated beyond legibility; the best of the past can be compared with the worst of the present at the same moment in book history. ∎

Editor's Note: Additional paragraphs missing from the end of the article were added Febrary 2013.