

## Versioning Loss: Jonathan Safran Foer's *Tree of Codes* and the Materiality of Digital Publishing

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### Abstract

The recent proliferation of experimental literature has produced a critical and creative exchange between the possibilities of print and digital distribution platforms. Through a focused study of Jonathan Safran Foer's *Tree of Codes*, this article confronts the difficulty of citation as an occasion to develop a web based prototype or model of this decidedly paper bound text. The result of this experiment produced a digitized version of *Tree of Codes* that allows for a further discussion of issues of loss, deformation, and versioning alongside a wider conversation on presentation semantics on the web and browser capabilities. This article argues that experimental features on the web have a great deal to gain in a reciprocal exchange between experimental print media.

Essentially, all models are wrong, but some are useful. (George E. P. Box *Empirical Model-Building and Response Surfaces*, 1987)

### Introduction

With the release of Sony's Reader in 2004 and the subsequent release of Amazon's Kindle in 2007, the introduction of consumer ebook platforms remains within the realm of recent memory. The relative newness of publishing literature in both open and proprietary formats — whether they are marked with html, epub, pdf, mobi, KF8, or ibook suffixes — demands that publishers and authors take chances with the digitization of literature and accept the risk of modifying literary meaning through digital presentation and dissemination. Since their initial release, each of these formats has been changed and tweaked from version to version. New functionality and bug fixes continue to improve and modify these technologies in subtle increments. The introduction of new formats and platforms has produced an unprecedented period of literary experimentation where versioning becomes the hallmark of software development and academic work in the humanities alike. As the titles of their works become marked by these file format acronyms, contemporary authors are now responding to the digital context in which their works are published with a renewed attention to the materiality of publishing. Simultaneously, the normalization of reflowable text is upending the fixity of print and the stability of the venerable codex. I argue that contemporary novelists are engaging with this new and fluid digital publishing environment by experimenting with the possibilities of print. Because the novel has always been an experimental form — insofar as it has always presumed to be *new* — a renewed interest in experimental print texts has come to express an anxiety about the proliferation of digital texts and digitized distribution models for literature. For this reason, I wish to discuss *Tree of Codes* (2010) by Jonathan Safran Foer because it is highly experimental in form and also acknowledges the work of creating digital versions of paperbound books.

This book is, I believe, one of the most coherent responses to the current shift in reading technologies and offers insights into the role of books in the preservation of human history through mechanical reproduction. Foer's text works

as an extension and modification of Johanna Drucker claim in *The Century of Artists' Books* (1995) that the artist book is representative of the 20th century social, cultural, and technological development. In a 21<sup>st</sup>-century context, the generic strictures of artist book do not necessarily apply to Foer's work, but he has taken up a similar formalist avant-garde sensibility in exploring the artistic possibilities of paper in a digital environment. However, any academically situated discussion of Foer's book demands that such a text submit to some kind of citation, reference, or quotation. This is a book that presents many problems for academic or critical discourse because it cannot be reliably cited. *Tree of Codes* is written by die-cutting words from the pages of Bruno Schulz's 1936 novel *The Street of Crocodiles*. The result is a fragile paper latticework of paper tabs that allows the reader to peer through several pages at once and read the remaining text. The experience of reading *Tree of Codes* calls to mind the fragility of art and the realization that so much of our artistic legacy has been lost. In this case, *Tree of Codes* is a physical reminder of the literary meaning that has been lost to war and the need of art to reconstitute and imagine our past. Schulz was a Polish artist and author of Jewish ethnicity living in Drohobych when the Nazis invaded in 1941. After being kept alive for his skills as a draftsman and storyteller, he was murdered in November of 1942 at the hands of a Nazi officer. The excised text in *Tree of Codes* is a physical representation of this loss and the loss of much of Schulz's corpus during the war. The result is, as Foer describes it by borrowing Schulz's words, "a geometry of emptiness" and a highly material — even sculptural — reading experience [Schulz 2008, 65]. Foer has also said, in a publicity video for his publisher, "I hope that *Tree of Codes* in some ways contributes to the conversation we are now having about what's possible with literature and what's possible with paper." This book presents an experience of remediation — of representing one medium through another — in its production and printing. By building on Jay David Bolter and Richard Grusin's basic proposition that "remediation is a defining characteristic of the new digital media" [Bolter and Grusin 2000, 45], I argue that *Tree of Codes* represents a version of Schulz's story that helps to preserve and revive its memory by paradoxically losing vast swaths of the text. Furthermore, Foer has presented a printed object that offers a profound experience of loss and also captures something of the history of literature that has been preserved from WWII. In a 21<sup>st</sup>-century publishing environment, however, the possibilities of paper now comment on the experience of loss in digital media.

Publishers have come to play an increasingly important role in the production of such experimental literature, but this is a very old genre. Experimental literary precedents have long drawn on a common thread of scientific and methodological exploration of humanistic thought. In the words of Emile Zola, perhaps the first commenter on the experimental novel, "The idea of experiment carries with it the idea of modification. We start, indeed, from the true facts, which are indestructible basis; but to show the mechanism of these facts it is the genius in the book"[Zola 1893]. While Zola is writing as a champion of the emergent 19th century naturalist school of thought in French writing — which of course had its correlate in U.S. fiction with authors like Theodore Dreiser, Frank Norris, Stephen Crane, and Upton Sinclair — the American equivalent sought to challenge the deterministic impacts of the scientific thought of psychology, evolution, and economics that fated the livelihoods of so many Americans at the time. As a kind of extension of scientific method, experimental literature must not confine itself, says Zola, "to those lofty regions that lie beyond the boundaries of science"[Zola 1893]. Instead, experimental literature tests the limits of form and the mechanism of medium in an attempt to challenge the limits of what can be known and said. Bruno Latour has been arguing for the use of scientific experimentation in humanities discourses since at least the 1987 publication of *Science in Action*, where he defined experimentation as simply a scientific methodology to explore, test, and modify "a core of common problems and methods" in academic and scholarly knowledge creation [Latour 1987, 16]. It is not until 1999, in *Pandora's Hope*, that Latour comes full circle and claims that "an experiment is a story" (124). While experimental texts have long challenged the norms of social and academic discourse, experimental print literature has recently turned the locus of its critique towards the limitations of digital publishing, while relishing the materiality of paper. As a work of intermedia — between technologies and discursive fields — the tools and critical tradition of the digital humanities is perfectly suited to logically integrate experimental literature and analyze broader shifts in medium and genre in the face of technological change; prototyping becomes a way to link the means and methods of cultural inquiry as a unified gesture.<sup>[1]</sup> As Alan Galey and Stan Ruecker describe in their essay "How a Prototype Argues" (2010), the position of this interpretive gesture exists somewhere within "the messy middle ground between interpretation and making" [Galey and Ruecker 2010, 406]. A prototype in a humanities context is a generative and creative artifact that enacts a literary and critical gesture, but a prototype is also a kind of scholarly outcome that must be experienced as it performs a theory or argument alongside a

discursive intervention. A critical engagement with literature requires a creative act that seeks to bridge formal constraints, but such a creative and critical gesture also offers the opportunity to explore fundamentally paired themes within Foer's text: the fragility of human life and the fragility of print.

## Lost on the Way

In a 2012 issue of *Digital Humanities Quarterly*, Paul Stephens marveled at the “extraordinary cornucopia of recent avant-garde writing” (6). This comment arose from his discussion on the recent “metadata revolution” that has sought to catalogue and aggregate vast datasets into accessible archives that are usable by contemporary authors for creative works (1). Foer's text represents a corollary gesture that Stephens identifies, but Foer takes Schulz's *The Street of Crocodiles* as his sole archive. While I have proposed that Foer's text intentionally resists digitization in response to our current digital context, the manufacture of *Tree of Codes* suggests that this text must not be confused for somehow resisting technology in general. The publisher of *Tree of Codes*, Visual Editions, is a small boutique-like company dedicated to experimental writing. The demands of the project required Visual Editions to seek out a variety of highly technical processes from different craftspeople and companies and a whole host of sophisticatedly engineered manufacturing processes. So, while the pages were printed by the Belgian firm die Keure — who were chosen because of their experience with printing art books and custom government forms like voting ballots — the actual die-cutting was done by Cachet in The Netherlands. Finally, the pages were returned to Belgium for individual hand-finishing, only to return to The Netherlands to be bound into a final product. Because of technical restrictions of a book that lacked so much bulk, *Tree of Codes* could not be released as a hardcover. While at once forgoing the anachronistic tradition of releasing a hardcover object that is associated with status, expense, and durability, the intensive labour required to produce each book also makes for a quite expensive paperback. My copy, on its initial release, cost \$45.95 Canadian, before taxes. *Tree of Codes* implicitly raises questions about the purpose of technology in the humanities and the production of literary art through an implicit understanding of its manufacture. However, if it is possible to suppose that technology is no mere means, humanities scholars must take account of these implicit meanings of the tools used to analyze cultural products of all kinds.

To accurately cite *Tree of Codes* in an online journal, I have found it necessary to encode this complex text using HTML, CSS, and an open source page turn script developed by Google. Therefore, digitizing experimental literature becomes a prototyping framework for testing the limitations of the presentation semantics of the web and the inherent meanings held between print and digital versions. In the words of Geoffrey Rockwell and Stéfan Sinclair in a draft essay by the same name, “There's a toy in my essay!” The “embedded hermeneutical toy” in my essay “can be explored for technique,” but I believe that such an act of remediation is also an interpretive gesture that is in sync with the thematics of loss within *Tree of Codes*. The markup I produce functions as an elaborate quotation mark that attempts to describe the complex aesthetic experience of reading the material text of *Tree of Codes*; it has, I hope, as much to say about digital humanities methods and experiments as it does about literary analysis. However, between the limits of print and the limits of web-based presentation, digital humanities discourse engages with certain poststructuralist philosophies of language, text, and signification more generally. Poststructuralism arose by questioning the assurances of meaning associated with the Saussurean sign, and the poststructuralist conception of language demands that the meaning of a text is also bound to its context and must signify new meanings for new contexts. If digital texts are situated within the context of markup languages, the shifting and reflowing contexts are boundless in ways that theorists of the last century could not anticipate. Jacques Derrida's essay “Signature Event Context” acts as something of an invitation to Galey and Ruecker's prototyping theory and methodology. During a colloquium on the theme of communication in 1971, Derrida describes the philosophical basis of citation as follows:

Every sign, linguistic or nonlinguistic, spoken or written (in the usual sense of this opposition), as a small or large unity, can be *cited*, put between quotation marks; thereby it can break with every given context, and engender infinitely new contexts in an absolutely nonsaturable fashion. This does not suppose that the mark is valid outside its context, but on the contrary that there are only contexts without any center of absolute anchoring. This citationality, duplication, or duplicity, this iterability of the mark is not an accident or an anomaly, but is that (normal/abnormal) without which a mark could no longer even have a so-called “normal” functioning. What would a mark be that one

could not cite? And whose origin could not be lost on the way? (“Signature” 320-321)

As a way of answering Derrida's question, it is necessary to consider the material context of the sign; the mark that cannot be cited is the mark that is bound to its material support or substance. When a substance functions to support the meaning of a text, the citation of printed marks now demands supplementary markup. In other words, postmodern emphasis on iterability now finds its full expression in the versioning logic of software developers and the digitization efforts of digital humanists. By limiting his definition of citation to only quotation marks, Derrida has limited the citationality of text unnecessarily.

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In what little critical attention Foer's book has received, Katherine Hayles and Kiene Brillenburg Wurth's essays are good examples of the limits of citation. Both authors are forced to cite the physical spaces in the text with slashes, and cannot attempt to cite the layering and linking of meaning between pages. Hayles attempts to cope with the problem with a system of angle brackets intended to signal the relative depth of a word appearing through the holes in the text [Hayles 2013, 229]. While Hayles offers an insightful statistical analysis of relative word prevalence between the original story and Foer's text, she ultimately accepts “a limitation of digitization” because Foer “predeformed his text, with the result that it resists further deformation” [Hayles 2013, 230]. The language of deformation has been used by many in digital humanities discourse, but I believe that the language of supplementation is more representative of the critical and creative acts of contemporary literature. Lisa Samuels and Jerome J. McGann's essay, “Deformance and Interpretation,” served to found this logic as a means of describing the performative aspects of an interpretive method that sought to alter the original text. Samuels and McGann's goal at that time, in many respects, was to describe the necessity of altering a text to archivists, whose very profession is defined by the act of preserving the original. However, Stephen Ramsay inherits this language in *Reading Machines* by describing how the “risks of deformation” are inherent to all criticism, which equally risks deforming meaning through critical rhetoric and argument. Ramsay settles on a broader critical digital literacy that demands that digital humanists “contend not only with deformed texts, but with the ‘how’ of those deformations” (63). As a final rejoinder to this tradition, Alain Liu describes his “deformational forms” as containing “something of the flavor of deconstruction” [Liu 2009, 505]. Because a digital version always modifies the original, it must be understood as both a supplement to the paper text and a new creation. If the purpose of a good citation honors the original in good faith, it is incumbent upon those working in the humanities to simulate the original context in every way possible, including the experience of variable and uncertain meanings. The kind of versioning that I describe avoids the entropy of deformation through a practice of making that is both technological and creative. Between print and digital manifestations of Foer's text, markup functions as an elaborate, malleable, and generative language of citationality. Markup is the performance of a quotation that leaves traces of code behind.

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## Conspiracy of Winking

If Foer's highly material text openly resists digital technology — though a “tree of codes” at least obliquely references a tree-like file system directory — what can possibly be learned by attempting to digitize this print object? In the essay “Beyond Remediation” (2009), by the Implementing New Knowledge Environments (INKE) group, a founding premise of the project argues that the “relationship between old and new media is reciprocal” [Galey 2009, 4]. While Foer's title suggests a somewhat contradictory link between print and programming, I claim that any difference between versions represents the traces of the print medium left behind in the digital form. While there has been a sense that digital texts will long be bookish in design, the reciprocal exchange between media necessitates that print texts are capable of enacting digital characteristics. In the context of the previous language of deformation, Foer's supposed deformation of Schulz's novel would be further deformed in any critical discourse that struggles with citation. My prototype, therefore, represents the attempt to push the limits of what is condoned and possible with the World Wide Web Consortium (W3C) schema and what is supported by browsers as a generative process of supplementation. Simply because a browser does not support a standard does not mean that a given or aesthetic goal is invalid. The history of web standards has demonstrated how tools, techniques, and capabilities that are implemented by developers and used by the public become the norm. The acceptance of JavaScript is one such example of usage dictating its acceptance as a standard. In the words of Douglas Crockford in *JavaScript: The Good Parts*, “JavaScript's popularity is almost completely independent of its qualities as a programming language” (1.0) and still owes a great deal to its adoption by Netscape Navigator 2 in 1996. Furthermore, artistic and creative endeavors are always pressing against the norms of

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presentation, and web development must follow a similar path. This kind of methodology demands that a new version of a text, even a version that loses so much tactile meaning through digitization, leaves behind traces of readerly intention and more critical possibilities. Presentation semantics of the web are simply more strict and documented than the cultural norms of print in previous periods. I can only describe the instances of reading through the text by flipping pages but also by catching glimpses and sidelong glances of different pages. The interplay between text and object is lost each time it is read because the experience of reading the print version cannot, by and large, not be repeated, while the imagistic language in Schulz's original story appears and overlaps in confusing and sensuous ways. Foer's text echoes this rush of imagery through its form; pages slide into view unexpectedly and reappear in new contexts again and again.

I have found that the whisper is the most salient metaphor to describe the experience of reading this book. *Tree of Codes* asks readers to relinquish the strictly conservative — in terms of the preservation function — value of a text as an unchanging entity. While it is safe to assume that the meaning of any text will change as the readers change, *Tree of Codes* goes further by asking that readers renew their experience of the novel through a varied attention to these visual whispers. The reader of *Tree of Codes* is complicit in Foer's rewriting of *The Street of Crocodiles*. One passage on a single page reads as follows: "the room grew enormous / filled with / whispers, / a conspiracy of / winking / eyes / opening up among the flowers on the wall / ." (*Tree* 27). Reading a single page and ignoring the pages beneath produces a coherent sentence, but the text begs our eyes to wander. The underlying text whispers from within the book as our eyes move over the page. The "conspiracy of winking" generates a new text, with gradients of emphasis that are unique to each reader. This same page may also be read, "Then / anger, choking / the room grew enormous / he would fall / into / , filled with / whispers / transformed / beyond / his thoughts / a conspiracy of / a storm of sobs / grown unfamiliar winking / He would /eyes / his breath and listen / opening up / among the flowers on the wall / ." (27).<sup>[2]</sup> Some decisions are made consciously and some are unintended slips of the eye. Words are completed by the reader and grammatical correctness is made out of necessity and habit. *Tree of Codes* has many of the hallmarks of newer web-based media, but this text is constantly shifting despite its decidedly static print form. The discrepancies between the inline citation above and the HTML prototype I have built<sup>[3]</sup> are profound and drastically shape the meaning of the text and the context of my interpretations.

This prototype simultaneously makes arguments about the limitations of the browser and the limits of text to be digitized. Such an argument follows closely from Galey's claim about "the web browser as a vital yet unacknowledged agent in the sociology of texts in the present" [Galey 2011, 197]. The experience of this discrepancy offers insight into several issues for digital humanists. The basic languages of the web — HTML, CSS, and JavaScript — are all highly accessible and offer a promise of backward compatibility and format longevity for humanities projects. While the browser is far from a transparent rendering of web content, the first web pages at CERN developed by Tim Berners-Lee in 1992 are still readable by modern browsers (see <http://info.cern.ch/hypertext/WWW/TheProject.html>). So, despite being excellent at rendering text, modern browsers each have an individual bias towards experimental code, and render the W3C standards with varying success and clarity. In addition to the legal limitations of copyright and contemporary literature, this digital prototype of *Tree of Codes* represents an opening of academic discourse to a global conversation on the capabilities of the web. However, as the relatively new HTML5 and CSS3 schema is implemented across browsers, support for certain features approved by the W3C remains spotty and uneven. In the implementation of a mix of CSS keyframe animations and JavaScript page turns, the current support for animations and 3D transforms represents a great deal of variability across browsers. Additionally, there were several changes in browser rendering engines during the development of this prototype. Notably, Google announced on April 3, 2013 that the Chrome browser would be forking the Webkit rendering engine and producing their own version called Blink, which they have been working on since 2007 under the title Webcore. Shortly before Google's announcement, the Norwegian-based Opera browser made an announcement of their own and committed their change from the Presto rendering engine to Google's development trajectory. While this shift has the potential to further divide browser performance, it is important to remember that the open source Webkit project — initiated by Apple in 1998 — is not a wholly unified project. The Chrome and Safari implementations of Webkit have long differed in their respective V8 and Nitro JavaScript engines. An early prototype using keyframe animations was unsuitable because of how differently each browser rendered 3D transforms, and the book opening ultimately needed to be animated with the Transit JQuery library (<http://ricostacruz.com/jquery.transit/>). As open source implementations of Webkit continue to fork and diverge from the

original source code, the aesthetics of the web will undoubtedly remain heterogeneous. In short, the culture of experimental presentation and endless versioning is built into the very fabric of the web.

Due to this variability, digitizing Foer's text for the purposes of citation or distribution requires an acceptance that such an intermedial versioning will generate errors, gaps, and an experience of loss. Because any reproduction must fall within the auspices of academic fair use and not violate the terms of Foer's copyright, this task represents a departure from many digital humanities prototyping or archiving activities. Perhaps more significantly, Foer's text fulfills the theory and practice of Zola's description of experimental literature as the performance of modification. The experimental text, Zola insists, must "show the mechanism" of its manufacture to modify the seeming stability of the form. This formal modification is not a passive lens through which one language or mode of communication is interpreted. It is a supplementary text that negotiates between media contexts. For example, the "find" function that allows users to search for words within a single page becomes a powerful tool to read *through* this prototype. Because all modern browsers have this functionality, it is possible to drill through a text and mine for word frequency and position. Searching for "father" reveals eight instances of the word and are numerically significant given the small sample size, but their placement in three dimensions allows readers to assess the physical structure of text in addition to iteration.

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## A Deeply Humanistic Way of Knowing

Due to the experiential nature of using a prototype to explore a text, unanticipated results can lurk within the code and are often exposed only by making and using the digital version. There is a tension between the experiential discovery of making and prototyping and forms of large scale text analysis. In the context of Ramsay's "algorithmic analysis" and Franco Moretti's "distant reading," the digital humanities offers a promise to lessen the labor of humanistic inquiry and distance the human reader from the initial experience of the text. Michael Witmore first made the connection between this aim and certain strains of philosophy in a blog post. The so-called speculative realists — led by Alan Badiou, Quentin Meillassoux, and Graham Harman — have found that the absolute meaning and clarity afforded by the analytic tools of mathematics and computer science has produced a viable alternative to a metaphysics predicated on a correlation between language, thinking, and being. This brand of realist philosophy draws its inspiration in part from a long tradition of experimental literature that identifies the tension between the literary experience and generalizing literary meaning through number. In *The Number and the Siren* (2012), Meillassoux works to "bring to light a procedure of *encryption*" housed within Stéphane Mallarmé's *Coup de dés* [Meillassoux 2012, 3]. This is a text, Meillassoux claims, that can and must be read algorithmically. The text's procedure, once deciphered, allows the precise determination of the "unique Number' enigmatically evoked in the poem" [Meillassoux 2012, 3]. By contrast, the individual experience of the direction and production of light offers a significant change in the meaning of *Tree of Codes*. In Foer's print version, the text has shadows and gradients of light and visibility — and therefore intelligibility — that the digital version does not quite simulate. The screen itself is the source of light and the "shadows" are a product of the linear-gradient function. It is the interaction design — or even the highly constructed user experience of the paper book — that allows for leaps in logic and meaning to be read — quite literally — *through* the work. Mallarmé's *Un Coup de Des* (1914) is, of course, a direct precedent for this blocking of text that is set in a visual and spacial array, but Foer's text resists algorithmic analysis despite their formal similarities. Visual or aesthetic similarity does not always guarantee similar meaning. So, while Mallarmé's poem differs greatly from *Tree of Codes*, Foer's rewriting of Schulz through a process of redaction has been taken up more recently in Michalais Pichler's version of *Un Coup de Des* (2008). In this formal gesture of emptying out the text, he rewrote the original text by masking the text in a constellation of black bars. As a visual statement about omission and the chance erasure of texts — whether they are incriminating official documents or poetry — reworking and often annihilating past texts in this way makes comments on the state of the historical record and memory in general. So, while Meillassoux celebrates the loss of human experience even as Pichler and Foer demand it, the loss of our direct experience of a text represents a powerful new motif within 21st century experimental literature.

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Through a kind of tactile encryption that resists algorithmic methods, Foer's novel echoes the linking and layering of digital texts and becomes a kind of paper correlate of hypertextuality. I find it surprising, therefore, when literary journalists cast *Tree of Codes* as an "object of anti-technology" [Kachka 2010]. In a *New York Magazine* interview, Foer put the issue of physicality like this: "It's a way of remembering something about books," he says. "I think there's going to be something that happens now, where books move in two directions, one toward digitized formats and one toward

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remembering what's nice about the physicality of them" [Kachka 2010]. In an earlier *Vanity Fair* interview held with Heather Wagner, Foer describes the early inception of the novel by saying, "I started thinking about what books look like, what they will look like, how the form of the book is changing very quickly. If we don't give it a lot of thought, it won't be for the better. There is an alternative to e-books. And I just love the physicality of books. I love breaking the spine, smelling the pages, taking it into the bath. . ." [Wagner 2010]. Later in the interview with Wagner, Foer is sure to say that he is no iconoclast and does not want to be perceived as rejecting the digitization of literature. Instead, he describes his motivations by saying, "I love the notion that 'this is a book that remembers it has a body.' When a book remembers, we remember. It reminds you that you have a body. So many of the things we may think of as burdensome are actually the things that make us more human" [Wagner 2010]. Foer continues his use of the metaphor of the embodied text in a *New York Times* interview with Steven Heller when he says, "On the brink of the end of paper, I was attracted to the idea of a book that can't forget it has a body" [Heller 2010]. The book, for Foer, has an important historical function that digital technologies have difficulty simulating. There is no digital metaphor for smell. They cannot simulate wear and tear. How do you water stain an iPad without voiding its warranty? They do not collect marginal comments, pressed flowers, or old train tickets. Indeed, the closest analogy print has for deleting an ebook is to burn it. While Foer's thoughts on the status of the printed codex betray his paper bias, his thinking about print has become saturated in a reaction to digital media. His concern for print books is fundamentally inflected by digital culture, and his resistance to digital media has become a reciprocal exchange.

This reciprocal relationship is also shaping common conceptions of history and memory. In the drive to digitize and archive paper texts for the purposes of faster access and safe storage, it is also becoming increasingly difficult to forget or lose digital footprints and works of literature alike. With the degradation of electronic files through bit-rot notwithstanding, *Tree of Codes* implicitly argues that loss has meaning that is valuable and is a crucial aspect of human life; the loss that is experienced through any digitization attempt is a means of accessing this type of meaning. In the words of Matthew Kirschenbaum in *Mechanisms*, "Versions are the textual differences that make a difference" [Kirschenbaum 2008, 188]. By borrowing the language of programming tools, versioned code makes for easier debugging and helps facilitate backup throughout the development process. Comparing versions between media is a fundamental function of the digital humanities' ethos of thinking through making. However, versioning was designed precisely to have a perfect record of code development. Therefore, by following Kirschenbaum's play on the word, there is a paradox within the heart of digital humanities methodology. Creating a digital version preserves documents while also resulting in a loss of certain kinds of medium specific meaning. *Tree of Codes* offers an experience of versioning loss. It is an experimental text that demands an experimental methodology, and it is a material text that gestures to the digital in a way that offers an experience of loss at the heart of the story. The text implicitly asks its readers to consider meaning when meaning is lost. In an era when digital footprints are becoming more and more indelible, *Tree of Codes* recalls the loss of life and loss of meaning during WWII to make meaning in the 21<sup>st</sup>-century digital world. Viktor Mayer-Schönberger has argued recently that digital memory requires expiration dates to mimic the norms of human experience while also equalizing the "stark imbalances of information power" [Mayer-Schönberger 2009, 202]. In other words, deleting data must become meaningful and valuable. He ominously turns to the "tragic case" of the Dutch registry of citizens used by Nazi forces to conduct their genocide as a historical example. The history of the Holocaust and of the Jewish diaspora is never far from Foer's writing. In the context of Schulz's life and the precarious position of his oeuvre as it emerged from post-war Europe, his books come to embody the fragility of paper in Foer's hands.

The nuance and detail demanded of any reading of *Tree of Codes* must be situated within the history and life of Schulz. In the afterword to *Tree of Codes*, Foer supplies his readers with an account of Schulz's death: "Felix Landau, a Gestapo officer in charge of the Jewish labor force in Drohobycz, became aware of Schulz's talents as a draughtsman, and directed Schulz to paint murals on the walls of his child's playroom" [Foer 2010, 138]. Though kept like something of a pet, Landau was only able to save Schulz's life until November, 1942. Schulz had obtained falsified papers and was planning to escape, when a Gestapo sergeant named Karl Günter decided take revenge for Landau's earlier murder of his Jewish dentist. The common account, which Foer relates in his afterword, is that Günter told Landau, "You killed my Jew. Now I've killed yours"[Foer 2010, 138]. All that remains of Schulz's reportedly great artistic output of stories and drawings can be assembled into a single volume. The two surviving short story collections, *The Street of Crocodiles* and *Sanatorium Under the Sign of the Hourglass*, are all that remain of his writing, despite having entrusted a single copy of

a larger manuscript entitled simply *Messiah* to non-Jewish friends. This manuscript remains lost to history. Yet, this profoundly affecting story is not entirely settled. In the wake of the war, historians were eager to claim great artists and tragic figures as part of a coherent narrative of antisemitism and a unified Jewish identity to justify the establishment of Israel. Brian R. Banks describes the conflicted claims placed upon Schulz's ethnic, religious, and racial identities in this fraught political arena: "Yes he was of Jewish blood but also an aggregate of Polish blood (significantly he sought to flee west not to east at the end) and also Drohobycz blood (which he could not flee) in the sense of being the landscape of his life, merged with a profoundly artistic spirit that does not necessarily exclude forms of personal faith borne out by the scattered scriptural metaphors" [Banks 2006, 257]. Banks argues that Schulz's national and religious identity was so locally situated that he could hardly stand in for these global events. Indeed, Banks goes so far as to claim that Schulz was not even killed primarily because of his ethnicity but "due to a personal rivalry between murderers who enjoyed legitimacy for their barbarism" [Banks 2006, 258]. The casualness of his murder emphasizes the profound sense of loss throughout *Tree of Codes*, but this casualness also demands a certain fastidiousness or attention to detail in Schulz's memory. Recently, however, the murals painted in Schulz's distinctive style were retrieved from the original cottage in which they were painted for Landau and his children, but an Israeli documentary film team had taken them to Israel with a great deal of controversy in 2001. They were exhibited in Jerusalem's Yad Vashem Holocaust Museum in 2009 despite Polish protests (Bronner). Repatriating these works to unify the history of the Holocaust demands a critical attention to context and a kind of citationality that finds these works in a radically different context from which they were originally conceived.

The fragility of his life and the fragility of his literature is a testament to the problems of ever maintaining an accurate historical record and the provisional nature of any text. And yet, it is literature and the book that functions as an imaginative canvas against which the very definition of literary art and literary history is expressed. For example, the story that opens Schulz's *Sanatorium* collection is entitled simply "The Book" and relishes the childish wonder of reading. In the story, the book is a near magical object:

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the wind would rustle through its pages and the pictures would rise. And as the windswept pages were turned, merging the colors and shapes, a shiver ran through the columns of text, freeing from among the letters flocks of swallows and larks. Page after page floated in the air and gently saturated the landscape with brightness. At other times, The Book lay still and the wind opened it softly like a huge cabbage rose; the petals, one by one, eyelid under eyelid, all blind, velvety, and dreamy, slowly disclosed a blue pupil, a colored peacock's heart or a chattering nest of hummingbirds. [Schulz 2008, 116]

He has often been called the Polish Kafka, but comparisons to Borges are equally appropriate. Schulz's vision of the book of life — or a living book — shares similarities to Borges's "Library of Babel" or "Tlön, Uqbar, Orbis Tertus." In such a context, it is not unreasonable for *The Street of Crocodiles* to metamorphose through the wear and tear of time and the unforeseen losses of history into *Tree of Codes*. For Schulz and Foer, the form of the book is the very source of imagination that springs from the pages of literary art. The book is both animate and inanimate, alive and also skirting with oblivion.

While these existential metaphors of literature and life are also at home in the new forms of natively digital literature and the aesthetics of the web, it remains important to maintain that such motifs continue to draw a tradition from the book. Beyond any one sided appeal by designers and developers to reshape reading, the artistic and historical foundations of literature's place in expressing something inherently human remain. Foer gestures towards our bookish past when he says, "we / find ourselves / part of the / tree / of / cod / es /. Reality is as thin as paper / . / only a small section / immediately before us / is / able / to endure" [Foer 2010, 92–3]. What is lost in such a citation? If the relationship between old and new media is reciprocal, the meaning of such an imperfect citation turns doubly through valences of experimentation and authority. A Polish author, lost during the horrors of WWII and translated into English, has continued to make meaning by physically removing his words. The text continues to be cited and versioned again and again. The original text moves further from its original context, but it continues to speak to the theme of loss through a process of citing, versioning, digitizing, prototyping, and making. Like Schulz's surviving texts and images, the preservation of this material history defines the enormity of the challenge facing digital technology as a historical

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