

## *Abra*: Expanding Artists' Books into the Digital Realm

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### Abstract

The recipient of an Expanded Artists' Books Grant from the Center for Book and Paper Arts at Columbia College Chicago, *Abra* is an exploration and celebration of the potentials of the artist's book in the twenty-first century. A collaboration between Amaranth Borsuk, Kate Durbin, Ian Hatcher, and a potentially infinite number of readers, the project merges physical and digital media, integrating a hand-made artist's book with an iPad app to play with the notion of the "illuminated" manuscript and let readers interact in dynamic ways with both the form and content of the work. A convergence of print and digital media, the project offers opportunities to consider the way materiality and embodiment are interlinked and how we might productively play with that system of exchange.

*Keywords*: interface, touchscreen, ekphrasis, digital, interactive, poetry, app, materiality, artist's books, poetics, poststructuralism

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*Abra* is a hybrid artists' book centered on a living, illuminated text and its titular speaker, *Abra*, a posthuman prophet whose name suggests her ecstatic relationship to language and those *abracadabra* moments in which words bring things into being. The project celebrates the potential of the twenty-first century book to dissolve boundaries between image and text, author and reader, playing with the notion of the "illuminated" book—whether as gold-emblazoned manuscript or lit words on an interactive tablet screen. This work began as a print-based project and has continued to evolve beyond our initial conception of it, perpetually trying to work its way off the page, first in performance, then expanding its boundaries as an artists' book and iPad app. The convergence of print and digital media and modes of being have been part of the project from the first, but through a series of shifts in the writing and discourse networks surrounding it, we have had the opportunity to think more deeply about the ways the text is enmeshed in that juncture. With each new form *Abra* takes, she grows, a many-headed hydra—or put another way, she multiplies, the sum of much more than her parts.<sup>1</sup>

Emerging from a collaboration that is fundamentally about pressing against notions of the single-authored text, the long poem meditates on our digital moment in which subjectivity is often characterized as a networked consciousness informed by its situation (racial, class-based, religious, social, pop-cultural, and historical, among others). It thus takes part in a suite of poststructuralist and materialist concerns that have been the foundation of both innovative print and digital writing. The dream of electronic literature has, to a great extent, been a post-structuralist one, embracing interactivity, non-linearity, and a collaborative, distributed

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<sup>1</sup> We have attempted to keep track of the "relentlessly expanding" project on our website *ABRA: A Living Text* at [www.a-b-r-a.com](http://www.a-b-r-a.com).

model of authorship.<sup>2</sup> The goal of this paper is not to claim purchase on that dream, but rather to demonstrate the ways in which shifts in materiality provide an occasion to consider print and digital interfaces in relation to readerly agency.

With its many material forms and in its oracular speaker, *Abra* plays with notions of mediation and mediumship. It is not, however, a liquid text that can be poured into any glass and remain the same. In experiencing the gradual transformation of the project, we have attempted to inscribe both the reading and writing body into the work, and to acknowledge the contingent nature of its medium. At a moment in which mediation is a foregone conclusion, it becomes necessary to remind ourselves that, as scholar and poet Craig Dworkin aptly puts it, “as much acts of interpretation as material things, as much processes as objects, media are not merely storage mechanisms somehow independent of acts of reading and recognizing the signs they record” (31). *Abra*'s meaning is determined through exchange with the reader, a performance that changes depending upon the material through which the book is experienced. Expanding *Abra* from a print-based to a digital interactive work has required that we embrace its “performative materiality”<sup>3</sup> and allow its different material engagements to inflect its investigation of gender and subjectivity, eroticism, and authorship.

#### “Abracadabra”:<sup>4</sup> An Origin Myth

*Abra* sprung, not fully formed, but fully forming, from the minds of two poets who wanted to braid their aesthetics and poetics—one language-centric, concerned with words' slipperiness and mutability, and the other richly and erotically corporeal, concerned with feminist representation and pop culture.<sup>5</sup> Our themes would be mutation, evolution, fecundity, and decay, and when we began exploring these ideas we hoped to create a conjoined poetry, baroque and sensual, that would push the limits of language, sound, sense, and the possibilities of collaboration itself. We wanted to press at the boundaries between word and image, author and reader, a utopian and feminist starting point for the collaborative process. Originally titled “Excess Exhibit” in acknowledgment of these superabundant, perhaps even impossible, goals and desires, the project asked: How can two separate tongues become one? How can two people who are so different create something encompassing, yet beyond, both?

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<sup>2</sup> As Robert Coover wrote in his 1992 *New York Times* essay “The End of Books,” “Hypertext presents a radically divergent technology, interactive and polyvocal, favoring a plurality of discourses over definitive utterance and freeing the reader from domination by the author” (24-25). The most thorough analysis of the deconstructive potential of hypertext can be found in George P. Landow's seminal, if outdated, *Hypertext: The Convergence of Contemporary Critical Theory and Technology* (1992). Though early advocates of hypertext overstated the case for readerly agency, their impulse toward what Adalaide Morris calls the “still-vibrant poststructuralist dream of processual, dynamic, multiple signifying structures activated by readers who were not consumers of fixed meanings but producers of their own compositions” (12), continues to resonate for many creators of digitally-mediated writing.

<sup>3</sup> A mode of digital humanities outlined by Johanna Drucker as a corrective to modes of media-specific analysis that, while drawing attention to the materiality of technologies once erroneously considered immaterial, tend to treat the meanings of those materialities as intrinsic and stable, rather than contingent, ambiguous, and dependent upon use, situation, and interpretation. “In a performative approach,” Drucker writes, “the cognitive capacities of the reader make the work through an encounter” (“Performative Materiality,” para. 23).

<sup>4</sup> All quotations in section heads come from Steve Miller Band's “Abracadabra,” *Abracadabra* (1982).

<sup>5</sup> Originally conceived by Amaranth Borsuk and Kate Durbin, the project has grown, mutated, and taken on many collaborators, so it seems fitting to tuck away these names in a footnote.

*Abra's* has always been a visual poetics. We began with the image, ekphrastically<sup>6</sup> translating works of art that, for us, evoke decadent overabundance; unbridled, even inappropriate, evolution; and a fusion of disparate spheres. Selecting works by a diverse range of artists, including Will Cotton, Vanessa Beecroft, Roberto Kusterle, and Hrafnhildur Arnardottir (a.k.a. Shoplifter), among others, we placed them alongside images of historical figures, medical anomalies, and conjoined twins. Separately, but hive-minded, we began to write about these images, using language constraints that also speak to abundance and excess: strategically placed infinitives and gerunds, evoking a Steinian continuous present, initially shaped the work.

We wove our words together, line by line, creating a tapestry of language, but soon discovered this simple conjoining allowed too much independence of thought. So we worked through the book painstakingly, side by side, splicing the stanzas' DNA together, word by word, in some cases letter by letter, in InDesign. The editing process, in *Abra's* case, turned into another creation process: the book, continually evolving, strives to embody its own concept. In its final form, to be published this spring by 1913 press, each stanza grows out of the preceding, recycling some of its language in a series of conjoinings and uncouplings. The helix of language breaks apart, the words of one stanza flying open to admit words from the next into its openings, and, when the page turns, the new stanza closes its wounds, reconstituting as its own poem. Opening and filling these spaces, forming portmanteaus and conjoined phrases, we have lost track of whose language is whose. It seems the continually-evolving speaker of this work wants to grow beyond our twin minds into a third: her own. *Abra* for abracadabra: the word that speaks itself into (a) being, the performative utterance and magic spell.

In order for that third voice to speak, it needed a mouth, or a series of mouths: it needed an oracle. So we began to embody the text in photographs and performances through a series of conjoined, post-human<sup>7</sup> avatars (see fig. 1). Bearing attributes one might identify as both human and animal, machinic and organic, these avatars draw inspiration from the imagery and language of the poem itself. They simultaneously embody the text and offer their own visual texts.

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<sup>6</sup> We refer here to ekphrasis broadly-conceived as the practice of responding to a work of art through the creation of another work of art. We did not conceive of the process as a bringing over into language of visual material, however, but rather as an approach more closely aligned with the "digital ekphrasis," described by Cecilia Lindhé. In "A Visual Sense is Born in the Fingertips," a thorough exploration of the ocular- and print-centric redefinition of "ekphrasis" in the twentieth century, Lindhé proposes a return to the term's ancient meaning, which involved "orality, immediacy, and tacility" (para. 3). Just as ancient ekphrasis attempts to evoke through *enargeia* (vividness) an affective state in listeners, our stanzas similarly attempt to arouse a multitude of embodied sensations that express meaning beyond sense.

<sup>7</sup> Because *Abra* exceeds definition and seeks hybrid, non-binary forms.



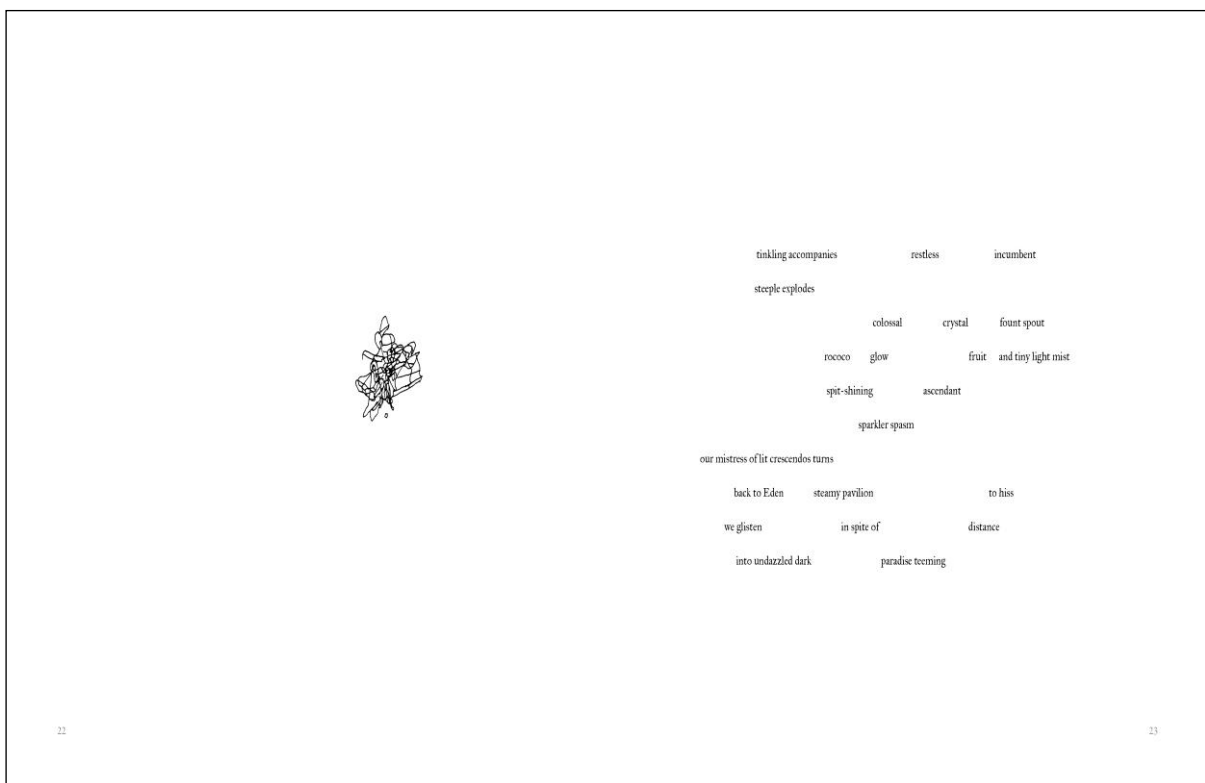
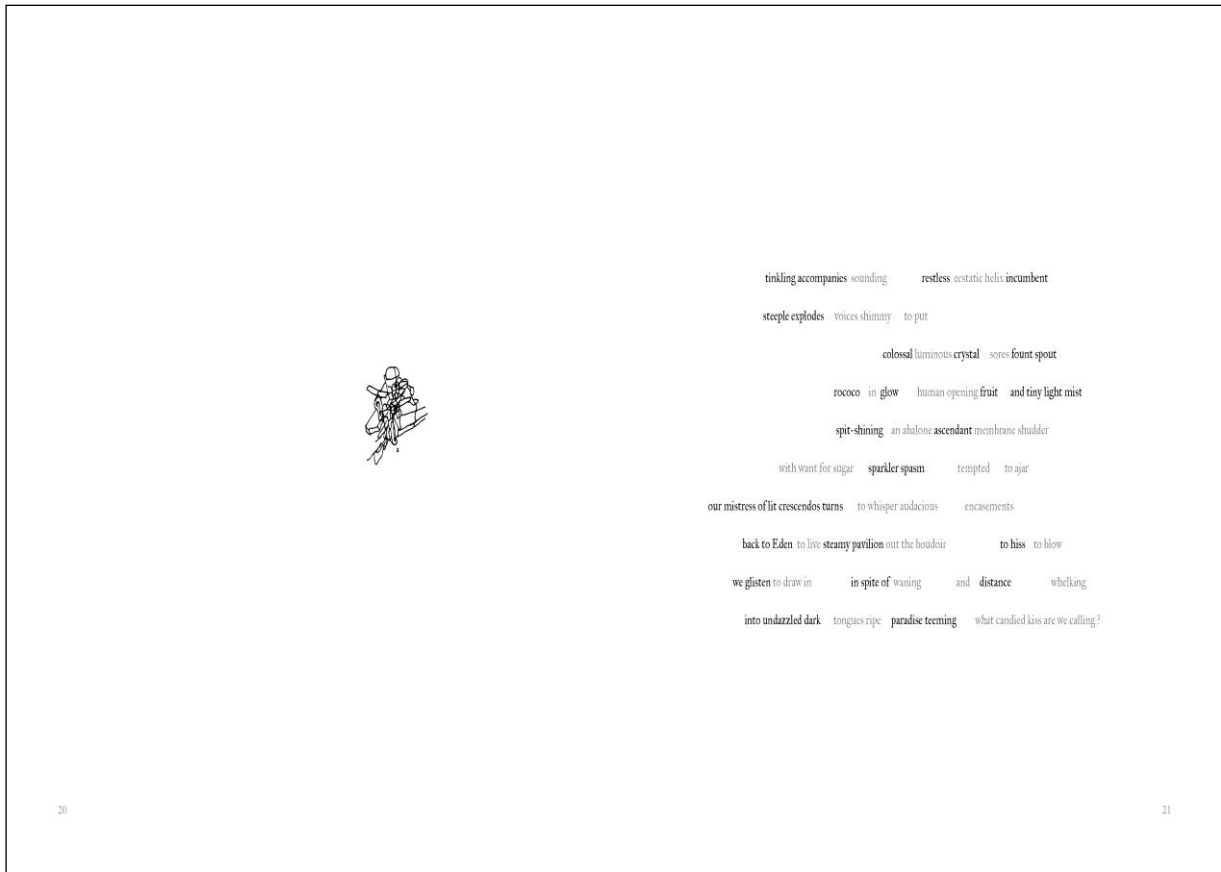
Fig. 1. Several of *Abra*'s avatars, styled and photographed by Borsuk and Durbin.

*Abra* the performance, like *Abra* the image, like *Abra* the poem, like *Abra* the book, expresses possibilities for what a collaboration could be if allowed to evolve at will. In a way, *Abra* is art itself: something other and more than her creators.<sup>8</sup>

Because *Abra* seeks to blur the boundary between text and image, our aim is for the book's pages to play with our easy separation of the two. On each verso page, an abstract illustration created by visual artist Zach Kleyn faces the poem, and just as the text mutates and grows from one recto to the next, so the image morphs. Created as a flip animation, the sketch continually enlarges and eventually reaches across the book's gutter to conjoin with the text, which itself presses ever leftward until the two interpenetrate (see fig. 2A-C).

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<sup>8</sup> These avatars, of course, evoke both religious and virtual figures. As Mark Hansen points out, virtuality need not necessarily be equated with technology: "Far from being a synonym of the digital, the virtual must be understood as that capacity, so fundamental to human existence, to be in excess of one's actual state" (51). A figure of "excess," *Abra* is always virtual, always ecstatic.



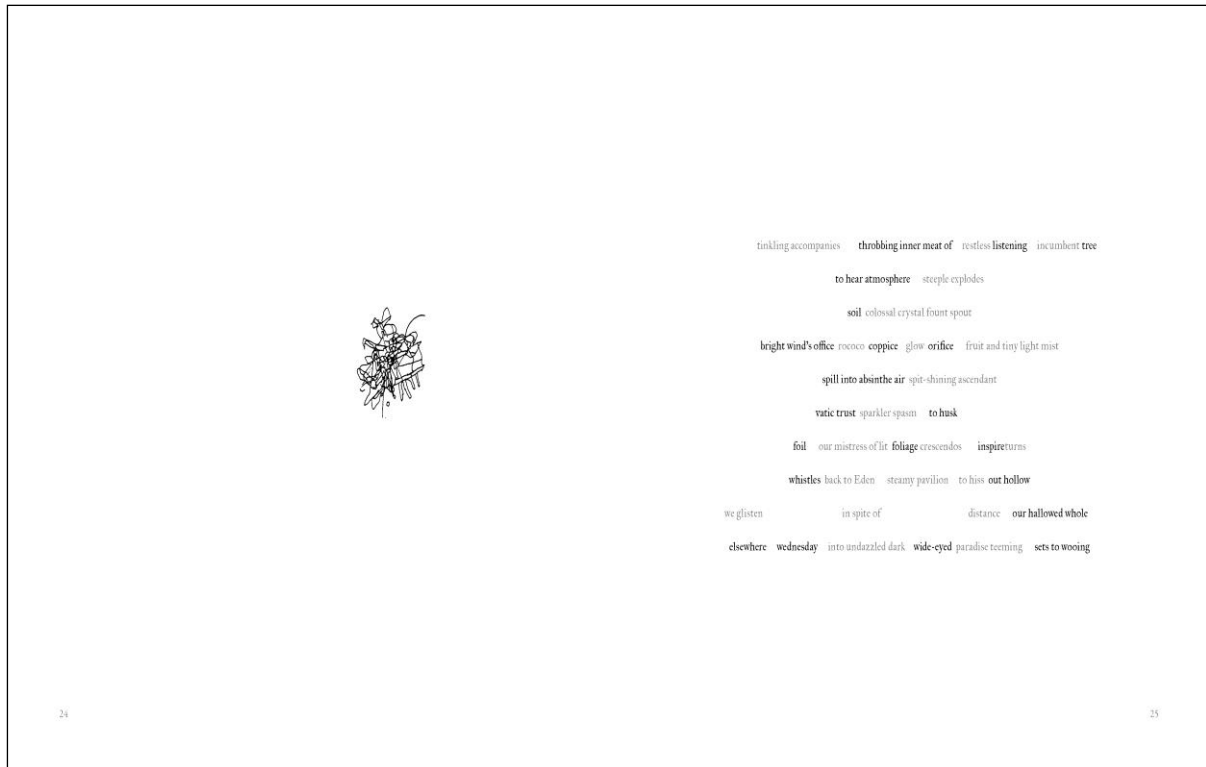


Fig. 2A-C. The poems mutate one into the next as the facing illustration grows.

Given this desire to both engage with and push against the confines of the page, it was at this point that we began to think about the history and future of the book.

### “I heat up, can’t cool down”: Book as Touchscreen Interface

*Abra*'s inherent instability—the project's very fascination with mutation—has inflected its physical form from the beginning, but the longer we worked on it, the more we realized the book fundamentally wanted greater freedom of movement than our flip-book interweavings would allow. Our embodied performance of/as *Abra* emerges from this desire to give the text an ecstatic life beyond the page. The project continues to mutate, thanks to a grant from the Center for Book and Paper Arts (CBPA) at Columbia College Chicago, which has enabled *Abra* to persist in pushing both beyond the page and beyond singular and uni-directional definitions of authorship. “Expanded Artists' Books,” an initiative funded by an *Arts in Media* grant from the National Endowment for the Arts, aims to broaden the audience for artists' books and to push the art form into the digital realm by commissioning born-digital works that include both print and iPad editions. Artists' books have already been influenced by digital technologies, from photopolymer plates that allow artists to quickly create complex page designs and custom fonts, to computer-assisted laser cutting, which has made reproduction of intricate cut-outs possible, regardless of edition size. In addition to utilizing these new technologies, “expanded artists' books,” according to the CBPA, will “utilize the rich capabilities of the tablet platform to imagine new forms that a book might take, such as exploring how interactivity challenges the traditional closure of the text or the performance of time” (“Expanded Artists' Books”). Pressing against closure is *Abra*'s core tenet: the

ouroboros text opens and closes with the word “heaving,” and on every page between it pushes language around, opening holes then filling them and swallowing its own tale. The book ends where it began, and thus never really stops mutating.

Artists’ books have historically been self-referential objects. Artists choose to make books, in most cases, to interrogate book form and take advantage of the spatio-temporal or socio-cultural affordances of the object we think of as a “book.” As Drucker puts it in her broad definition of the highly contested term, an artist’s book integrates the formal means of its realization and production with its thematic or aesthetic issues. It “has to have some conviction, some soul, some reason to be and **to be a book** in order to succeed” (*Century 25*, emphasis in original). This integration of both form and content as modes of signification creates a reflexive loop between material and meaning, a quality N. Katherine Hayles has referred to as “techartextuality,”<sup>9</sup> and one that connects these emphatically physical artworks with their digital counterparts in electronic literature.

With those “reflexive loops” and *Abra*’s own looping structure in mind, to embrace the call of the Expanded Artists’ Book grant and create a “born-digital” work, we could not simply provide what might be termed an “enhanced e-book”—an edition of the text with bonus features like audio and video—which would treat the tablet, and its slick surface and seemingly-invisible interface,<sup>10</sup> as a “crystal goblet”<sup>11</sup> into which the “original” text might simply be poured.<sup>12</sup> In order to conceptualize the artists’ book and iPad app together as a single “expanded” book, neither could be privileged over the other, neither treated as accessory. Our aim has been to make the two reading interfaces operate both together and separately, each a “differential text”<sup>13</sup> in *Abra*’s manifold embodiments, with neither acting as the “original” or “authoritative” edition. More readers, in fact, are likely to experience the free app than the limited-edition artists’ book or our performances of the text, given the constraints of cost, production, and distribution.

Working together with faculty at Columbia College Chicago and the CBPA, we have considered ways to animate the surface of the page that might highlight continuities between page-based and touchscreen interfaces. We sought to evoke the long history of the book’s mutating form and to situate the tablet along a continuum from clay to screen in order to remind readers that, as media archaeologist Erkki Huhtamo has noted, “[b]ooks are tactile

<sup>9</sup> See *Writing Machines* (2002) for N. Katherine Hayles’s detailed explanation of the way both print and digital “techartexts” interrogate the technologies through which they have been produced.

<sup>10</sup> As Lori Emerson notes in her excellent media-archaeological exploration *Reading Writing Interfaces* (2014), Apple’s intuitive interfaces are anything but transparent: “while interface does grant access, it also inevitably acts as a kind of magician’s cape, continually revealing (mediatic layers, bits of information, etc.) through concealing, and concealing as it reveals” (x).

<sup>11</sup> A philosophy of e-book publishing drawn from typographer Beatrice Warde’s 1932 essay “The Crystal Goblet, or Printing Should Be Invisible,” in which she suggests print should serve only to communicate ideas “from one mind to other minds” and not distract readers from the intellectual engagement that is their reason for consuming the text. Warde’s central metaphor treats text as an intoxicant to be savored with as little distraction as possible and presumes that meaning inheres in language, a situation utterly at odds with *Abra*’s textured surfaces and associative poetics. To paraphrase Marcel Duchamp, the poem’s meaning is not in the text, but in the reader.

<sup>12</sup> The metaphor of the crystal goblet comes up again in the epilogue to Loss Pequeño Glazier’s seminal study *Digital Poetics* (2002), in which he argues that innovative writing’s concern about the problematic nature of language manifests as an engagement with its materiality: “from the viewpoint of innovative practice, ‘literature’ is not a heavenly liquid drunk from a clear crystal goblet. It is the struggle with the goblet that presents the problem—its smoothness, its temperature, the way the concept of the literature is changed by being in the goblet” (171).

<sup>13</sup> A concept drawn from Marjorie Perloff’s work as a useful term for digitally-mediated works. Differential texts, she writes, “exist in different material forms, with no single version being the definitive one” (146).

objects par excellence, meant to be perused with one's fingers" (81). While our familiarity with the codex often leads us to take for granted the tactility of print, its physical embodiment fundamentally alters our reading experience through our associations with its structure (presumably linear, finite) and material (whether a disposable pulp paperback or a collectible fine press edition). Books are, as Hayles has said, "material metaphors [. . .] whose physical properties and historical usages structure our interactions with [them] in ways both obvious and subtle [. . .]. To change the physical form of the artifact is not merely to change the act of reading [. . .] but to profoundly transform the metaphoric relation of word to world" (23). *Abra*, as an expanded artists' book, seeks to foreground the history of these "material metaphors" that change the nature of what language might encompass as well as to embrace the performative nature of mediation: the juxtaposition of these materials only gains meaning through the intervention of a reader.

From cover to endsheet, the casebound artists' book<sup>14</sup> makes oblique reference to a number of periods in print history through subtle visual cues. The excessiveness of the text translates here into an aesthetic of simultaneous extravagance and minimalism: a simplicity meant to imbue the book-as-object with a sense of mystery. Its iridescent white clothbound board cover is emblazoned with a single foil-stamped word, "Abra," which serves as both title and incipit, suggesting the magical utterance (voiced silently by the reader) that activates the text. The first several spreads after the title page appear blank, but in fact contain scattered letter fragments. These bits and pieces have been printed "blind," with only transparent ink, so that the bite of the polymer plate barely registers on the paper's surface. One can feel them by running one's fingers over the page, or see them by manipulating the paper until the light hits those tiny indentations, reflecting off the kiss of ink. Illegible as language, these broken letters are meant to evoke the cuneiform printing of early tablets, whose indentations tell of business and inventory, and eventually history.

These pieces animate across the page, shuttling toward the center where they eventually converge in the book's first word, "heaving," which heaves itself into being with a spark of gold ink. Emblazoned this way, it announces a pattern of references to manuscript illumination that runs through the text. The first and last word of each stanza are printed in gold to allude to the history of decorated initials and catchwords. Midway through the book, a shimmering rainbow of color provides a gloss for a "rainbow spurting" that shoots from the body of the text (see fig. 3). Other than this bright moment, the vibrant red, green, and blue hues associated with medieval text decoration and marginalia transmute into a monochromatic color palette, with black and gray text indicating the interwoven stanzas that illuminate one another from one page to the next.

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<sup>14</sup> Conceptualized through dialogues with book artist Amy Rabas, who is currently fabricating the edition, the book's design has benefitted greatly from the input of Steve Woodall, Clif Meador, Jessica Cochran, April Sheridan, Michelle Citron, and Paul Catanese of the Department of Inter-Arts at Columbia College Chicago.



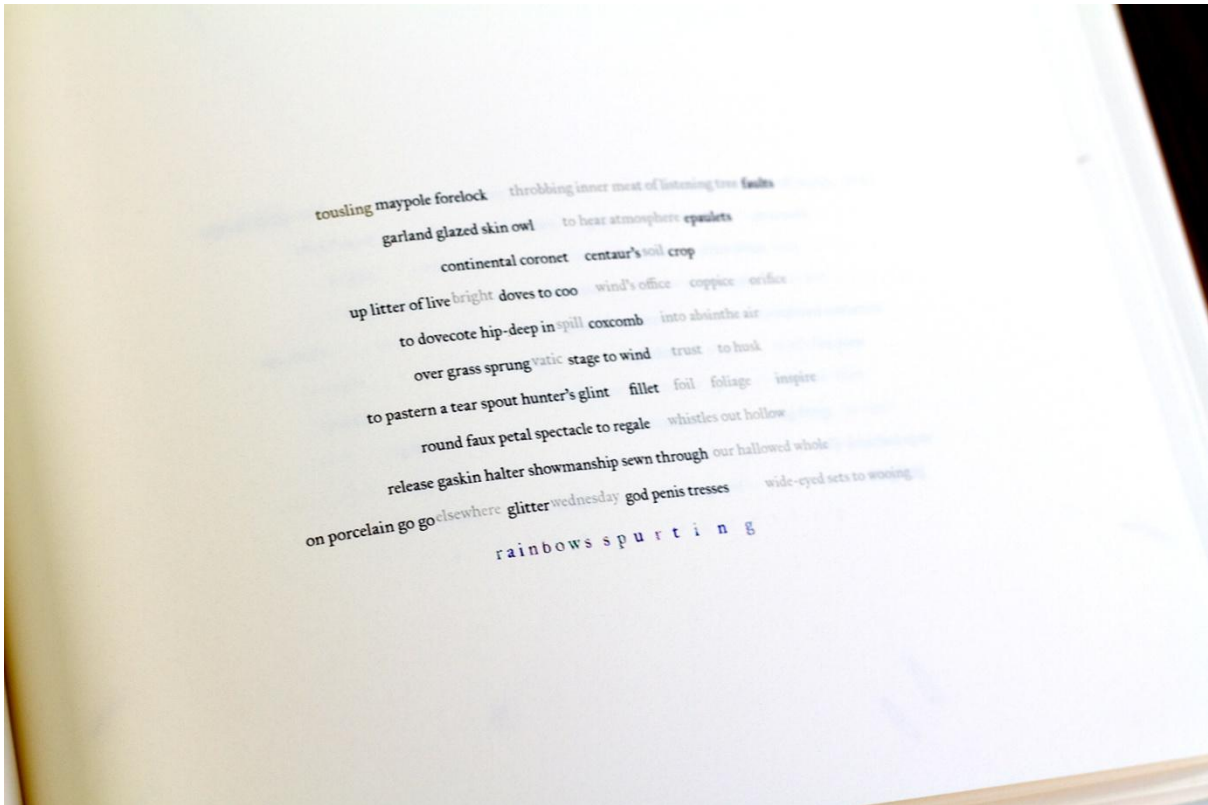


Fig. 3. Rainbow foil provides a textual gloss and glossy text.

This gray text, printed in thermochromic ink, invites an intimate connection: it disappears when warmed, so the heat of a reader's hand or breath can turn it invisible and return the text to its un-illuminated state.

That first heave also inaugurates a series of page-based animations that allude both to flip-books and digital motion: visual representations of *Abra*'s looping recursiveness. The first stanza constellates, slowly growing, phrase by phrase, as the reader turns the pages. Subsequently, the stanzas interweave as they do in the trade edition, new texts constantly populating apertures opened within each poem so that the gray and black texts can be read separately and together. As the reader gets deeper into the book, actual apertures begin to appear: laser-cut openings that allow one to see the page below, where occasionally letters and words peek through letting layers of text interpenetrate. These openings, with their gold-singed edge, have been etched by light into paper's surface, another echo of illumination's presence (see Fig. 4).

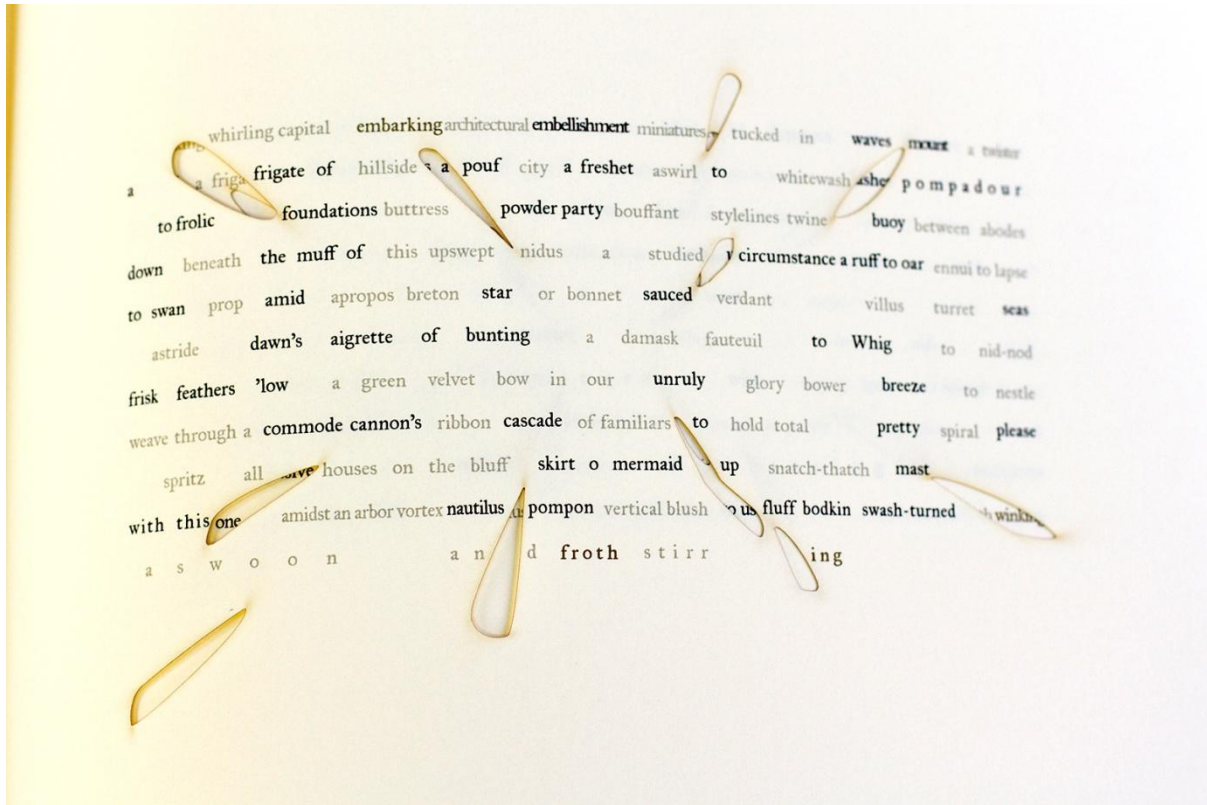


Fig. 4. Lasercut openings animate through the text.

They, too, maneuver from margins to center, coalescing into a pinprick that gradually widens, page by page, opening a window in the heart of the text that reveals another illuminated text, that of the iPad screen. Inserted into a well in the back of the book, the iPad provides both mirror and window, a shimmering black surface in which we see ourselves seeing the text. As we turn the pages, our touch bridges these surfaces, altering the text on both page and touchscreen, encouraging us to read these haptic engagements as interconnected. Rather than espousing a binary or teleological philosophy of “old” and “new” media, *Abra* acknowledges the infrathin<sup>15</sup> continuities between them.<sup>16</sup>

### “I want to reach out and grab ya”: Touching Text

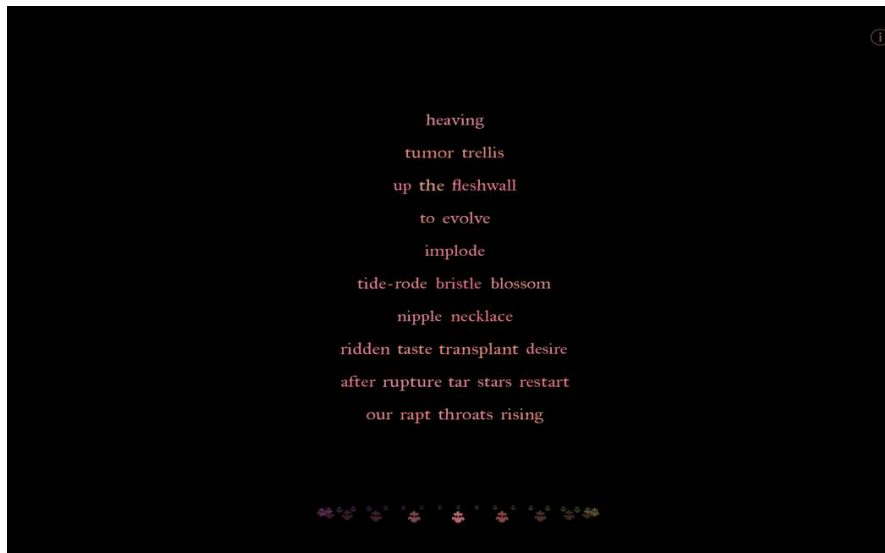
The *Abra* app is designed to function both as an element conjoined with the physical book and as an independent entity. Its clean, spare design and typography echoes that of the pages of the artists' book, but does not precisely remediate them, taking the book's oblique references as its starting point. Rather than re-inscribing the metaphor of the page into the app, we have

<sup>15</sup> While Duchamp declined to define “inframince,” examples suggest a perceptible difference between “identical” things: “just touching. While trying to place 1 plane surface / precisely on another plane surface / you pass through some infrathin moments” (45, underlining in original).

<sup>16</sup> In this way, the project takes part in a history of digitally-mediated poetry works that use gesture to draw attention to the embodied acts of both writing and reading. Media theorist Carrie Noland has pointed out the irony that “digital poetry has turned out to be a genre of computer-based writing concerned with recalling to the user's consciousness a memory of the motions required to produce letters manually on a flat support” (217). Ian Bogost's art game *Simony* (2012) stands out in this genre of projects that use print history to comment on the present moment. Designed after a late-medieval illuminated manuscript, the *Simon-style* memory game uses the value system in which these objects were embedded to explore the relationship between religious and technological worship.

created a space for the untidy activity of mutation to play out. Its black background, instead of emulating the surface of medieval parchment or vellum, allows the letters to float free of supports as they move and change. Seen through the artist's book above, the gradually mutating illuminated letterforms will, we hope, animate the printed page as well. Once confronted through the laser-cut apertures of the book, the familiar touchscreen of the iPad reflects the reader back to him or herself, creating a pro-prioceptive feedback loop that simultaneously reminds the reader of their centrality to the work and of the text's own constructed digital materiality.<sup>17</sup>

Without pages to indicate the reader's location within the book, however, a new interface had to be conceived—one that could both situate the reader and allow for ready access to any point in the text. To suggest the interlocking structure of the stanzas, we use textual coloration, which shifts in increments through a deeply saturated spectrum, evoking the colors of medieval manuscripts from scribal ink to marginalia. The first displayed stanza, a reddish-brown, gives way to one slightly more orange, which in turn yields to orange with faint yellow tones, and so on. The reader navigates among the stanzas by turning a 3-dimensional circular dial at the bottom of the screen. Composed of rainbow-hued flower cuts taken from the Fell Type ornaments,<sup>18</sup> the color of the floral motif at the dial's center corresponds with the color of the text, a clue to *Abra*'s architecture (see Fig. 5).<sup>19</sup> The dial can be turned or spun rapidly by the reader, functioning as a spatio-temporal navigation device to rapidly teleport to different positions around the text.



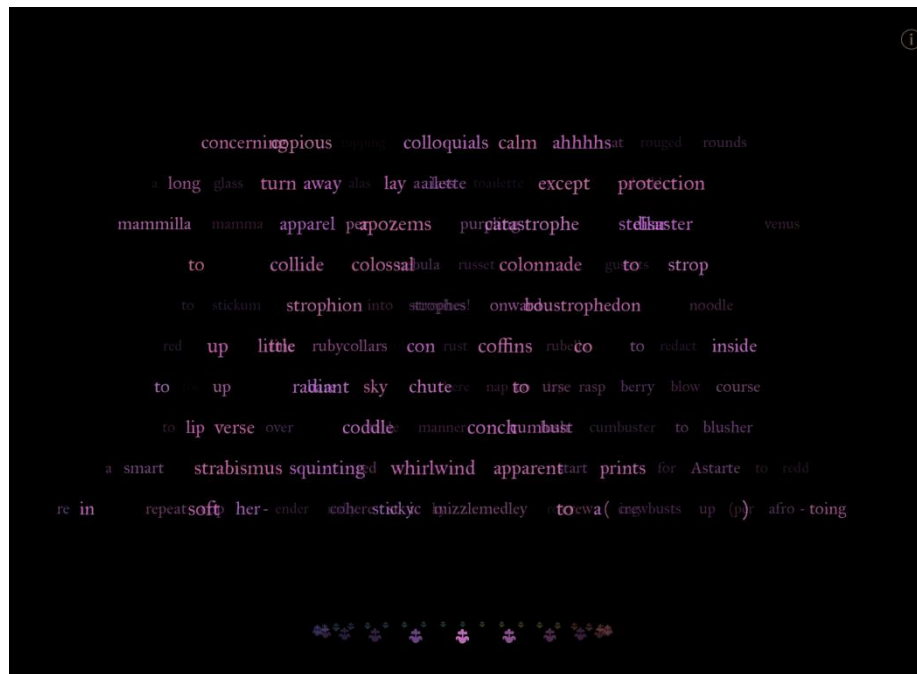
**Fig. 5.** The first poem readers encounter in the app.

<sup>17</sup> Attention to the proximal senses, Laura U. Marks suggests, can be not only an aesthetic, but an ethical position, since “embodied perception, including the experience of all the senses, acknowledges the inextricability of perceiver from perceived and the groundedness of knowledge in local experience” (128-29).

<sup>18</sup> The “Fell Types,” digitized by Italian civil engineer and typographer Igino Marini (and licensed under the SIL Open Font License), are used in both the artist's book and iPad app. The Fell types were amassed by John Fell, Bishop of Oxford and Dean of Christ Church, for the purposes of printing an Oxford edition of the Bible in the late seventeenth century. The typeface used in *Abra*, IM Fell Great Primer Pro, was cut by Peter de Walpergen, who served as Fell's personal typesetter. Oxford University Press historian Harry Carter considers the ornaments in Fell's collection some of the best extant samples of early printers' flowers, particularly those by Robert Granjon, which appear in the app: “In Fell's collection there are several examples of the stylised leaves and simple arabesques that he made early in his career to put between lines on title pages. Later he turned to making units designed for repetition to build up vignettes, headbands, and borders” (Marini).

<sup>19</sup> Due to the constraints of printing, these images are available in full color on *ABRA: A Living Text* at [www.a-b-r-a.com/gramma](http://www.a-b-r-a.com/gramma).

The texts displayed remain faithful to the print book's stanzas, but blur and animate transitions between them, enacting the helical coupling and uncoupling implicit in the text. The reader can access both the individual poems and the conjoined works between them, each turn of the dial morphing the center-aligned texts from one to the next, animating the recombinant way one stanza swallows another. When words are shared between lines across stanzas, they are kept visually intact and animated to new positions, destabilizing the delineation of stanzas as discrete units.<sup>20</sup> Words not included in the new stanza recede back into the void, as other words materialize and take their places (see Fig. 6).



**Fig. 6.** The words of one stanza animate into place while others recede.

In addition to animating the transitions between texts, the dial interface allows these stanzas to evolve to states far removed from their originals, so that affinities among widely-separated stanzas swirl into view, revealing their shared DNA.

Not only do the stanzas combine polymorphously, they are also mutable, receptive to touch. A menu at the top of the screen, released by touching a Fell fleuron in the app's upper right corner, offers readers a number of tools (or spells) for interacting with the text. In "Mutate" mode, gently tapping words or running one's finger through the text sets off a mutation that morphs it into another word or fragment from *Abra's* vocabulary. In the absence of a reader's activity, the text gradually evolves and morphs on its own, bubbling with perpetual instability. These mutations are driven by algorithms that reference lexical tables of relative symbolic similarity: the number of times a particular letter or symbol exists within a word (or partial word) relative to another word. Within this rubric, perfect anagrams are rated most similar and words with no letters in common with the target word are rated at zero. However, the algorithm also factors in word length and gives minor additional weight to potential alliteration. When a word is initially triggered to mutate, it will almost always change

<sup>20</sup> The logic for the reflow process has been written to be flexible enough to facilitate efficient transitions of any set of words to any other set of words, while keeping as many shared terms intact, and in order, as possible.

to another word of very close similarity. If the word is triggered repeatedly, though, the algorithm will gradually broaden its range of possible substitutions, yielding wilder and stranger transformations.<sup>21</sup> Color again provides a clue to the extent to which the text has been transformed: words maintain the hue of their point of origin, so mutation dapples a stanza over time (see Fig. 7).

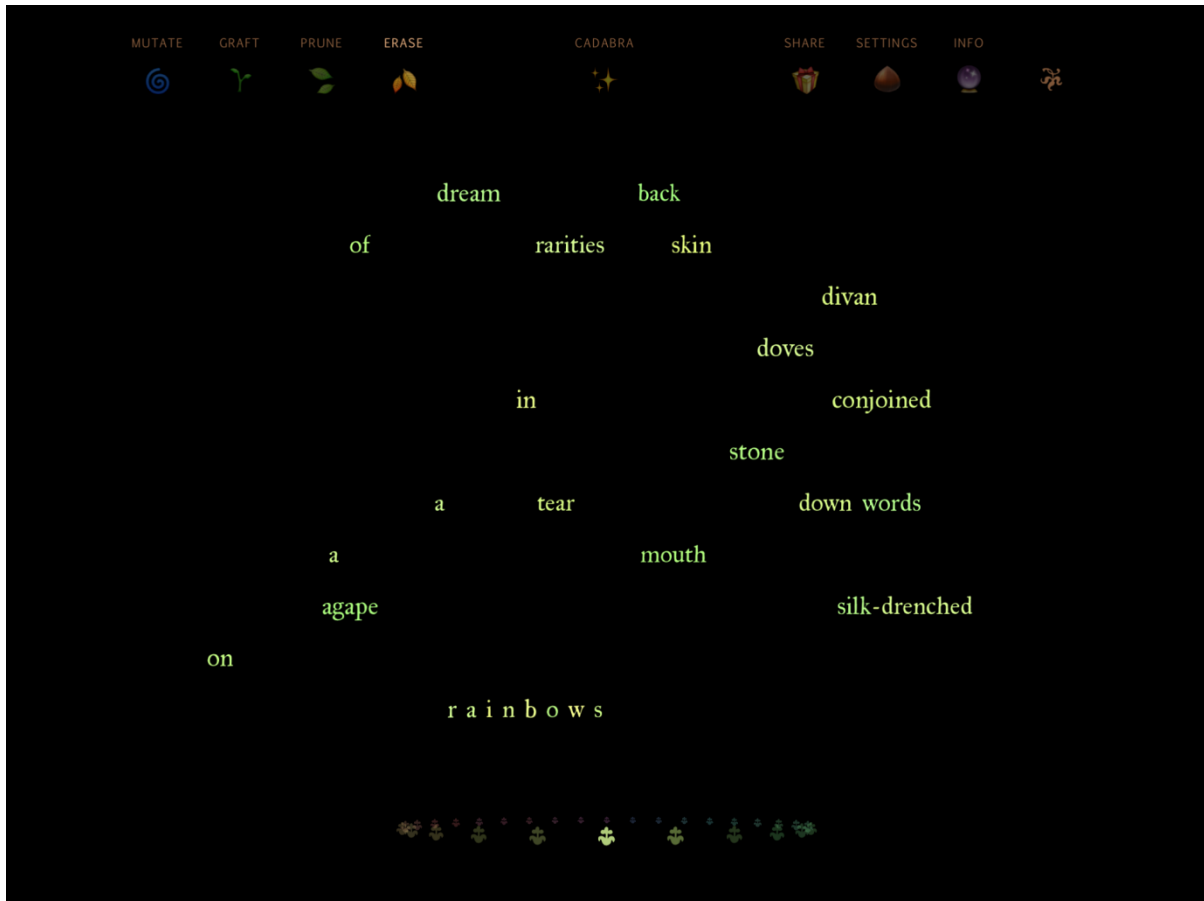


Fig. 7. A reader has altered the text through touch, which calls up language from elsewhere in *Abra*'s lexicon.

The central spell in the toolbar, “Cadabra,” introduces an element of surprise by applying one of a number of transformations to the text at random, drawing from a range of behaviors that include visual re-arrangements, animation, word transformations, and selective erasure attuned to sound and language. The unpredictable spell relies on a number of programmed algorithms dependent upon the available text—some are only triggered under specific conditions. Readers can reveal magic words within the text by pressing and holding. The resulting illuminated words each cast a Cadabra spell when held—one whose feral mutations will yield a different result each time.

In addition to these surprising behaviors, readers may take a more direct hand in shaping the text. Other spells allow them to “Prune” unwanted language from any line, slenderizing the

<sup>21</sup> The transition algorithm considers partial words and letters as distinct from whole words, primarily so that spaces are created between words as appropriate and not between individual letters or partials. The *Abra* engine recognizes hyphens, apostrophes, and other standard punctuation, and has special handling for these cases. Spaces are treated only as margins added to position calculations, not as textual units per se.

text onscreen, or “Erase” words and phrases, creating black holes within the poem. As readers shape the text, creating new phrases, images, and juxtapositions, they can save these transformations using the “Share” function, which allows them to save a screenshot or post it on social media, creating further offshoots of *Abra*'s continual growth and mutation. These generative stanzas might provide fodder for readers' own poems or simply serve as linguistic oddities to share. We hope to insert these texts into *Abra*'s material loop by using the reader-generated texts as scores for live performance. The reader can also add to *Abra*, inscribing the app with additional language. When the “Graft” icon is selected, whatever the reader types is indexed and spliced into *Abra*'s vocabulary, stored locally within the app's memory (see Fig. 8).

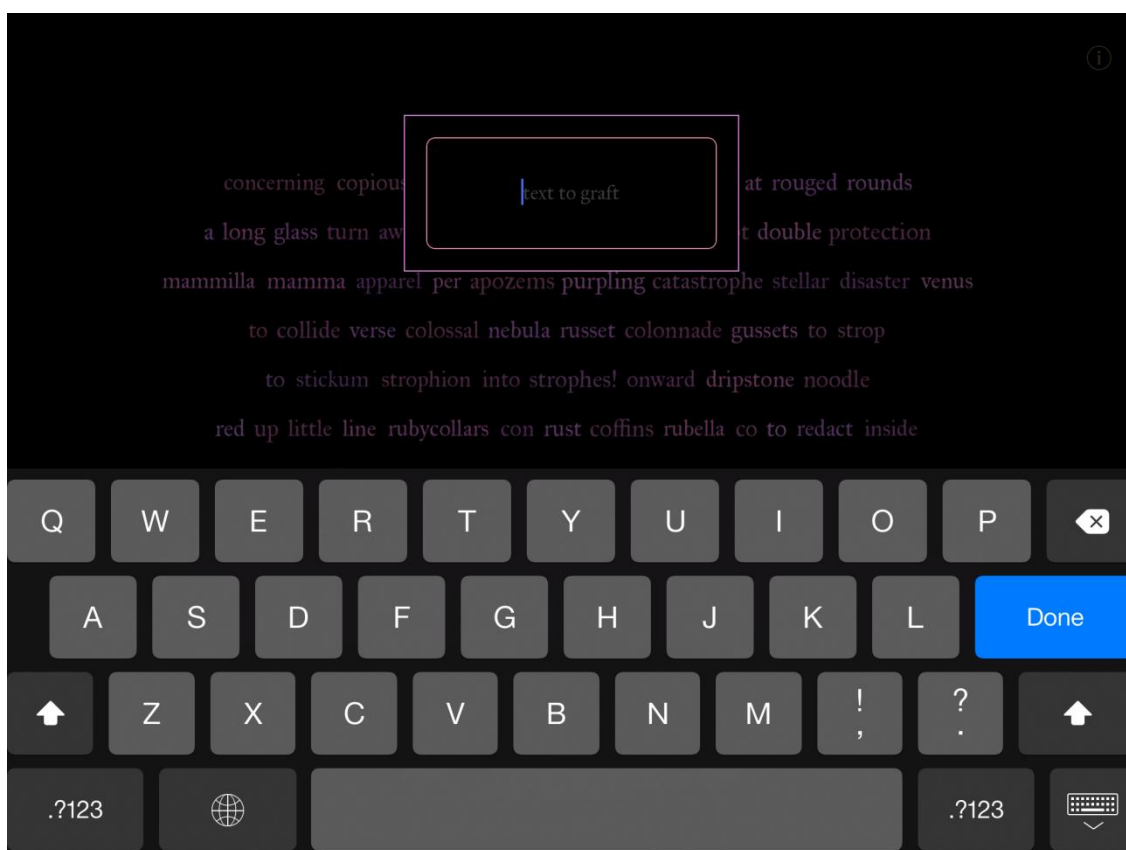


Fig. 8. Readers may alter the text by entering their own language.

Like the generative music apps developed by Brian Eno and Peter Chilvers (Trope, Bloom, Scape<sup>22</sup>), *Abra* remembers its user's additions and draws upon them when mutating on its own. Like a physical book with dog-eared pages and notes in the margins, a reader's copy of *Abra* can become increasingly personalized over time, compounded with language significant only to them. Additions to *Abra*'s lexicon can be in any language or symbolic set the reader's device is capable of handling, including emoji, which leads to some wonderfully hybrid and unexpected results. The app can mutate them in the same way it alters text, transforming these pictograms into words that are semantically resonant. We had, at one point, hoped to connect users' copies of *Abra*, mapping her networked consciousness by transmitting reader-added

<sup>22</sup> Available with the Generative Music application.



language to a central server and broadcasting selections of this language out as updates to *Abra*'s vocabulary. While technically feasible, we ultimately decided to limit that avenue of *Abra*'s omnidirectional growth due to concerns about maintaining and filtering the content over time. A reader is free to add any text to a copy of *Abra*, as purple or blue as she might desire, but facilitating cross-pollination between installations could lead to hate speech emanating unexpectedly from *Abra*'s mouth. None of us were comfortable with this prospect, nor with that of making ongoing censorial decisions about what to allow, so we have decided to limit the process to a local scope.

In addition to enabling readers to shape *Abra*, the digital environment and the constraints of Apple's tablet have both afforded and necessitated changes and revisions to the poem. The later stanzas in the book have excessively long lines—a holdover from the page-based version in which verso image and recto text grow uncontrollably, reaching across the gutter towards one another. To keep the text legible on the iPad, a few long lines have been trimmed, and horizontal and vertical spacing has been made more uniform. For the iPhone, the number of lines in each stanza has been reduced, effectively cutting each in half. Perhaps most notably, the circularity of the text, implied in print by the opening and closing word "heaving," becomes literal in the app, since the reader may spin the dial and progress from the "last" stanza back to the "first." That transformation has enabled the insertion of an extra stanza between them, expanding the connection point of the ouroboros from the doubled "heaving" of the print version to a full, dynamically heaving stanza. Whenever the reader navigates to the position between first and last heave, the text of the extra stanza generates on the fly using language pulled from either side. The stanza is thus different each time—a mutation readers may or may not notice, but one that points to the potentiality inherent in the work.

Our initial designs for the app sought to include a host of gestures—twists, swipes, spirals, and other custom shapes—much like the artist's book, which also started with a laundry list of materials and methods (including glow-in-the-dark ink, a jeweled cover, and interleaved translucent paper to create layered mutations). However, when we began showing our app-in-progress to others, we discovered problems with this approach. Implementing many possible gestures meant most would not be quickly discovered, and discerning different shapes programmatically required sustained movements with a clear trajectory, which meant immediate, tentative touch did nothing. We have found that readers almost always run their fingers over the words in a playful, exploratory way, attempting quick squiggly touches to find out how the app will react, and do not try to inscribe the surface with canonical gestures like the swipe (associated with the page-turning metaphor in e-books) or pinch-zoom. In the absence of visual indicators that these standard gestures should be employed, readers rarely think to use them and instead treat the text as a field of language. We ultimately decided to simplify the interface, rewarding exploratory touch immediately with responsiveness and animation. We like the idea of mystery and discovery, governing principles of the project, but our intent is not to make the interface so opaque as to provoke frustration. The text is, after all, a decadent exploration of lexical pleasure.

This desire for an intuitive interaction is, of course, influenced by Apple's own manual-free ethos, but it also arises out of an interest in accessibility. Since *Abra*'s text is so textured and strange, it already presents challenges to reading for narrative or meaning. The poem presents affects and images. More than anything, it conjures its conjoined speaker. In the interest of

access, we initially sought to branch *Abra*'s multifaceted identity into a cross-platform simultaneous release for Apple, Android, and web. However, technical and practical limitations have led us to focus on iOS (a stipulation of the Expanded Artists' Books grant) for its first release. Developing the app in Objective-C for iOS has allowed us to take advantage of that platform's native capabilities for highly efficient text rendering and animations, and has limited the scope and scale of bugs in the process of experimenting with design and interactivity. The process is not, however, without its drawbacks. As Apple's planned obsolescence continually reinvents the form and dimensions of the iPad, the codebase will have to be updated in response. For instance, the recent release of Apple's iPad Air, with its idiosyncratic pixel dimensions and display density, has required extensive revision of the code, which had been written with technical assumptions about the maximum display sizes the app would run on. If *Abra* is indeed ported to Android and the web, it may help to release its codebase as open source to allow other interested individuals to patch it as necessary—a closed and proprietary codebase can spell the eventual inaccessibility of software-based artworks. We still hope for cross-platform translations following the first release, but have had to let *Abra*'s other incarnations gestate for the time being. For now, the app expands the artist's book by serving as a poem, an instrument, a toy, and an environment readers can write into, creating their own texts in collaboration with *Abra*'s aesthetics and algorithms.

### **“Where it stops, nobody knows”: The “relentlessly expanding” Artist's Book**

About half way into the text of *Abra*, we come upon a poem in which bodies are adorned with candy and flowers: they “collect delectation” in ornamental language that weighs down the lines with images of “confection rumpus” and “posy blanket.” Amid the manufactured and natural delicacies, *Abra* announces a poem of “sublime rows showy soldiers carcass rapture ! sky-spurged never waning relentlessly expanding.” This melding of decadence and death has been produced non-computationally by two writers, seated side by side, sharing a plate of Zankou Chicken with pickled turnips and garlic butter. The body in the text and the bodies writing the text are certainly interconnected. On a recent reading of the app, touching these last words commutes the sense as “synapses shimmy relentlessly sinew.” Shimmying and expanding, stanza after stanza, the text asserts its desire to exceed the containers envisioned for it.

What is more surprising: that the algorithm creates a kind of sense or that the initial poem has any sense of its own? Both are surfaces to be touched that gain meaning from contact with the reader. The ekphrastic text presses for an affective reading and the reader, pressing back, works their way into this text, a tactile engagement. Theorists of the haptics of new media writing and reading refer us back to F.T. Marinetti's 1921 “Manifesto of Tactile Art,”<sup>23</sup> which proposes to supplant the supremacy of sight with touch in artistic funhouses full of different textures. The encounter with conveyor belts of touch-objects and various forms of flooring has promised “maximum spiritual and sensual pleasure to the naked feet of male and female dancers” (qtd. in Huhtamo 78). Marinetti's gesture feels contemporary to us, not because it

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<sup>23</sup> Including Huhtamo and Lindhé, both of whom emphasize F. T. Marinetti's claim that through tactilism “a visual sense is born in the fingertips.”



evokes the kinds of touch-based interaction we engage in regularly, but because it signals a changed, relational approach to art—the kind of slap in the face of public taste that is central to the work of the early twentieth-century avant-gardes. As Huhtamo astutely points out, “Tactilism, the ultimate art of the surface, is really about what is beyond it. It is the mind of the toucher” (78). Perhaps *Abra*’s differential interfaces are all connected to this search for “sensual pleasure” and for a dialogic experience with “the toucher.”

While *Abra* is not one of Jan Svankmajer’s *Conspirators of Pleasure* (1996), the text invites touch as a means of highlighting its own interface, reminding the reader that we encounter every text through an interface whose naturalization must not be taken for granted. *Abra* continues to evolve. In every iteration, the project enlarges its sphere of contact—a perpetual reaching across that also reaches out to the reader. The Expanded Artists’ Books grant from the CBPA has challenged us to consider the ways apps can themselves be construed as artists’ books and the ways artists’ books, traditionally a page-based form, can integrate digital media and methods into their structure and, in our case, content. The project makes and takes space to consider the ways materiality both shapes and gains meaning through exchange, a subject we are still beginning to understand. *Abra* will keep “spinning round and round” (“Abracadabra”) in the loops between book, app, and performance, seeking additional loops between reader and text, and pushing us to let the language mutate further from where it began: a multidimensional collaboration with language.

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