

## From Distracted to Recursive Reading: Facilitating Knowledge Transfer through Annotation Software

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### Abstract

Rather than seeing hypertext as offering only distracted reading, this paper argues that annotation software provides students with the opportunity to perform recursive reading: a process that facilitates knowledge transfer and encourages intersectional critical approaches to texts. As hypertext editions and online reading communities have proliferated, scholars have theorized that these layered, interactive modes of reading produce distracted readings of texts, especially in pedagogical contexts. With annotation software, however, researchers and students have the opportunity not just to consume these distracted readings, but to produce them. Within the classroom, annotation software assignments require a deeper psychological investment from students than simply consuming a hypertext edition. By choosing how and where to annotate a particular text, students' distributed modes of attention are re-focused on the text itself, pulling disparate threads of thought together.

You know you have to read 'between the lines' to get the most out of anything. I want to persuade you to do something equally important in the course of your reading. I want to persuade you to 'write between the lines.' Unless you do, you are not likely to do the most efficient kind of reading.  
[Adler 1940, 11]

## Distracted Reading<sup>[1]</sup>

It has become a cultural cliché to lament the dawn of the Internet age as the death of intellectual thought. One need not look far in popular media to find the myriad thinkpieces suggesting that the distractibility of youth is at an all-time high, that Google has replaced the need for memory, and that media audiences consume only clickbait rather than "real news." These (ironically) online arguments are supported by illustratively titled volumes about the evils of online reading, such as Nicholas Carr's *The Shallows: What the Internet is Doing to Our Brains* and Mark Bauerlein's *The Dumbest Generation: How the Digital Age Stupefies Young Americans and Jeopardizes the Future* [Carr 2010] [Bauerlein 2008]. According to these authors, readers who consume text exclusively or mainly online have lost the ability to concentrate on a single text from beginning to end: or in other words, they are no longer linear readers, dedicating their time and energy to the words on the page in the order they appear. Instead, these readers are hopelessly distracted by the online reading experience, as ads, embedded links, and mouse-over hovers pull their attention several directions at once, ensuring that nothing of substance enters long-term memory. In this view, supported by educational studies that demonstrate that reading online encourages selective consumption and lesser recall [Liu 2005] [Carr 2010], the Internet's incredible potential for information sharing and computing power is too easily overshadowed by the possibly more numerous possibilities for distraction and procrastination.

On the other hand, defenses of reading and intellectual thought in today's hyper-connected world have become nearly as common as their critiques. In particular, Jerome McGann argued early on that reading online, especially text enhanced with hypertext, enables radial reading rather than (or in addition to) linear reading, which "involves decoding one or more of the contexts that interpenetrate the scripted and physical text" [McGann 1991, 119]. The embedded links that direct readers to images, sources, and supplemental information, the online dictionaries that define words as they are read, and the sheer potential for directed individual research all add up to a deeper and broader reading of a text, rather than a shallower one. According to McGann, moreover, hypertext only makes manifest the fact that all texts, to greater and lesser extents, "function in a radial field" [McGann 1991, 126]. Books have never existed in a vacuum, and to some extent the linear reader who starts at the beginning of a text and reads through to the end is largely a fiction: a "linear" reader may stop to consult with a dictionary or historical source, flip to the endnotes or critical works in an edited edition, or mentally or physically compare the work at hand with any number of other related texts. In other words, linear reading is interrupted by radial thinking. A well-designed online text, by embedding all of these possibilities in a single web page, might paradoxically allow for a more continuous reading experience than a physical book that would need to be put down to acquire the same information. To a medievalist, hypertext can also function as a modernization of a long-standing practice: consider a heavily-glossed medieval Bible, in which scribes used the margins of the page to both reproduce and contribute to interpretations of the text such that on some pages the distinction between Biblical text and commentary is nearly erased. It is difficult to argue that such commentary, while undeniably distracting, is either shallow or anti-intellectual. Nor does online reading disallow or destroy more traditional linear reading practices: David Dowling describes the phenomenon of online reading groups communally reading *Moby Dick*, for example, and points to the revival of longform news articles that are no longer limited in length by the physical standards of the printed page [Dowling 2010] [Dowling 2014]. Recent studies in education also suggest that the reading comprehension gap between print and screen is closing [Cull 2011] [Eden and Eshet-Alkalai 2013]. According to this perspective, the Internet age offers new horizons of insight, knowledge, and shared intellectual work.

These defenses complicate the too-attractive binary that longform linear reading is "good," under attack, and must be recovered in online communities, while hypertext-enabled radial reading is "bad," distracted, and deliberately erodes traditional thought. Yet in the classroom, we often reproduce such assumptions unthinkingly, assigning traditional reading and writing assignments that can clash poorly with a student who is accomplishing these tasks on a phone or tablet. There is also little doubt that a student occupied with Facebook both contributes and learns less than one not so distracted. The hyperbolic clash between naysayers predicting the end of human civilization and enthusiasts pointing to a blessed new dawn faces a far more prosaic reality in the classroom: that the Internet age presents neither our salvation nor our damnation, but instead a set of tools. Hypertext and other aspects of online text can undoubtedly enhance our students' understanding by encouraging radial reading. They can also present considerable distractions, as anyone who has gone on a late-night Wikipedia binge can relate. In the classroom, then, our task is to harness the potential of hypertext without falling prey to the unproductive kind of distraction.

In order to accomplish this goal, we considered how we might encourage students to consume texts online in deliberate, scholarly ways. Many studies have already indicated that online hypertext annotations can combat the tendency towards shallow digital reading that [Carr 2010] notes in *The Shallows*. [Porter-O'Donnell 2004] demonstrates that annotated content promotes greater reading comprehension in digital contexts than the same content without such annotations. [Chen and Chen 2014] likewise report statistically significant improvements in elementary-age students' reading abilities with the use of a collaborative annotation system. The majority of these studies, however, focus on reading comprehension as the primary goal, which in the college English classroom is only the necessary first step in teaching students how to critically engage with a text. Our goal is not to have students simply understand the content of a text, but instead to teach them to see the multivalent, polyphonic possibilities in every text. We hypothesized that we could harness the same deeper reading encouraged by online annotation in order to produce what we call recursive reading: a process that goes beyond simple comprehension in order to facilitate knowledge transfer and encourage a layered and intersectional critical approach to texts.

## The Role of Recursive Reading in Knowledge Transfer

In pursuit of that aim, we considered how we accomplished one of the most basic goals of English literature classes:

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teaching students to read critically. In our methods class at our small liberal arts college, we teach our students methodologies and theories for approaching literature — such as formalism, new historicism, psychoanalytic criticism, queer theory, etc. — and we do this either overtly by calling attention to the names and histories of these practices, or implicitly through our own emphasis on certain approaches with certain texts. For instance, if we are teaching Charles Dickens' *Oliver Twist*, we might choose to engage new historicist methods by exploring the historical implications of industrialization, including background on the Poor Laws, mortality rates, and the general squalor of nineteenth-century London. Alternately, if we teach Chaucer's *Wife of Bath's Tale*, we might approach gender studies by discussing medieval conceptions of sex and gender and how both are implicated in the question of authorship.

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Immediately problematic, however, is that while we might spend a great deal of time teaching a methodological or theoretical approach in conjunction with one text, that approach seemed to disappear as soon as we moved to the next text. Students siloed their knowledge of a particular methodological approach, such that they could apply new historicism only as it pertained to Dickens or gender studies as it applied to Chaucer. What we as instructors saw as lenses a critical reader might use to interrogate *any* text became fixed to a single text, or at best a time period. The difficulty of knowledge transfer became clear: students resisted seeing these concepts as dynamic, intersecting, and malleable, instead fusing particular theories with individual texts or time periods. There was no transfer across texts, no return to prior knowledge to integrate it as we moved forward on our syllabi.

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In all fairness to our hard-working students, research shows that knowledge transfer is difficult. As the authors of the book *How Learning Works* note:

Most research has found [...] that (a) transfer occurs neither often nor automatically, and (b) the more dissimilar the learning and transfer contexts, the less likely successful transfer will occur. In other words, much as we would like them to, students often do not successfully apply relevant skills or knowledge in novel contexts. [Ambrose et al 2010, 108]

Therefore, our students' inability to read across theoretical and methodological approaches did not originate from laziness or lack of engagement, but from the need for this skill to be explicitly taught rather than assumed. In their germinal work on knowledge transfer, David Perkins and Gavriel Salomon posit that there are a range of types of transfer. One kind of transfer "involves the spontaneous, automatic transfer of highly practiced skills, with little need for reflective thinking," while the other kind of transfer requires "the explicit conscious formulation of abstraction in one situation that allows making a connection to another" [Salomon and Perkins 1989, 118]. Often referred to as low-road vs. high-road transfer, what distinguishes the two is the need for "mindful abstraction" or "deliberate, usually metacognitively guided and effortful, decontextualization of a principle." Emphasizing the need for teaching these skills, Perkins and Salomon insist that the best environment for transfer is one in which "skills of mindful attention to and management of one's own processes were taught along with the strategies themselves" [Salomon and Perkins 1989, 126].

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Turning to the role of writing in supporting knowledge transfer, in *Writing Across Contexts*, Kathleen Yancey, et. al. ask: "how we can help students develop writing knowledge and practices that they can draw upon, use, and repurpose for new writing tasks in new settings" [Yancey, Robertson, and Taczak 2014, 2]. Thinking about transfer in the writing context, Yancey et. al. suggest sequential writing assignments which emphasize return and revision in the writing process as a way of encouraging transfer. As *Writing Across Contexts* indicates, most work about knowledge transfer has considered it in the context of writing, and as a problem that can be solved with writing solutions, such as assigning drafts and multiple rounds of peer and instructor feedback. Yet as we continued to encounter difficulties with knowledge transfer while teaching literary theory, it seemed to us that the problem preexisted the writing aspect of our courses. We have all experienced the student who, when faced with commentary that requires a full revision, chooses to interpret that feedback in the least revelatory manner possible, making few to none of the necessary changes. While for some students this behavior can be linked to lack of time or interest, others with the same issue lacked neither motivation nor time. What we came to discover was that for many of these students, the problem lay not in their skills in writing, but to those in reading. These students, once they had committed their ideas to paper, ceased to regard their rough draft as *writing* – that is, in the full present progressive sense, an idea still in progress – and instead began to see it as *reading*.

No longer was it a fluid form easily changed, but instead a fixed point, more akin to one of their primary texts than their own handiwork. This mindset made it almost impossible to engage in the kind of revision that recursive writing requires. [2] Moreover, this mindset makes it incredibly difficult to learn multiple modes of theory. If, to our students, reading is a fixed point, then by reading critical race theory alongside *Othello*, it becomes impossible for students to then transfer it to *The Tempest*. In order to help solve the problem of knowledge transfer, then, we needed to think more not just about writing, but about how students read and interface with the texts we assign them.

John Bean's *Engaging Ideas* lays out that for students to become what he refers to in the research as "deep readers" they need to "claim, interact with texts [and devote] psychological energy to the task" [Bean 2011, 162]. Judith and Keith Roberts take this further, suggesting:

A good reader forms visual images to represent the content being read, connects to emotions, recalls settings and events that are similar to those presented in the reading, predicts what will happen next, asks questions, and thinks about the use of language. One of the most important steps, however, is to connect the manuscript [students] are reading with what [they] already know and to attach facts, ideas, concepts or perspectives to that known material. [Roberts and Roberts 2008, 126]

Bean, along with Roberts and Roberts, agrees that for students to read well and read deeply, they must engage and form associations with the text. Elsewhere, scholars make the overt connection between recursive processes in the writing practice and strong reading skills. The much-used anthology *Ways of Reading* suggests, "strong readers, we've said, remake what they have read to serve their own ends, putting things together, figuring out how ideas and examples relate, explaining as best they can material that is difficult or problematic...At these moments, it is hard to distinguish the act of reading from the act of writing" [Bartholomae and Petrosky 1993, 13]. For Bartholomae and Petrosky, interacting with the text fuses the process of reading and writing together. The recurring idea that reading and writing should together emphasize a process of return and connection-making suggested a method that could help us to surpass our students' particular cognitive difficulties. Furthermore, the idea of getting students to form "visual images" to represent content, as proposed by Roberts and Roberts, immediately called to mind digital tools. Echoing McGann's discussions of "radial reading" that replaces linear reading, Rosenwasser and Stephen, in *Writing Analytically*, articulate what they call recursive thinking:

Thinking is not simply linear and progressive, moving from point A to point B to point C like stops on a train. Careful thinkers are always retracing their steps, questioning their first – and second — impressions, assuming that they have missed something. All good thinking is *recursive* — that is, repeatedly going over the same ground, rethinking connections. [Rosenwasser and Stephen 2015, 60]

The recursivity scholars like Yancey saw as so crucial to writing, and Rosenwasser and Stephen to thinking, we realized was equally crucial in reading. We needed to teach our students to view reading not as a one-and-done singular act, but instead as a process of returning and rethinking. More than simply reading a text multiple times, we needed to teach them to be recursive readers, continually returning to the text (whether their own or someone else's) with new information and encountering it afresh, integrating their new knowledge with the old. If we could encourage visualization via digital tools that spurred our students to be recursive readers, we might begin to dismantle our particular problem of siloed knowledge and encourage students to transfer knowledge across contexts within our classrooms.

## Building the Annotation Module

How could digital humanities help us teach our students to read recursively? Annotation assignments seemed the obvious choice, but annotation, or text markup, is not limited to digital tools, as our epigraph suggests. Interacting with the text is a long-standing, analog literary practice, but one that we wanted to revisit for a particular set of pedagogical outcomes. We needed to use a tool that would encourage a textual interaction that was both fluid and visual and that allowed students to return to the same text again and again in order to emphasize rereading. We also wanted our

students' work to be available to the class as a whole.<sup>[3]</sup> These goals together suggested that a digital annotation tool was the solution to our pedagogical problem. Looking for options to enhance learning, we turned to Todd Bryant, Language Technology Specialist in Dickinson College's Academic Technology department.

Bryant built a local Drupal 7 site utilizing two modules, Annotation and Annotator, that allowed us to highlight and annotate text. (Code available on the Drupal community site: Annotation — <https://www.drupal.org/project/annotation> and Annotator <https://www.drupal.org/project/annotator>). A single Drupal 8 module providing the same functionality has since been created by Sai Grandhi, a Computer Science student at Dickinson College, for projects running the latest version of Drupal. (Code available on the Drupal community site: <https://www.drupal.org/sandbox/bryantt/2528442>). Our argument for using a locally hosted Drupal site over other, hosted annotation projects was long-term reliability and the advantages to having a custom-built site for our needs. Using a Drupal site meant that we could have our texts organized and in a single location as opposed to having students share multiple Google or Office 365 documents. Over time, classes at Dickinson are able to add to the site as well as utilize the work of previous students as examples of quality annotations if desired. We also maintain the ability to make sections or even individual pages of the site publicly available or private.<sup>[4]</sup> Bryant also pointed out, by hosting the site and the database ourselves, we would retain complete access to the data created by professors and students for future digital humanities projects.<sup>[5]</sup> In the end, a custom-built tool provided us with maximum flexibility when thinking about the future use of text annotation. While we crafted a highly-focused annotation project for our classrooms, the tool's uses could extend far beyond what we lay out in this essay. Additionally, by developing in open source, the tools demonstrated can be utilized by others and modified to fit new kinds of annotation projects.

Our program allows students to log in and access their class poems. Once logged in, students can add annotations by highlighting text and then typing into the text box. The resulting mouse-over annotations can be edited and multiple annotations can be overlaid on the same text. (See Figure 1 for two visualizations of a poem; one with highlighted areas and one showing mouse-over hovertext.)

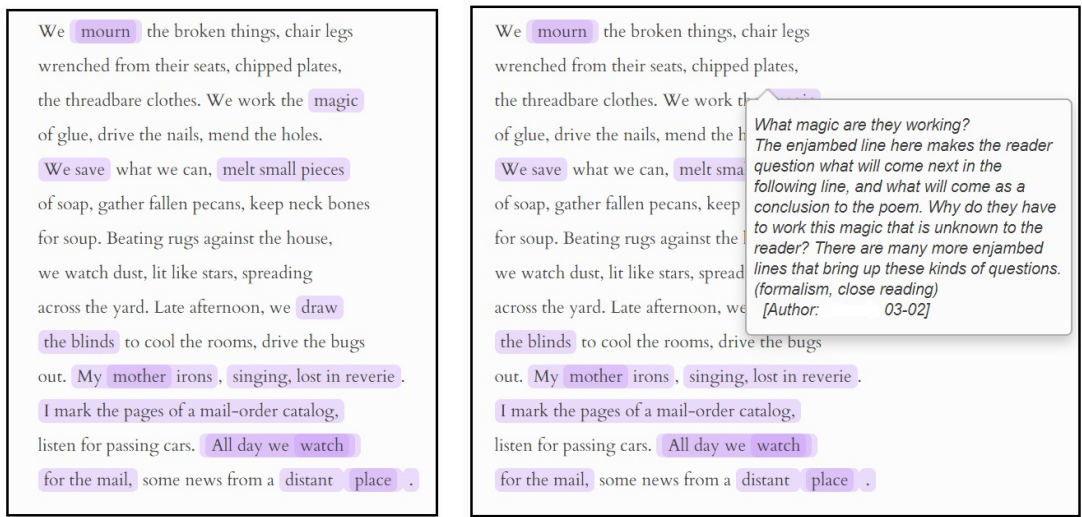


Figure 1. Sample annotation of "Housekeeping" by Natasha Trethewey

Annotation programs, however, are not new, and if building our own Drupal site had been out of the question, we could easily have turned elsewhere. Indeed, other classrooms interested in the possibilities offered by annotation software can look to places like Rap Genius (<https://rap.genius.com/>), which has created a highly-trafficked site dedicated to the annotation of all genres of text, not just song lyrics. More academic in focus, MIT's Annotation Studio (<http://www.annotationstudio.org/>) offers "a suite of collaborative web-based annotation tools" that allow users to "engage and reflect more critically upon texts instead of passively reading them." Bryant's module works similarly to Annotation Studio in that both sites are using the same tool (which is available here,

<http://annotatorjs.org/showcase.html>) to highlight text and send the annotation and its location to the server. Other annotation projects include Hypothesis (<https://web.hypothes.is/about/>) which “enable[s] sentence-level note taking or critique on top of news, blogs, scientific articles, books, terms of service, ballot initiatives, legislation and more.” Even programs such as CommentPress, a WordPress plugin, and Google docs allow users to highlight text and add annotations with comments or further questions. The practical uses of annotation assignments, then, are not restricted to those with the capability to build a custom module.<sup>[6]</sup>

## Recursive Reading in the Classroom: Examples and Outcomes

Turning to classroom deployment, each of the authors here used the annotation tool in a total of four sections of Dickinson College’s *Introduction to Literary Studies* course over the span of 2015-2017. In our course catalog, these courses are designed to:

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explore the work texts do in the world. This course examines several texts of different kinds (e.g., novel, poetry, film, comic book, play, etc.) to investigate how literary forms create meanings. It also puts texts in conversation with several of the critical theories and methodologies that shape the discipline of literary study today (e.g., Marxist theory, new historicism, formalism, gender theory, postcolonial theory, ecocriticism, etc.). This course helps students frame interpretive questions and develop their own critical practice.<sup>[7]</sup>

A foundational course set up to frame our students’ “interpretive questions” and “critical practice” over the duration of the major, *Introduction to Literary Studies* implicitly demands students learn how to utilize the knowledge of critical theories and methodologies as they apply to a variety of literary objects. This means that students will need to be able to transfer knowledge of theories and methods to new texts within our *Introduction to Literary Studies* course as well as to later courses which will build on the foundational work of the class. Using the annotation tool developed in consultation with Bryant, we created an assignment where each student chose a poem and annotated it throughout the term. The catch was that each student returned to the *same* poem again and again through the class, annotating it each time with at least two new annotations utilizing the methodology or theory we were currently studying.

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What we found over the course of the term was that students began to see how the theories and methodologies interacted, how their own highlighting and annotations overlapped and intersected, and how repeatedly annotating the poem allowed them to discover something new with each reading. This ability to return to a particular reading and visually change and augment it was a moment of reading deeply. Students read and re-read a text from many angles, viewing it through a variety of different methodological or theoretical lenses. The annotation module facilitated a digital space for students to be attentive to the language of their poem through a recursive reading process.

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Recursive reading, or returning to and annotating a single text over and over, dovetailed with our methods of writing as well. As in most classes emphasizing writing, the course requires students to return to and revise drafts of papers as they move through the class. Emphasizing reading as a process much like writing made both writing and reading recursive, and it encouraged students to approach their own drafts with the same renewed flexibility as they approached their chosen poem. Finally, part of what worked particularly well here was that each student chose a *different* poem. With a variety of poems, it meant that each student became an expert on the chosen poem.<sup>[8]</sup> At the end of a semester, students were left with a visual, layered, hypertext record of their process (and progress) in critical thinking, resulting in more nuanced integration of critical methods in their essays and in-class work.

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Practically speaking, as a result of their practice with recursive reading in the annotation module, we saw student improvement across three distinct course assignments: knowledge transfer across annotations, analytical thinking in essays, and awareness of knowledge gained in reflection essays. In the exhibits that follow, we present examples of this student success. First, the annotations themselves demonstrate examples of recursive reading and knowledge transfer across theories and methodologies. Second, we offer an example from a student essay that shows how the annotations encouraged students to see and see again, prompting internal feedback that led to deeper analytical thinking in their writing. Third, a final self-reflection essay assignment demonstrates evidence of knowledge transfer not just within our

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classes, but potentially to future classrooms and projects.

## Exhibit A: Annotations

In Skalak's class, after a four-week grounding in the literary theory of formalism, students encountered a new, more conceptual lens: structuralism. Scores on the weekly assignment plummeted, from an average of 8.3/10 to 5.5/10. This drop was not unexpected: most students have encountered formalist approaches in high school, but it is the rare secondary education that includes readings on structuralism. Their initial attempts have been overwritten through the semester-long revision process, but the feedback on one student's attempt is indicative of the whole. In the comment accompanying the student's numerical score, Skalak writes:

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You have pointed to a binary here in this line, but pointing out a binary does not make a structuralist reading. The rest of your annotation is instead formalist, focused on the tone and rhythm of the line. To think about this poem as a structuralist might, consider the following questions: does the poem construct itself around the binary opposition you notice here, or depend upon the opposition being absolute and completely opposed? Why is it significant to oppose these two? How does it affect our understanding of the poem to see these as opposites?

From Skalak's feedback, it is apparent that this student had seized upon a key vocabulary term — binary oppositions — and assumed that this sufficed to produce a structuralist reading, suggesting an insufficient understanding of how to apply the theoretical readings we had discussed in class. Unfortunately, the student misunderstood how binaries might function within a structuralist reading. In the following week, however, the class moved on to deconstruction, and once again the students faced a new theoretical lens through which to view their chosen poem. Skalak explicitly reminded the students that they could revisit previous sections of the poem, taking a look at the same lines under a different lens. Nearly half the class chose to layer their deconstruction reading directly over their structuralist reading of the previous week, with auspicious results. The student referenced above submitted these two responses:

to stop at Phoenician trading centers,  
to buy fine things,  
mother of pearl and coral, amber and  
sensual perfumes of every kind -  
as many sensual perfumes as you can  
and may you visit many Egyptian cities  
to learn and go on learning from their

Have Ithaka always in your mind.  
Your arrival there is what you are desirous  
But do not in the least hurry the journey  
Better it last for years,  
so that when you reach the island you  
rich with all you have gained on the voyage  
not expecting Ithaka to give you wealth

Ithaka gave you the marvelous journey  
Without her you would not have seen  
She hasn't anything else to give you

*Imagery - using words that connect to tactile, visual, and olfactory senses [Author: 09-15]*

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*[Structuralism] Fine Things - Mother of pearl, coral, amber, and ebony are of course all different gemstones with varying color. Pearl is pure white while coral and amber get gradually darker until ebony, which has an almost black color. This has an obvious connection to skin color. These lines are stating specifically that there are four skin tones: white, tan/pink, brown, and black. A sexual element is brought into it in the context of the next line, with the use of the word "sensual." These colors could be referring to the multiple women of varying skin tones (four tones specifically) that Odysseus slept with on his journey back to Ithaka. During the time that Odysseus would have been alive, it probably was not seen as abnormal for a man to sleep with women other than his wife if he was across seas. [Author: 12-01]*

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*[Deconstruction] Referring to*

Figure 2. Structuralist annotation of "Ithaka," by C.P. Cavafy



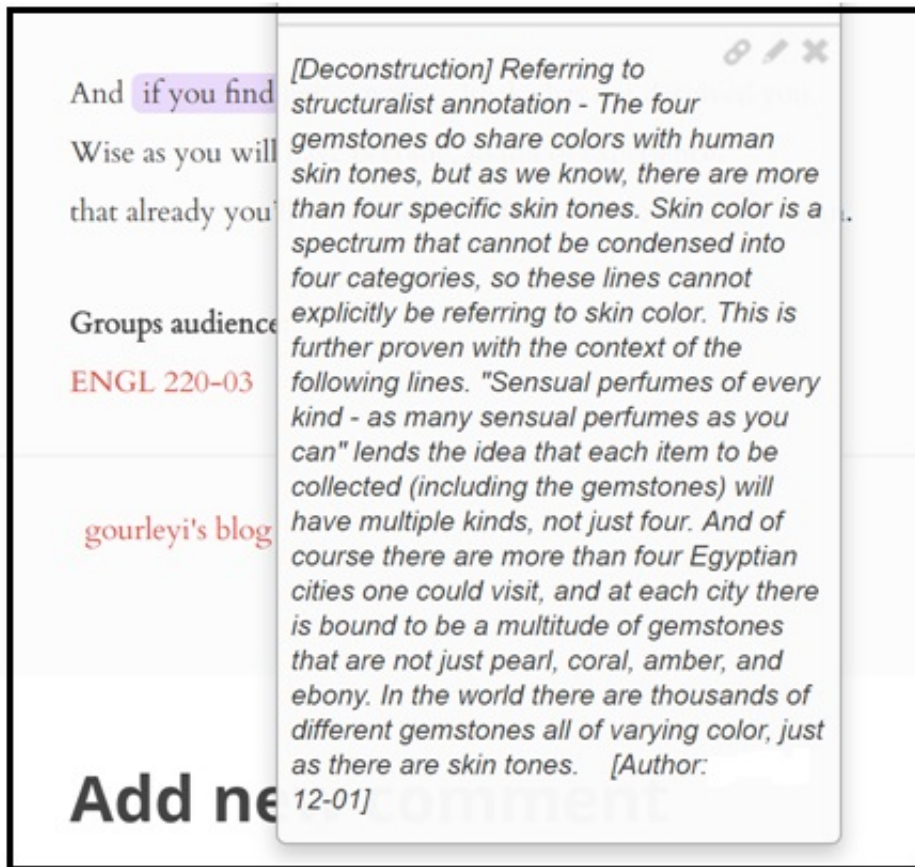


Figure 3. Layered deconstructionist annotation of "Ithaka," by C.P. Cavafy

The same student who had struggled with her first structuralist reading had now completely replaced her old annotation with two others: one structuralist, and one that directly deconstructed that first reading. Here, the student's knowledge of formalism allowed her to see the poem's connection between inanimate goods and the sensuality of female bodies, which fueled her structuralist observation that the poem creates four different categories for these goods/bodies, like the "four corners" of the globe. Her immediate re-reading of this section to reject such an easy categorization of the world demonstrates her newfound understanding of deconstruction and structuralism both. While not a perfect example of either theory, these attempts demonstrated marked improvement. Rather than leave her lackluster attempt at structuralism behind as only last week's mistake, this recursive approach to reading encouraged new, integrated learning: by reading the poem a second time, this time through the lens of deconstruction, the student also came to better understand the structuralism to which it responded. Even better, she demonstrated successful knowledge transfer within the course as the lessons of the previous week carried over into the next, building on and augmenting one another. These annotations also pointed forward to our later studies of feminism and critical race theory, and she returned to this section with great excitement in class discussion to add further nuance to her initial readings.

While Kersh's class covered a slightly different range of critical theory, evidence of transfer surfaced in annotations where students began to point out readings that were catalyzed by overlapping or intersecting methodologies. For example, one student began her reading of Alice Dunbar-Nelson's "Sonnet" by carefully trying to parse the poem's approach to love in the beginning lines, "I had not thought of violets late,/ The wild, shy kind that spring beneath your feet/ In wistful April days, when lovers mate/ And wander through the fields in raptures sweet." What started as a straight close reading of the symbolism of "violets" within the sonnet became much more nuanced as the student reader began to theorize the metaphor of violets as it related to the gender of the poet, to the time period in which it was written, and then finally to race. In the annotation assignment prompt, students were directed to label their annotations

with parenthetical or bracketed notations that identify the methodology or theory they engage (see figures above). In the “Sonnet” annotations, the student begins simply with notations such as “formalism” or “new historicism” and as the weeks progress the notations begin to reflect the intersections she has found labeling one “post-colonialism and cultural materialism” then, more comically, “cultural materialism + a bit of feminism.” While the student’s comfort with the assignment increased alongside her willingness to push the boundaries of the prompt’s requirements, what became increasingly clear was how in her own reading she found the poem impossible to interpret using a single lens. Similar to Skalak’s student analyzing “Ithaka,” the student working on Dunbar-Nelson’s *Sonnet* improved her own reading with each new annotation. Each new interaction with the poem produced not just a reconceptualization of the text, but articulated an intersection of theoretical lenses. (See Figure 4)

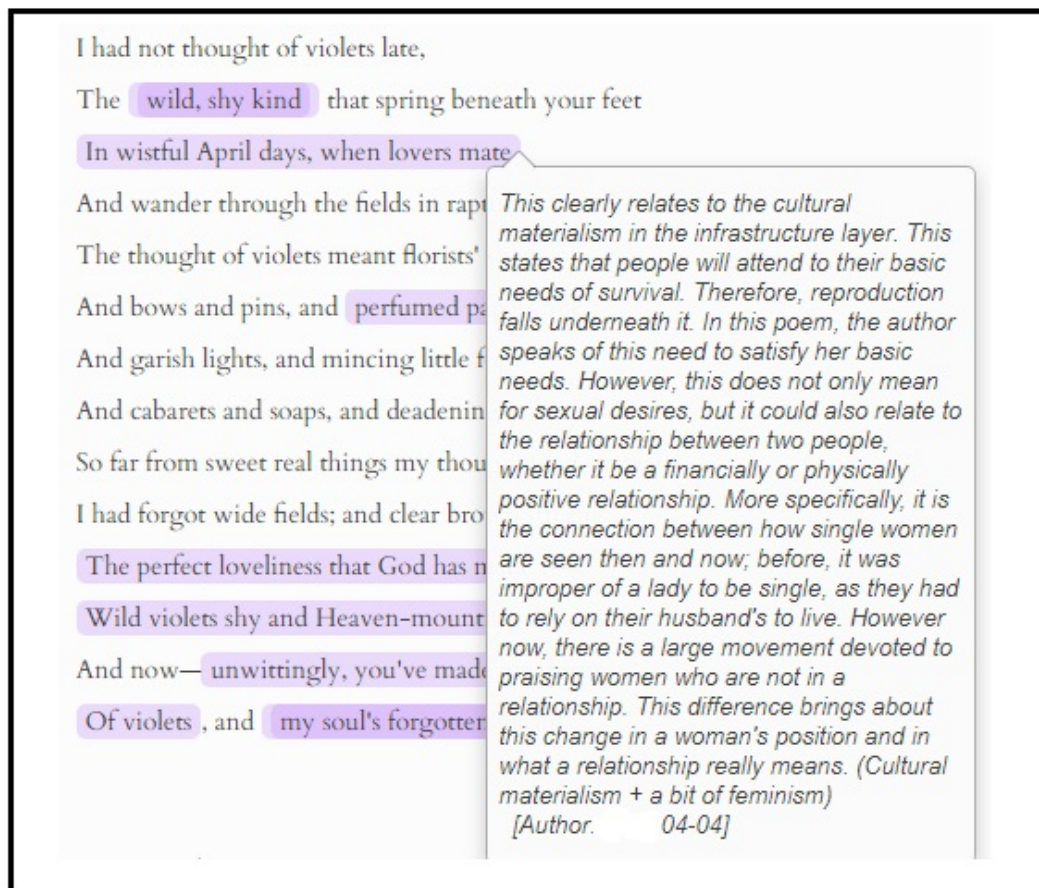


Figure 4. Intersection of theoretical lenses in “Sonnet” by Alice Dunbar-Nelson

## Exhibit B: Analytical Writing

This process of recursive reading also proved fruitful when it came to lengthier analytical essays. After several weeks of annotation practice, our classes required students to write a formalist essay on their chosen poem. Many chose to return to subjects they had first noted in their annotations. Returning to their annotations with fresh eyes, this time aimed at producing a paper-length analysis, encouraged students to expand and improve upon their initial ideas. As an example, consider the following student’s initial annotation (Figure 5) and subsequent thesis:

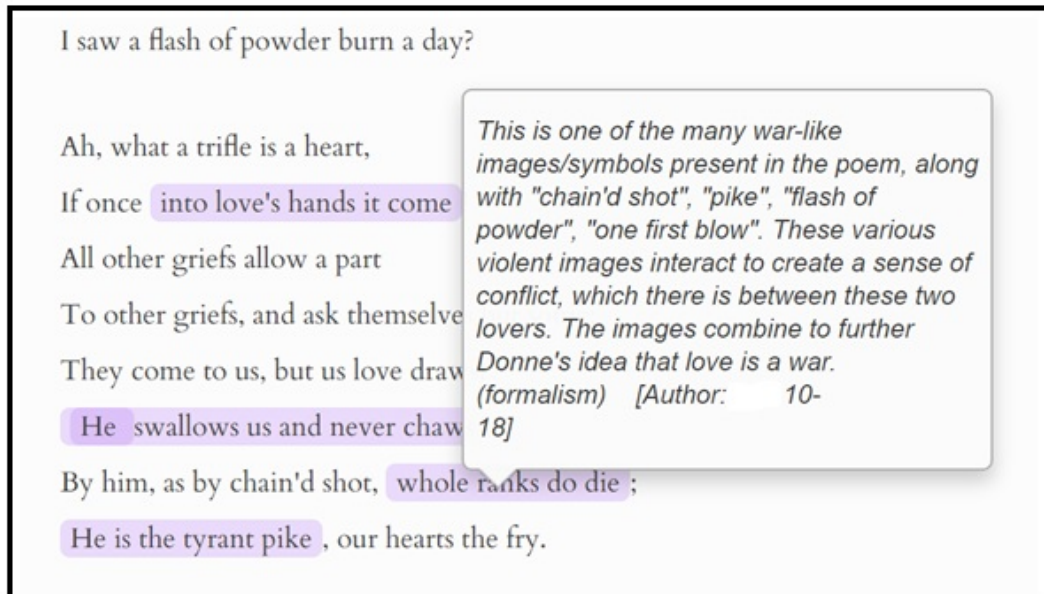


Figure 5. Screenshot of formalist annotation of "The Broken Heart," by John Donne

Through a series of startling and unexpected metaphors, John Donne makes the unusual assertion that love is, essentially, nothing but deleterious. Donne employs the use of, primarily, metaphors, to fully convey the destructive nature of love as a battle. These metaphors, paired with the overarching theme of warfare, and finally, the conceit of his heart being broken glass, effectively convey the idea that love is not what most people perceive it be; it is a damaging and harmful conflict in which no man can escape victorious. Just as war is a mentally and emotionally scarring experience, so is love.

This example may seem to present nothing especially exciting: after all, writers on the subject of pedagogy have known for years that revising old ideas leads to better writing outcomes. This is why we have all signed on to the doctrine of first drafts, second drafts, and multiple sources of targeted feedback. What makes this example worthy of note, however, is that it resulted not from peer or instructor feedback, or from a revision of a draft, but from a student re-reading the source text and independently revising his thinking. He moves from a simple observation of recurring war images to a thesis which takes into account the nuances of the poem's metaphors.

From a pedagogical perspective, this kind of independent work is the holy grail of student revision: the student engaged in meaningful revision of *his own* draft. While peer review and instructor feedback is crucial to the writing process, we also want students to see their own shortcomings and engage with internal feedback during the revision process. And, we might add, *without* overly burdening a time-strapped professor with yet another draft to grade. One may hope, of course, that students would return to re-read their primary texts and think anew on their own: but with this kind of annotation assignment, we can have better expectation that they will do so.

## Exhibit C: Student Self-Reflection

At the end of any class, we typically have two questions: first, did the students learn the class objectives? Second, can they articulate what they have learned, so as to better prepare them to transfer that knowledge forward to future classes and future assignments? Our first two sets of examples address this first concern, demonstrating how recursive reading fostered engagement with critical theory and analytical writing. There we see how students rereading and reworking a single text from a variety of lenses produced better, richer engagement with both the lens and the primary text. One way to gauge the success of this second question is to ask the students to reflect on the annotation process. In a final

assignment, Kersh's students wrote a reflection paper about the semester-long annotation assignment addressing two key components. First, they were to outline their process for annotating their chosen poem and what they learned from each annotation. Second, they were asked, "what did annotating the poem, and then writing this paper, teach you? In other words, what are you taking away from this digital poetry project after the semester?" In the first two reflections, students articulate how their process of reading changed during class, showing their own ability to engage in metacognition, or thinking about how they think:

This process, while long and at times hard to do, taught me many things. I believe it taught me how to continue to look at one piece of writing and analyze it through multiple perspectives, and get something new out of it every time. I also learned not to get frustrated when I don't understand something right away, or I don't see a clear understanding through one theory. **Sometimes it took me two or three times**, reading over the poem to see how I could interpret it or how it made sense through a new lens. I wouldn't give up, but I would teach myself how to breathe and come back to the poem with a fresh start.

**Example 1.** Student A, "Not marble nor the gilded monuments" by William Shakespeare [emphasis added]

Here, she articulates that rereading allowed her to see "something new... every time." Moreover, what is particularly compelling about this student's response is the way in which she realizes that return "two or three times" is essential to the process of reading well. Also fascinating is the way she imagines her own bodily responses as she thinks about and works through the poem. Her claim that "I would teach myself to breathe and come back to the poem with a fresh start" resonates with John Bean's imperative that students devote "energy to the tasks" of reading [Bean 2011, 162]. Moreover, she is teaching and learning from herself; developing a critical awareness of her own process.

Similar to the student working on "Not marble nor the gilded monuments," the next excerpt demonstrates the writer's awareness of his own process. This student muses about his newfound understanding of multilayered reading:

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Initially, I had been sure formalism was the most noteworthy; however, as I continued along, it became clear that analyzing one piece of diction, regardless of the depth of its meaning, is futile without context. This is why we use so many different theories and methodologies; to piece together the puzzle of the literature, to bring together every background and contextual piece of evidence we can gather [...] **one does not exist in solitude; they must both be implemented and tied together** paradoxically to fully develop one's own understanding of the piece. For me, this poem is many different things; a feminist critique, a denial of patriarchal beliefs; yet above all, its contextual background was the thing that allowed me to make these observations and view the piece through multiple lenses and theories.

**Example 2.** Student B, "How do I love thee? Let me count the ways" by Elizabeth Barrett Browning [emphasis added]

Here the student articulates an exciting discovery of how theories and methodologies intersect in a single text. Not only has he realized that methodologies and perspectives build on one another, but that multiplicity is necessary. One reading or one theoretical approach "does not exist in solitude" and instead he implies his own hard work "tied" the readings together.

Moving on to two last excerpts from the reflections, these students overtly articulate knowledge transfer. Indeed, most of our students began to see the connections across theories and methodologies as we progressed through the class, learning to apply and understand them in new contexts. In these final two examples, however, recursive reading not only opened up moments of transfer in class, but also allowed them to apply recursivity outside the classroom. The following example is written by a senior science major. This course was her first literature class in college and she reflects:

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Analyzing a work from one perspective is effective, but using many allows you to generate a composite image, a dynamic study, and a nuanced view of a single piece. As previously mentioned, the process of writing the annotations encouraged me to fully grasp and realize what each methodology meant, instead of learning them superficially for our exam. Fully realizing what this project has been and reflecting on it in this paper makes me appreciate how much I've learned from this class and how using different methodologies to examine a work can reveal new meanings. The most important thing I've accomplished with my annotations is a deeper understanding of how to analyze literature. **I think I'll leave this class with a set of tools that I can use to recognize certain things (power dynamics, the impact of the patriarchy and colonialism, the modern and historical context of a piece) in literary work and any other type of non-literature work I read.**

**Example 3.** Student C, "When I have fears that I may cease to be" by John Keats [emphasis added]

Suggesting that "new meanings" might surface when we analyze literature or "any other type of non-literature work I read" was a thrilling moment for us as teachers. The student's understanding of Keats' famous poem grew exponentially over the course, but she also recognized the applications of lenses and perspectives outside in areas outside the classroom. Echoed in another reflection piece, this newly-declared sophomore English major writes:

**This whole project taught me that not only in a literary context is there many different meanings and perspectives, but there is in life as well.** The same approach we took to developing our annotations, is the same approach everyone should take when encountering strangers or life experiences. More often than not, the real story isn't explicit or on the exterior; I learned to delve deeper into conversation with the world and understand that there are frequently many meanings to occurrences in our lives. Outside the written word, the project has taught me that when going through life it is important to understand all perspectives before we try to understand the bigger picture.

**Example 4.** Student D, "Love's Music," Philip Bourke Marston [emphasis added]

## Conclusion

With annotation software, we were able to create an assignment that explicitly taught the skill of recursive reading, encouraging our students to stay open in their approaches to the text. By layering hypertext readings on top of each other, we transformed what could have been a distraction – an annotation that pulls students away from linear reading of the poem – into an opportunity to return to the text in a new way. Students moved freely from one critical method to another, from annotation to text and back again, creating a visual picture of how literary criticism works. As the above examples demonstrate, this technique also prevented students from quarantining one lesson from the next, which led to better critical thinking and stronger papers.

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Most exhilarating, at least from our perspective, is that the comments in their final reflection papers reveal that some students have been able to make the leap to transfer their knowledge of integrated critical theory to other areas of their own lives. Students experience life through text, as conversations, media, or mentally narrating their own lives. Their responses over the course of the semester suggest that by using annotation to encourage recursive reading, our classes might be offering theoretical lenses to think about these other texts they encounter, beyond the walls of the classroom. Bell hooks ends *Teaching to Transgress* with the idea that:

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The classroom, with all its limitations, remains a location of possibility. In the field of possibility we have the opportunity to labor for freedom, to demand of ourselves and our comrades, an openness of mind and heart that allows us to face reality even as we collectively imagine ways to move beyond boundaries, to transgress. This is education as the practice of freedom. [Hooks 1994, 207]

Encouraging transfer, we think, encourages movement with "an openness of mind." We are deeply committed to the

model of liberal arts education that works hard to encourage critical thinking in all situations, in all the various texts that circulate in our world. Teaching students the skill of recursive reading using digital tools may be a small step, but it is one more along the road to move “beyond boundaries.”

## Notes

[1] We would like to extend a special thanks to our students in *Introduction to Literary Studies* for their hard work and willingness to give annotation a try. Moreover, we are so grateful to Todd Bryant, Language Technology Specialist at Dickinson College, for his expertise and time.

[2] See [Carillo 2015] for a lengthier discussion of the role of reading in composition and literature classrooms.

[3] Novak, Razzouk, and Johnson's literature review on social annotation tools further details desirable factors for annotation systems [Novak,Razzouk, and Johnson 2012].

[4] This project was approved by Dickinson College's IRB and all students directly quoted signed consent forms granting us permission to cite their work.

[5] For example, Kersh used Grandhi's module for Drupal 8 to create an online, annotated edition of the 1892 volume of poems *Sight and Song* by Michael Field. This project uses the same annotation software, but puts it to a different kind of use insofar as it allows for students to encounter a volume of poetry annotated with hypertext background, images, and citations. The module's flexibility lies particularly in its ability to be utilized in multiple ways: for instance, as a process-oriented and ongoing project (this essay), or a footnote-style augmentation of a text (*Sight and Song*).

[6] Scholars working on engaging learners with social annotations model learning systems (SAM-LS) also explore how digital tools might improve student performance [Mendenhall and Johnson 2010] [Johnson, Archibald, and Tenenbaum 2011]. While these concepts are critical to conversations about using digital tools in the classroom, our work diverges from that body of literature in that we are less interested in the social aspect of annotation. While filled with the potential to allow students to teach other students, we turned our attention to fostering critical thinking on an individual level. Students in our classes could see other annotations, but they were only responsible for their own poem. Secondly, our focus was less on reading comprehension, though we see the foundational necessity for their skill, and instead on higher-order metacognitive skills that allowed students to see dissonance and multivalency in a single text.

[7] [http://www.dickinson.edu/homepage/417/english\\_curriculum](http://www.dickinson.edu/homepage/417/english_curriculum). Our sections were capped at 15 students and the course counts as a writing intensive/writing in the discipline course for our college's graduation requirement.

[8] In both Skalak and Kersh's classes, we periodically asked students to speak aloud in class about their poems and/or their annotations. This further increased the students' expertise on their poems and connected our in-class discussions about theories and methodologies to the work they were doing in our online platform. Finally, all annotations were visible to the other members of the class, but were not publicly available.

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