"I Shall Be Telling This With a Sigh": Choice Blindness and Cognitive Processing in Frost's "The Road Not Taken"
Laurel Bollinger, University of Alabama, Huntsville

Abstract: Teaching Frost's "The Road Not Taken" requires us to encounter the conventional, sentimental reading of the poem that cannot be supported by close textual analysis. However, looking at the poem through contemporary psychological and cognitive research reveals both how the initial choice between two all-but-identical roads shifts in the speaker's memory to be so central to his self-definition, and why that sentimental reading has proven so resistant to revision.

Few major works of American literature have been as persistently misread as Robert Frost's "The Road Not Taken." Popular culture offers many instances where even the title is misremembered; as "The Road Less Traveled," the poem becomes what Lynne Marie Houston characterizes as a "Hallmark card," a "heroic celebration of individualism," rather than a text tightly embedded in the Modernist poetic tradition, as she argues it must be taught (16). For Frank Lentricchia, Frost was trying and failing to have it both ways: to reach a popular audience, Frost writes a poem steeped in the tradition of the Fireside poets; to participate in the poetic movement of his era, he simultaneously employs the modernist ironic mode. Lentricchia goes on to explain that the enduring popularity of the poem's more sentimental reading "has attested to the power of convention to withstand those who would subvert it from within" (75-6). Whether we see the poem as failed, as does Lentricchia, or as a gentle irony aimed at Edward Thomas (an indecisive ambling friend with whom Frost often walked), as Frost himself often insisted,¹ that sentimental, conventional reading dominates the poem's popular reception, even in the high school classroom. When we teach the poem at the college level, then, we are often working against multiple layers of misreadings—but misreadings that present us with the opportunity to offer students insights not only about the poem but about the process of reading itself. By relating the poem to modern psychological and cognitive research, we can shed light on what is going on both inside the poem and inside readers who refuse to see the poem Frost actually wrote. Such a fusion of humanistic and scientific work helps students see connections between scholarly endeavors that might otherwise seem unrelated.

¹ Lawrance Thomson traces this repeated claim at some length in his biography of Frost (544-548).
The standard misreading is both familiar and hard to justify on textual grounds. As a celebration of a peculiarly American brand of individualism, the poem hinges on its penultimate line: "I took the [road] less traveled by" (l. 19). As the (presumably male) traveler looks closely at two competing options (the "two roads" that "diverged in a yellow wood" [1]), he chooses the less frequented direction; the poem implicitly celebrates his difference from more conventional travelers, ultimately asserting that "that [choice] has made all the difference" (20). Countless inspirational wall hangings, graduation speeches, and Facebook images cite the last two lines, suggesting that the unconventional choice was both cause for rejoicing and central to the traveler’s subsequent life.

Yet for readers attuned to the poem’s ironic elements, other features carry more weight. Of the poem's twenty lines, for instance, five (twenty-five percent!) insist that the two roads are "really about the same" (10), "equally" untrodden in the morning light (11). By contrast, only three lines (fifteen percent) suggest any difference between the roads at all (lines 7, 8, and 19), and two of those three lines offer at best a rather hesitant assertion—being "just as fair," with at most "perhaps the better claim" to being chosen because the road "wanted wear" hardly warrants the ringing endorsement of difference made in the penultimate line (6-8, emphasis added). Indeed, that initial hesitant assessment is immediately contradicted by a sustained four-line rejection of the claim, insisting that neither road has been traveller by anyone on that particular day. Moreover, the very fact that the two options are already "roads" (and Frost vehemently objected to the title being misremembered as "two paths" [Gerber and Jewell 21]) suggests that both options have already been traveled upon extensively; the traveler is certainly not offering to break away from the masses to forge a new route (although in essence the conventional misreading seems to assume so).

Even were we to accept the premise that the two roads actually differ, the poem still resists the sentimental reading. Line 16’s "sigh" can as easily be regretful as self-satisfied, and in establishing the outcome stemming from the choice, the last line’s "all the difference" too remains scrupulously neutral. The title itself, after all, commemorates the rejected rather than the selected option, at least implying regret. It is of course possible that the speaker made a decision with incomplete information—as is so often the case!—and anticipates recognizing in retrospect the importance of the choice. But the poem cannot support the idea that the speaker reached the initial decision through careful determination of the relative merits of the two roads. That the speaker "shall be telling this" story at some point in the future (16)—"somewhere ages
and ages hence” (17)—seems largely to predict rationalization: the slight hesitation, the doubled "I" separated by a dash, suggests a speaker fumbling for an explanation, not relaying a decision already defined as of central importance to his life. So, at some point in the future, rather than accurately remembering the actual moment of selection, the speaker will invent a justification. The poem, far from celebrating the selection, anticipates the speaker deluding himself about the nature of his choice.

While the component of self-justification does not feature prominently in the conventional reading, it does represent a moment in the poem where Frost reveals insights that subsequent cognitive and psychological research confirm. In a 2005 study designed to test “the relation between intention, choice, and introspection,” psychologists Johansson, Hall, Sikström, and Olsson created a scenario that replicates something like the choice Frost envisions. The psychologists showed participants a series of photographs of female faces, and asked participants to select the face they found more attractive. Participants were then given the selected photograph and asked (after a two second delay when both faces were hidden) to explain the rationale behind their choice. However, using techniques derived from slight-of-hand magic tricks, the researchers sometimes substituted the rejected face for the selected one; as they explain,

on these trials, the outcome of the choice became the opposite of what [participants] intended. Both decision theory and common sense strongly suggest that everyone would notice such a radical change in the outcome of a choice. But on the great majority of trials, participants failed to notice the mismatch between choice and outcome, while still being prepared to offer introspective reasons for why they chose the way they thought they had. (Johansson et al, "Choice Blindness" 282)

In other words, even when faced with the photograph they had not originally selected, most participants invented justifications for their apparent choice. Researchers term the failure to detect such substitutions as "choice blindness,” and explain that "using choice blindness as a wedge, we were able to ‘get between’ the decisions of the participants and the outcomes with which they were presented. This allowed us to show, unequivocally, that normal participants may produce confabulatory reports when asked to describe the reasons behind their choices" (Johansson et al., "Failure to Detect," 118-19). The researchers found very little difference in the types of justification used when true or false choices were described (Johansson et al., "Failure to Detect," Fig. S3). As with Frost's two roads, in some cases the two pictures were selected to
be only modestly different, but even with more profound differences the researchers report the same basic test results (although the mismatch was detected somewhat more frequently). In fact, similar results have been obtained using abstract art, different jam or tea varieties, live or computer simulations of faces—in short, regardless of the specific test object, the subject response remains stable (Johansson et al, "Choice Blindness" 282). If participants did not detect the substitution, they remained fully capable of offering "introspective reasons" for a decision they had not actually made. A follow-up study in 2014 tested to see if believing they had made a specific choice influenced the participants' perceptions over a longer period of time; that is, having been (falsely) told that they found Photograph X prettier, when faced with Photograph X and Photograph Y a second time, would participants restate their original judgment or shift to select the face they were told they had chosen? Researchers found that "the participants come to prefer the face they were led to believe they liked" (Johansson et al., "Choice Blindness" 285). The very act of imagining we have made a choice seems to shape our preferences, in other words—even if we are mistaken in the belief that we made that particular choice or, by extension, even if there is no meaningful difference between the two options offered. That Frost's speaker would continue to assert his invented selection principle "ages and ages hence" seems very much in keeping with this research outcome. Unlike the test subjects, Frost's speaker presumably has not experienced a bait-and-switch with regard to the road selected, but having once made a choice between two all-but-identical options, he—like the test subjects—finds "introspective reasons" to justify the nonchoice involved, and is likely to defend his "confabulatory report" even long after the original event.

Such research clarifies two aspects internal to the poem—that the speaker's remembered justification overwrites his initial judgment (that the two roads were for all practical purposes identical transforms in his memory into a preference for one defined as "less traveled," much as the research subjects came to prefer what they had not originally chosen once they had articulated a justification for that falsified choice), and that such assessments tend to persist over time. More puzzling is the degree to which the final stanza's rigorously constructed neutrality has entered into popular consciousness as celebration. The care with which Frost evades judgment in that stanza produces something like a literary Rorschach test, and calls to mind Henry James's response to critics of The Turn of the Screw. Accused of "indecently expatiating," James insisted that readers themselves must have provided "all the particulars" because inside the novella his "values are positively all blanks" (1188). Yet the blank canvas
Frost produces has tempted generations of his readers down the sentimental road, as it were, toward an affirmation of traditional American understandings of self-determination and individuality. And here again, modern cognitive and psychological research offers explanatory insight.

Our lay understandings of the interaction between our senses and the brain tend to assume a fairly basic bottom-up path: information comes in from the senses and is interpreted by the brain. However, modern neurocognition suggests that this lay understanding is incorrect; as neurophilosopher Andy Clark puts it, "the brain is in the business of active, ongoing, input prediction and does not (even in the early sensory case) merely react to external stimuli" (7). Describing the neuron activity from the brain to the senses as often exceeding the activity moving from the senses to the brain, he goes on to explain, "All this makes the lines between perception and cognition fuzzy, perhaps even vanishing. In place of any real distinction between perception and belief we now get variable differences in the mixture of top-down and bottom-up influences . . . Believing and perceiving, although conceptually distinct, emerge as deeply mechanically intertwined" (10). He sees sensory data as really only necessary for error correction; to save what is sometimes characterized as analogous to computing bandwidth, the brain starts from its expectations and only takes sensory data into account once it detects a mismatch between the expected and the received data. Neuroscientist Gregory Hickok agrees, explaining that the brain functions primarily for predictive coding, noticing only when data does not conform to expectation; he cites research that the neural connections for top-down processing of perception (so, prediction) exceed those for bottom-up connections (processing sensory data) by something like a 10:1 ratio (230-239). Such a process preserves cognitive resources for other functions, and so, by reducing the otherwise overwhelming amount of basic data to which the brain must pay attention, makes possible much of the interpretive work we do.

While Clark's specific claim is speculative (and of course contested), work on embodied cognition has long made similar claims. Even in matters as simple as color vision, information is bidirectional, flowing from the brain to the senses rather than strictly from the senses to the brain, and as Varela et al. have argued, our color perception is tightly embedded in the expectations produced by our cultural and linguistic backgrounds (157-171). They offer as an example the blurred line where blue and green meet, which speakers of Tarahumara in northern Mexico (with one word for both colors) do not tend to perceive while English speakers (who do have words for the distinction) may even exaggerate (171). Given that human physiology does
not differ appreciably between the two groups, it becomes clear that cultural differences, and the predictive qualities those differences enact in the brain, influence what might otherwise be simply a matter of sensory perception. Other researchers argue that higher-order processing works in similar ways. Hirsh, Mar, and Peterson, working within the field of narrative psychology and responding directly to Clark's work, suggest that "the broadest and most integrative levels of an individual's knowledge system can be characterized as narrative descriptions of reality," and that such narratives "appear to function as high-level generative models of the sort that Clark describes, structuring our expectations about daily experiences and providing an organizing framework for interpreting incoming sensory information" (36). As they explain, when we encounter information that contradicts those narrative frameworks, "the cognitive system can very easily be overwhelmed by the large volume of 'error' information being carried up the neural hierarchy. . . . [R]elatively low-level errors are experienced as fairly benign while violations of one's core narratives about the world are often associated with severe forms of emotional trauma" (37). Such narrative frameworks may be personal or cultural in nature, but as they clarify, "[i]n placing these narrative structures at the top of the predictive hierarchy, an individual's cultural context is afforded a powerful influence on the top-down regulation of domain-specific knowledge structures and behavioral patterns" (37). In short, regardless of the level of complexity of the information we are processing, we are inclined to start from our expectations rather than the data itself, and such expectations emerge in large measure from our socio-cultural environment.

The application of such work to "The Road Not Taken" is clear. While at first glance the interpretation of a single poem surely does not participate in readers' "core narratives about the world," the conventional, sentimental reading of "The Road Not Taken" clearly does emerge from the poem's cultural context. The ubiquity of the poem in popular culture means that readers generally come to it already positioned within an interpretive community inclined to highlight its celebratory qualities. Within that interpretive community, the poem does indeed conform to core narratives about American exceptionalism, in that its sentimental reading

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2 It is important to acknowledge that earlier researchers may have overstated the impact of such differences; John McWhorter has recently clarified that objective studies of Russian speakers identifying variants of blue for which they do not have words show only minute differences in processing speed (a matter of milliseconds) relative to English speakers who do have such color words (9). The point need not hinge on individual words, however, nor strictly on modern variants of the Sapir-Whorf hypothesis. Brains clearly predict even where sensory data is at its simplest.
affirms something like the innovative, entrepreneurial spirit so prized in modern American culture. In that sense, the studied neutrality of the poem's final section does not signal the need for error correction, and so the brain's top-down processing pattern remains unchallenged.\(^3\) Even the misremembered title serves as additional support for such cognitive function; faced with a title that contradicts (or at least complicates) the sentimental reading, the brain apparently substitutes a title in keeping with the core narrative rather than responding to the actual words on the page—the sensory data. While researchers in a variety of disciplines have long recognized confirmation bias, here we can see evidence that such confirmation bias may emerge at a cognitive level that precedes conscious awareness. While readers can of course be brought to see the actual words on the page, and thus perhaps to appreciate the poem's neutral or more ironic interpretations, readers may not be inclined to do so without an outside influence to trigger the need for error correction.\(^4\) We may, with Lentricchia, regret the intractable quality of convention itself, but what we are seeing happening in the reception of the poem simply plays out for us at a higher-order level the very functioning of the human brain itself.

Exploring these insights in the college classroom will require different techniques depending upon the specific goals of the instructor. For a context in which the focus is largely on Frost, with this poem serving as one of perhaps several instances of his work, it may be most expedient to model close reading and then discuss the contributions of cognitive psychology and neuroscience to explicating the poem and its reception. I tend to start by asking students to describe their prior encounters with the poem, and have generally heard the sentimental interpretation as their primary exposure to its interpretation. For such students, offering the neurocognitive explanation for the poem's reception provides a nice alternative to a more dismissive response to the sentimental reading, which close reading may provoke. For contexts in which more time is available or where the intersections between science and literature will receive more sustained attention, note that the articles marked "Web" on the Works Cited page

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\(^3\) Of course, the interpretive community of scholars steeped in Modernism may tend to see the essentially neutral language as implicitly ironic. All readers, embedded in reading communities, will be inclined to misread rigorous neutrality as affirming their own biases.

\(^4\) That challenges to the sentimental interpretation of the poem may confront readers' core narratives and thus risk the emotional trauma Hirsch et al. envisioned was recently confirmed by one of my students; she attempted to explain the ironic reading of the poem to her mother—who describes the poem as her favorite—and her mother simply refused to accept the shift in interpretation the ironic reading requires.
are available outside of paywalls. While perhaps challenging for non-scientists to read, the articles are reasonably accessible and are always prefaced by abstracts. An instructor could assign one or more of the articles, or provide the abstract and perhaps some select quotations to give students a rapid understanding of the issues each raises. The concept of choice blindness in particular will require far less background information than will the work derived from neuroscience, and students will be readily able to see how the poem instantiates the insights of the research.

Teaching Frost's poem with reference to such research helps us to see the intersections between cognitive science and literary criticism, and so the ways in which the two disciplines need not function as wholly separate realms but as alternate paths—roads?—to the same insights. In addition to coming to a greater understanding of the poem's conventional reception, we can also see more clearly how our cultural conventions, as Hirsch et al. put it, "shape the cascade of cognitive operations that give rise to subjective experience" (37). In its deceptive simplicity, Frost's poem not only captures the mechanisms through which we interpret our own decisions, but also triggers the very cognitive processes that make interpretation itself possible.

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5 Search for the titles, as some articles exist both inside subscription databases and in free venues.
Works Cited


**LAUREL BOLLINGER** is Professor of English and Director of English Graduate Studies at the University of Alabama in Huntsville, where she teaches American literature. Her current research focuses on the intersections between scientific and literary explorations of embodiment.