

P A R T I I I

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THE NEW  
UNCONSCIOUS

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## CHAPTER 22

## THE NEW UNCONSCIOUS

*A Literary Guided Tour*

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IN the past decade the unconscious mind has attracted intense interest from academic psychologists and the interest has spread to philosophers and science writers as well. The so-called new unconscious is aggressively antipsychoanalytic.<sup>1</sup> A very brief definition catches the most important elements: “The cognitive unconscious includes all the mental processes that are not experienced by a person but that give rise to a person’s thoughts, choices, emotions, and behavior.”<sup>2</sup> The key here—and the key to my chapter—is these mental processes are “not experienced” by us—and because they are not, they cannot be seen directly. Whether they can be seen indirectly is a trickier question. I offer these pages as a tentative guide. I stress the tentativeness. More knowledgeable guides than I exist and will be cited in the pages that follow. More confident guides can certainly be found on every street corner of the intellectual world, and I confess to having been mesmerized by their noisy pitches. But I have found that these guides almost always have an agenda that goes well beyond an interest in science. The agenda might be to score a moral point, to intervene in some ongoing intellectual debate, to sell books, to produce better, more rational employees and citizens, to help maximize shareholder returns, or even just to get a gee-whiz effect from some fascinating and mildly counter-intuitive psychology experiment. These agendas are almost always normative. Usually such guides are well-meaning, even when they smuggle in the biases of our money-obsessed culture. But they tend to conflate scientific progress with progress in social, economic, and moral spheres of life. I am all in favor of progress in these other spheres of life—but science experiments are almost certainly not the way to achieve it. Science experiments are ends in themselves, often very messy and inconclusive ends, not some first step on the royal road to a desirable telos. For instance, it seems unlikely that even the most watertight account of human irrationality is going to do much to bring that irrationality to heel.

Several fields have claimed a stake in studying the unconscious mind: social psychology, neuroscience, cognitive science, and behavioral economics. Inside

experimental psychology, the hot fields have been subliminal perception, priming, and decision-making—specifically the study of heuristics and biases. Outside of experimental psychology, the heuristics and biases research has found an enthusiastic audience among economists and financiers: Daniel Kahneman, one of the field’s founding thinkers, won the Nobel Prize for economics despite having never formally studied or taught economics. Priming research such as the “Florida effect”—an experiment in which subjects asked to read a list of words about old people tend to walk more like old people on the way out of the room—has been widely reported, although it has proven very controversial since the results can only rarely be replicated.<sup>3</sup> Meanwhile journalists such as Malcolm Gladwell, Jonah Lehrer, and David Brooks have tried to turn the findings into guides for living and for interpreting ourselves, but their efforts have been met with (at best) skepticism.<sup>4</sup>

Popular science writing, meanwhile, has fallen in love with the idea that we are “moist robots” (the phrase is Dilbert’s) and that what we take to be our rationally derived intuitions are riddled with errors. Our seemingly transparent mental states are illusory. The smooth surface of our conscious experience can be easily fluffed and tricked. The list of titles that remind us of that seems to grow larger every day: *The Invisible Gorilla: How Our Intuitions Deceive Us*,<sup>5</sup> *How We Know What Isn’t So: The Fallibility of Human Reason in Everyday Life*,<sup>6</sup> *Brain Bugs: How the Brain’s Flaws Shape Our Lives*,<sup>7</sup> *Don’t Believe Everything You Think: The 6 Basic Mistakes We Make in Thinking*,<sup>8</sup> *You Are Not So Smart: Why You Have Too Many Friends on Facebook, Why Your Memory Is Mostly Fiction, and 46 Other Ways You’re Deluding Yourself*,<sup>9</sup> and many more. Often written by academic psychologists, these books take as their emblem the “invisible gorilla” that wanders through a game of basketball, unseen by most people who have been instructed to count the number of passes a certain team makes. (The invisible gorilla is an example of change blindness). The gorilla shows that the apparently truth-tracking bubble of our attention is riddled with blind spots—or as Daniel Kahneman puts it, that “we can be blind to the obvious, and we are also blind to our blindness.”<sup>10</sup> We hold to a powerful sense that our experience is a continuous whole and that we have unmediated access to things as they are. We believe in the smooth casing of consciousness up until the moment that the casing shatters. Experimental psychologists have gotten extremely good at conjuring scenes that give our illusions a hard shove.

Perhaps because of that success, the public voice of the new unconscious sounds markedly different—more triumphalist, more scientific, far more antiseptic—than the popular Freudianism of the 1950s and 1960s whose noirish fictions were lurid and overblown. (A brief note: not to be confused with scientific, scientism is the fantasy that science can explain everything. It can’t. Scientists are far more humble about science’s limits than are the carnival barkers who stand outside their tents.) The psychoanalytic unconscious was, writes John Kihlstrom, the psychologist who first described the cognitive unconscious in 1987, “hot and wet; it seethed with lust and anger; it was hallucinatory, primitive, and irrational. The unconscious of contemporary psychology is kinder and gentler than that and more reality bound and rational, even if it is not entirely cold and dry.”<sup>11</sup>

I am often struck by the thought that the sudden rise of the neuro-explanations scratches the same intellectual and emotional itch as other distinctly modern genres of writing—especially those that feature masterminds solving puzzles that the rest of us only dimly make out. I love reading psychology experiments the way some people love reading true crime or the way my mother used to love detective fiction—sitting on her couch, devouring book after book like popcorn. My pleasure is the same. I enter a world in which causes and effects are not what they seem. Crime fiction is like an anatomy display at the science museum. Flick a switch and limbic system goes red; flick another and the neural pathways turn green. In crime fiction, you flick a switch and every paranoid fantasy you’ve ever had turns out to be real. Your suspiciously beautiful neighbor really is Russian spy. Your emotionally secretive girlfriend is running a counterfeiting ring. Your withholding but clearly humanly pained therapist is also Tony Soprano’s therapist. And so on. Like crime fiction, psychology experiments paint a strange alternate reality in which you can see all kinds of new and meaningful connections rise to the surface. A student assistant meets you in the hall on your way to participate in what you think is an experiment on personality types. The assistant fumbles with her clipboard. She hands you her cup to hold as she takes down your details. Inside the lab you read a description of a personality and rate that personality as either cold or warm. But unbeknownst to you, your rating will be determined not by what you read in the experiment but by the temperature of the liquid in the cup that the student assistant has handed you beforehand.<sup>12</sup> Both psychology experiments and crime fiction show us a world almost exactly like our own but governed by secret principles—principles invisible to the eye. And like Freud’s case histories, they give us the delicious pleasure of the reveal. Their narrative structure follows the classic pattern “I once was blind but now I can see.”

So where does all this newfound interest in the unconscious leave literary studies? The dynamic unconscious or psychoanalytic unconscious has been so tightly woven into the history and ethos of our field that rejecting it out of hand seems both unduly hostile and perverse. Yet insofar as the new unconscious has an identity outside of psychology, it seems geared towards decision-making rather than towards the creative imagination (much less the life of the soul). “In some ways, this situation is regrettable,” writes Kihlstrom. “It seems doubtful that there will be too many novels written or too many movies made about semantic priming effects. But then again, the plot lines of both *Spellbound* and *The Manchurian Candidate* rely on implicit memory; so perhaps a nonpsychoanalytic formulation of the psychological unconscious still can be pretty interesting, even to artists, writers, and other nonpsychologists.”<sup>13</sup> In several respects he is right. Semantic priming and implicit memory are fascinating topics—and they can make for fantastic literary material (see for example the 2000 Christopher Nolan film *Memento*, a highly accurate portrayal of anterograde amnesia). Yet the new unconscious is, by its very nature, nonrepresentational. This makes it rather difficult to find obvious literary correlates. I will go into this subject in more detail in the next section. But for now I offer as an emblem of the new science this skeptical, tactful, and highly resonant passage from David Foster Wallace’s graduation speech at Kenyon College:

A huge percentage of the stuff that I tend to be automatically certain of is, it turns out, totally wrong and deluded. . . . Here's one example of the utter wrongness of something I tend to be automatically sure of: everything in my own immediate experience supports my deep belief that I am the absolute center of the universe, the realest, most vivid and important person in existence. We rarely talk about this sort of natural, basic self-centeredness, because it's so socially repulsive, but it's pretty much the same for all of us, deep down. It is our default-setting, hard-wired into our boards at birth. Think about it: There is no experience you've had that you were not at the absolute center of. The world as you experience it is right there in front of you, or behind you, to the left or right of you, on your TV, or your monitor, or whatever. Other people's thoughts and feelings have to be communicated to you somehow, but your own are so immediate, urgent, real—you get the idea. But please don't worry that I'm getting ready to preach to you about compassion or other-directedness or the so-called "virtues." This is not a matter of virtue—it's a matter of my choosing to do the work of somehow altering or getting free of my natural, hard-wired default-setting, which is to be deeply and literally self-centered, and to see and interpret everything through this lens of self.<sup>14</sup>

Most simply Wallace is describing how we stumble along inside various egoistic biases. We have a monstrously difficult time seeing beyond them or correcting for the distortions.<sup>15</sup> But we could take his words to heart in a larger sense too: they remind us to be patient and tactful in the face of this embryonic line of inquiry. The media's tendency to make heavy weather over preliminary results has grossly inflated small and tenuous findings.<sup>16</sup>

In this chapter I will take some tentative steps towards opening up the new unconscious to literary study. First though, partly to draw a contrast with the new unconscious, let me acknowledge how important the psychoanalytic unconscious has been to our field. I remember—or perhaps I only think I remember—when the unconscious was a Northwest Passage to the intellectual world. The humanities graduate students I looked up to in college were obsessed with its power. Like alchemists of old, they knew arcane techniques for hunting its subtle traces. I sat dumb and enthralled as they teased apart the manifest from the latent content in some episode in their lives. Or worked out the ratio of condensation to displacement in a dream or a poetic metaphor. Everyone wanted to understand Lacan's dense seminars. Heidegger's fierce critique of Western metaphysics hung about our shoulders like a cloak of power. The campus bar was sacred space. These graduate students wanted to know whether the unconscious was structured like a language (the answer would later turn out to be no). The ones whose families could afford it were in analysis—some for years at a time. Our professors talked openly about transference and countertransference. Everybody seemed passionately launched on an inner journey, well armed with small sharp scalpels for cutting through thick membranes of social webbing. We felt like wild experimentalists, sucking the marrow out of life.

I now see that this interest was, as the saying goes, overdetermined. Graduate students the world over match wits with their professors. All this talk of repression and symptoms was court gossip, a witty way of bringing secret motives to light. Perhaps a

better metaphor is nautical. These students were protecting themselves by squirting out an inky language—cloudy and distracting—for controlling a world in which they felt themselves to be vulnerable. Yet the defense was culturally sanctioned, even admired. In those days, humanistic psychotherapists still practiced the talking cure. The wider intellectual culture was awash in grand psychoanalytic ideas.

Devotion to psychoanalysis was only to be expected, too, because the graduate students' mentors admired it so much. Literary theorists in the twentieth century warmly embraced the notion of a robust and directing unconscious. Intellectuals of many stripes batted on the idea that we are cast about by hidden forces—forces that determine our choices, dispositions, and life stories. Most of these forces were thought to originate from within. The picture of the unconscious had been drawn largely from Freud but also from Lacan. Ever since Freud's theories began to be known, they have cast a wide net among the literati (for example the Bloomsbury group) and an even wider net among those whose writerly beat is to offer up ever more surprising explanations of social issues.

Few readers need to be told that, nowadays, psychoanalysis stands in much the same relation to academic mind science as paganism once stood to early Christianity. The new gods have built gleaming cathedrals on the ruins of the old gods' temples and the old gods have been made into the new devils. The decline of psychoanalysis is by now a familiar story. Freud called himself a scientist. Yet he shied away from evidence that might cast doubt on his theories. In fact to many doubters, psychoanalysis is a pseudoscience. In a pseudoscience, hypotheses count when they are confirmed but not when they are disconfirmed.<sup>17</sup> We now know enough about confirmation bias to recognize that Freud vaccinated his system against evidence that might disconfirm parts of it. Scientific hypotheses do not count unless they can be tested. None of Freud's particular theories have been falsified or verified. Worse, the complexity of his system, with its interlocking parts held together by hydraulic pressures, seems more like wishful model building than science. His theory seems to require inner homunculi, the id, superego, ego each pulling its own levers.<sup>18</sup>

Psychoanalysis is hardly alone committing this sin. Many science papers truck not just in confirmation bias but also in outright deceit.<sup>19</sup> Fortunately the deceivers tend to be caught quickly and brought to heel. Freud, however, actively dissuaded researchers from exploring points of view other than his own. "It may be tempting," he wrote in an essay on infantile sexuality, "to take the easy course of filling up the gaps in a patient's memory by making enquiries from the older members of the family: but I cannot advise too strongly against such a technique.... One invariably regrets having made oneself dependent on such information. At the same time confidence in the analysis is shaken and a court of appeal is set up over it. Whatever can be remembered at all will anyhow come to light in the course of further analysis."<sup>20</sup> Freud seems to have violated Pierce's fundamental maxim: "do not block the way of inquiry."<sup>21</sup>

The psychoanalytic unconscious barely seems unconscious at all. Far from being a darkly echoing cavern measureless to man, Freud's unconscious is more like a garrulous sea captain running at the mouth after a drop too much whiskey. Freud's unconscious

tells tales and spins yarns. Perhaps its stories don't entirely make sense at first. But the work of the analyst is less like diving in technical gear in three hundred feet of black water than it is like sitting the captain up in his chair and giving him a few strong slugs of coffee to help him sober up.

In Freud's vision, chains of thought are closely anchored to a fully available psychic life. Slips of the tongue, jokes, intrusive thoughts, fleeting memories, and other bits of mental static can be explained by image patterns lying just beneath the surface. Freud in fact denies any real difference between conscious and unconscious thoughts. The real difference, he says, lies in the sort of processing that mental content undergoes:

It would put an end to any misunderstandings if, when describing the various kinds of psychic acts from now on, we were to disregard whether they were conscious or unconscious and to classify and correlate them solely in terms of their relation to drives and aims, their composition, and their location in the hierarchy of psychic systems.<sup>22</sup>

Freud thought that what mattered was less whether a thought was conscious or unconscious than its place in the "hierarchy of psychic systems." Repression is a violent force, whose "essence consists in turning and keeping something away from consciousness." The action itself is harsh and controlling, like stopping an unwanted guest from trying to get into one's house: "I also have to put a permanent guard on the door that I have forbidden the guest to enter, otherwise he would force it open."<sup>23</sup> The unconscious arrives over and over again with its demands. Meanwhile Jung's unconscious is brimming with totems, living images of "archaic psychic components that have entered the individual psyche."<sup>24</sup> In both traditions, the analyst's task is to translate—to take a foreign and incoherent stream of images and give them a sort of narrative shape.

And yet, a paradox. Even though research scientists have rejected the particulars of Freud's theory, his greatest prophecies have turned out to be true. The unconscious is both a feature of our brains and far more powerful than psychoanalysis envisioned. The unconscious consists of a wide array of automatic processes and activities of which we are not and cannot become consciously aware. Our automatic processing capacities are vastly larger than the cluster of representations in consciousness. The going metaphor used to be that reason is merely the tip of the iceberg, but now the metaphor is that conscious reason is the snowball or perhaps even the snowflake perched on top of the tip of the iceberg.<sup>25</sup>

The unconscious includes all of the "internal qualities of mind that affect conscious thought and behavior, without being conscious themselves."<sup>26</sup> This means all the electrical activity generated by neurons; the baroque networks in which those neurons connect; the chemical transmitters moving across synapses; and the stew of hormones in which everything bathes. Neuroscience has started to map the contours of this hidden continent—which is really just the brain itself. The project is enormous. None of us may live long enough to see it completed. Most brain activity is unconscious. Our senses deliver around eleven million pieces of information to our brains every waking moment—of which our eyes deliver ten million. Of those eleven million pieces of



information, we are aware of roughly forty.<sup>27</sup> Exponentially more neural signals are processed from our peripheral nervous system than ever reach the threshold of conscious awareness. The degree and number of cognitive processes that run outside our conscious awareness are beyond what anybody can imagine, even the researchers who work on it all the time. We literally know not what we do.

We are probably lucky that we do not. Automatic processing is a boon to our abilities to get things done without the scourge of meddlesome thought. After all, what good does introspecting about finely tuned adaptations do for us? Evolution hasn't designed our brains so that we can tinker with them. Thinking would just muck up the works. So runs a prominent line of argument, put recently by David Eagleman:

The specialized, optimized circuitry of instinct confers all the benefits of speed and energy efficiency, but at the cost of being further away from the reach of conscious access. As a result, we have as little access to our hardwired cognitive programs as we do to our tennis serve. This situation leads to what Cosmides and Tooby call "instinct blindness": we are not able to see the instincts that are the very engines of our behavior. These programs are inaccessible to us not because they are unimportant, but because they're critical. Conscious meddling would do nothing to improve them.<sup>28</sup>

Most mental processes go on outside of conscious awareness. The inward eye cannot see them. No amount of introspecting will show us the parts of our visual system that, say, help us detect edges or the sizes of objects at a distance. But the same principle applies to most so-called higher-order mental processes as well, processes that we would almost surely take to be integral to who we are. It isn't just that consciousness is a poor and uncertain guide to the automatic brain—it is rather that consciousness has little actual contact with nonconscious brain processes. Consciousness, to paraphrase Milton's Satan, is its own space. Consciousness tells stories, giving shape and order to our experience.

One of its key tools for ordering experience is explanation, the reliable swinging pendulum of cause and effect. But explanation is its own mechanism—"the phenomenological mark of a particular kind of cognitive system," writes Alison Gopnik—our cognitive system.<sup>29</sup> Explanation may be somewhat self-enclosed, encapsulated off from other brain processes. David Hume was the first philosopher to allege this. He intuited that the metronome-like regularity of cause and effect has its own logic. Furthermore, that structure—let's call it reason—has only the flimsiest ties to the world around it. Nevertheless reason represents itself as taking an accurate compass heading. Here is how Hume puts the matter (he is discussing the question of how we know, when one billiard ball strikes another, that the second ball will not just go flying crazily off in some random direction):

The utmost effort of human reason is to reduce the principles, productive of natural phenomena, to a greater simplicity, and to resolve the many particular effects into a few general causes, by means of reasonings from analogy, experience, and observation. But as to the causes of these general causes, we should in vain attempt their discovery, nor shall we ever be able to satisfy ourselves, by any particular explication of

them. These ultimate springs and principles are totally shut up from human curiosity and enquiry.<sup>30</sup>

“These ultimate springs and principles are totally shut up from human curiosity and enquiry”: thus, in a single stroke, Hume put down the pretensions of what has come to be called System 2 (namely slow conscious deliberative rationality, as distinct from System 1, our fast heuristic-based way of taking mental shortcuts) and anticipated the main stance of cognitively inflected social psychology.<sup>31</sup>

Views like Hume’s began to be worked out systematically in the 1960s and 1970s. In a now-classic paper from 1977, Richard Nisbett and Timothy Wilson asked how well people are able say why they act as they do. Nisbett and Wilson showed that while people firmly believe that they know their own minds, their reasons for behaving or choosing can easily be manipulated by experimenters. Even when we believe we know why we have chosen something very simple, such as a certain pair of stockings laid out on a table in front of us, our choice is driven almost entirely by accidental factors such as where the stockings are placed—factors that the experimental subjects then refuse to believe could have played any part in their choice.

These sorts of effects may seem small, but the underlying principle is robust. It has guided the field of unconscious studies for thirty-five years. Essentially Hume was right: our reason gives us an account of why we act as we do, but the story it tells us is usually just that—a story. And evidence is mounting that the story comes online rather late in the deliberative process—it takes a great deal of neuronal activity to crest into a signal that we can recognize. But ever since Benjamin Libet’s famous experiments showing just how late that signal arrives, neuroscientists have debated what role consciousness plays in decision-making.<sup>32</sup> For a certain hard reductionist cadre, consciousness plays very little role in decision-making. Tom Wolfe captured this view perfectly in his parable of “the conscious little rock.” A professor at Dupont University (a fictional mash-up of Duke and Stanford) gives a lecture in which he describes an email he’s gotten from a neuroscientist:

She said, “Let’s say you pick up a rock and you throw it. And in midflight you give that rock consciousness and a rational mind. That little rock will think it has free will and will give you a highly rational account of why it has decided to take the route it’s taking.” So later on we will get to “the conscious little rock,” and you will be able to decide for yourself: “Am I really . . . merely . . . a conscious little rock?” The answer, incidentally, has implications of incalculable importance for the Homo sapiens’ conception of itself and for the history of the twenty-first century. We may have to change the name of our species to Homo Lapis Deiciecta Conscia—Man, the Conscious Thrown Stone—or, to make it simpler, as my correspondent did, “Man, the Conscious Little Rock.”<sup>33</sup>

Among neuroscientists, the “conscious little rock” view of humanity is far from universal, but it is certainly widespread. Cognitive science has never been as impressed by the inner world as have those of us who, like Ferdinand Pessoa, listen intently to the music in our soul and try to discern the hidden orchestra. By introspecting, we often

take ourselves to getting at some sort of better, truer, deeper story. Neuroscientists, however, believe that our actions are driven by factors that lie far outside of conscious awareness—social cues, inferences from our contexts, and subliminal suggestions. And by now the orchestra's handmaidens, self-reports and introspection, are widely viewed as unstable and unreliable.

So how can we humanists and inveterate introspectionists make sense of the new science of the unconscious? Here are some suggestions. They are speculative and tentative, as befits a very young field with many different growing parts and robust controversies.<sup>34</sup> I will use literary examples to illustrate them. My thesis has several parts. First, the very simplest part. The so-called new unconscious has *by definition* no ready-made phenomenology, no language in which to unfold its tales (indeed there may simply be no story to tell yet about the relationship between phenomenology and the unconscious). Its very silence stands in sharp contrast to the endlessly nattering unconscious of psychoanalysis. Its silence also challenges a longstanding humanist desire to practice the psychoanalysis of texts. Thus, insofar as humanistic study seeks to be minimally in touch with scientific knowledge, we must abandon our notions of a literate, speaking unconscious. We must do so in the face of a great deal of uncertainty about what sorts of pictures of the hidden brain might come into view. And even more, we must do so not knowing how the hidden brain gives rise to the rich phenomenology of consciousness. Some glimpses have been given of fabulous voyages into uncharted lands, but these are still hazy. For instance, the neural connection between literal and metaphorical now appears to be so tight that symbolic thought might be less a numinous realm of experience than a thin film on our physical beings. Consider just one of many studies showing how close the relationship is between psychic and physical pain. Nathan DeWall and his colleagues at the University of Kentucky have shown that regular doses of Tylenol can relieve hurt feelings from social rejection.<sup>35</sup> Evolution is thrifty and makes dual use of the neural correlates of physical and social pain. (For a fascinating take on the relationship between figurative language and neural substrates, see Ralph Savarese, "What Some Autistics Can Teach Us about Poetry: A Neurocosmopolitan Approach," chapter 19 in this volume.)

Second, the speculative part. The unconscious cannot be seen directly or even indirectly. The way to catch it is slant, by noticing how consciousness makes patterns and to try to figure out what motivates those patterns. Consciousness makes patterns but it also leaves noticeable gaps. Consciousness confabulates—it tells stories. To look for the unconscious is to try to understand what those patterns are and why they take shape. What sorts of patterns do our minds intuitively reach for and why? What motivates the stories we tell? When does the smooth surface of consciousness break down, perhaps blowing apart temporarily and then coalescing again? And finally, how do storytellers and fiction makers make use of or resist those intuitive patterns? The tricky part is this: understanding and storytelling are, of course, conscious. Thus it is doubly important not to attribute phenomenological patterns to an inherently nonphenomenological state.

Fortunately the range and spread of literary examples that can help us explore these questions is infinite. Consider the matter of consciousness as sheer confabulation. An

author, Leo Tolstoy, mocks his main character, Pierre Bezukhov, for essentially being a “conscious little rock”—for having no idea why he acts the way he does, even though a welter of reasons rush through his mind:

“It would be nice to go to Kuragin’s,” he thought. But at once he remembered the word of honor he had given Prince Andrei not to visit Kuragin. But at once, as happens with so-called characterless people, he desired so passionately to experience again that dissolute life so familiar to him, that he decided to go. And at once the thought occurred to him that the word he had given meant nothing, because before giving his word to Prince Andrei, he had also given Prince Anatole his word that he would be there; finally he thought that all these words of honor were mere conventions, with no definite meaning, especially if you considered that you might die the next day, or something so extraordinary might happen to you that there would no longer be either honor or dishonor. That sort of reasoning often came to Pierre, destroying all his decisions and suppositions. He went to Kuragin’s.<sup>36</sup>

Tolstoy sees his feckless hero as a world-class rationalizer. His desire to go to the party at Kuragin’s lead his reasons around like a mule on a string. The mule, being good natured and obliging, supports what its master tells it to do. Consciousness, Tolstoy implies, turns out to be little more than a clever way of justifying the sorts of things Pierre wants to do anyway.

Here are two brief literary glimpses into the unconscious mind. The first is from neuroscience: a visual illusion called the flash lag effect. When a flash is overlaid on a quickly moving object, we see the flash as lagging slightly behind the object. In fact the flash and the moving object never diverge—they just seem to do so because our visual system waits something like eighty milliseconds to integrate all the stimuli it perceives. (A fascinating upshot of this research is that we actually live a few microseconds in the past—and tall people live even more in the past than short people do.) Because the flash surprises us, we don’t integrate it with other stimuli so it lags behind.<sup>37</sup>

I listened to David Eagleman talk about his research into the flash lag effect in October 2012. It struck me that Milton had worked the same effect into the beginning of *Paradise Lost*, and indeed for some of the same reasons that neuroscience has gotten interested in it. Eagleman tells the story about falling off a roof when he was a boy and noticing that time seemed to slow down. That was when he started to wonder how the brain constructs time. What he discovered is that physical time and subjective time can easily come apart. Sights and sounds arrive in a syncopated fashion. Subjective time filters and smooths the stuttering mass of sensory data and binds it all up into a coherent story. The brain makes predictions about where moving objects are likely to be and retrospectively gives order to incoming stimuli. In synchronizing incoming information, the brain gives us the illusion that space and time are one continuous whole. Think of a film where the soundtrack and the images are slightly uncoupled: consciousness effectively couples them again. But clever designers of visual effects can puncture the illusion, and so Eagleman has designed elaborate experiments that involve throwing his graduate students off high towers to measure how freefalling uncouples their sense of time.

Milton designed an imaginary cosmos rather a science experiment, but some of his insights into time and space are similar to Eagleman's. For Milton, Satan is the great disrupter of time and space. In a scene from Book 1 of *Paradise Lost*, the devils are talking. One of them stops. "He scarce had ceas't when the superiour Fiend" (namely Satan) "was moving toward the shoar." Milton mixes his tenses—the past together with the durative. But then Satan turns out to be moving so quickly that language can't capture his speed and he gives off the flash lag effect, its light following behind in Satan's wake: "his ponderous shield / Ethereal temper, massy, large and round, / Behind him cast." Into this sudden breach rush a flood of similes:

the broad circumference  
Hung on his shoulders like the Moon, whose Orb  
Through Optic Glass the Tuscan Artist views  
At Ev'ning from the top of Fesole,  
Or in Valdarno, to descry new Lands,  
Rivers or Mountains in her spotty Globe.  
His Spear, to equal which the tallest Pine  
Hewn on Norwegian hills, to be the Mast  
Of some great Ammiral, were but a wand,  
He walkt with to support uneasie steps.<sup>38</sup>

Readers of Milton will know that these elaborate similes—Galileo with his telescope, a tall Norwegian pine the size of a mast but here reduced to a mere wand—are Satan-scaling machines—or to put it another way, the poet's attempts to show what Satan looks like to puny human faculties. Milton believes that poetry, particularly an epic poetry rich in similes, can best pull off this feat (similes are thus an especially Satanic mode). But the feat is inherently impossible, and so the reader hops on board a simile only to find herself slipping through trap doors (the simile makes no sense) and hidden portals into further similes, all of which are designed to put pressure on our ability to form analogies ("to compare great things to small"). Even epic poetry stumbles against Satan's size—hence Milton's almost manic need to pile on simile after simile. Satan is the unknown, that which cannot be apprehended by the puny capacities of human beings. In his presence, meaning and categories break down—a process that begins with that rather simple visual illusion, the flash lag effect.

The next example, from the world of heuristics and biases, is more ambiguous—because it is conscious, or can become so. Indeed heuristics and biases research relies on a fluid boundary between the unconscious and the conscious mind, or in their jargon, Systems 1 (the fast automatic effortless mind) and 2 (the slow effortful attentive and conscious mind). Systems 1 and 2 engage in constant crosstalk. When we learn any new skill—typing or driving, for example—the effort we put in feels enormous. We have to focus painstakingly on every part of the skill until it becomes automatic. Kahneman writes:

The division of labor between System 1 and System 2 is highly efficient: it minimizes effort and optimizes performance. The arrangement works well most of the time

because System 1 is generally very good at what it does: its models of familiar situations are accurate, its short-term predictions are usually accurate as well, and its initial reactions to challenges are swift and generally appropriate. System 1 has biases, however, systematic errors that it is prone to make in specified circumstances.<sup>39</sup>

One such bias in System 1 is the “I knew it all along” effect, otherwise known as reading the outcome of an event back into the details of its unfolding. Its official name is the “hindsight bias” and it seems to be a fairly universal feature of how we come to terms with surprising events.<sup>40</sup>

A few vignettes: my hairdresser says that she must have intuited that her husband was having an affair. Although it shocked her terribly to find out, suddenly a number of niggling little details made sense. The distant look in his eye, the furtiveness about his cell phone, the sudden need for out-of-town trips. But when he handed her his iPhone with a message from his girlfriend (an apparent accident, though of course not one), a story that could be sidestepped living forward could not be sidestepped understood backwards. The feeling flashed through her that she had known it all along.

The circus barker on the stock channel makes a 1%-style living by exploiting the hindsight bias. He puts on a big red nose and holds up an air horn and throws chairs around the set. He touts stocks in a rapid-fire patter. He stuns everyone with a wall of sound. Later on he will say, “See? My stock picks were correct,” only mentioning the ones that went up. He forgets to mention the ones that went down. The glaring eye of the Internet makes it harder for him to run away from his earlier sayings. Nonetheless his detractors find it devilishly hard to pin anything on him. He just surfs away on the information tide.

Emma Woodhouse, handsome, clever, and rich, suddenly discovers that she is in love with a man she has known since childhood. The feeling “darted through her, with the speed of an arrow.”<sup>41</sup> But rather than admit that she was wrong about what she felt before (which was hard to gauge), rather than be chastened, she quickly retells the story of how she felt to bring the story of her life into accord with how she feels now. She knew it all along.

The hindsight bias was named by Baruch Fischhoff in 1975—who also dubbed it, in this magical phrase, “creeping determinism.”<sup>42</sup> Fischhoff was a graduate student in psychology at the Hebrew University in Jerusalem, an American deeply immersed in Zionist politics. Those were heady days for the heuristics and biases crowd. Daniel Kahneman and Amos Tversky had begun an ambitious research program that—we can now say with perfect hindsight—would yield the most consequential fruit—inventing a new academic field, turning out new research agendas across the social sciences, and garnering a Nobel Prize. But well before any of that was in the works, Baruch Fischhoff needed a topic. All the talk around him was about only a few key heuristics—availability, representativeness, anchoring, and adjustment.<sup>43</sup> But really the talk was about our “sense-making heuristic.”<sup>44</sup> From his study of politics, he knew that people were much more often wise after the fact than before (“If we’re so prescient,” he remembers wondering, “why aren’t we running the world?”)<sup>45</sup> His first experiments were about politics.

He began with a simple before/after questionnaire about Nixon's visit to China, testing whether people were likely to misremember their former predictions in the light of how things turned out. Then he fictionalized several battles from the history of the British in India—battles with the Gurkas, a group of Nepalese Hindus who clashed repeatedly with the British East India Company army in the early nineteenth century. Fischhoff wrote up stories in which the Gurkas won and in which the British won, and found that people were more likely to retrospectively pick out certain features of the battles as being explanatorily salient based on the outcome.<sup>46</sup>

So what is the hindsight bias exactly? Simply put, it is the tendency to detect a pattern in light of the most recent turn of events. So for instance, if I believe that my destiny was to have been an English professor, I'm more likely to remember the parts of my childhood spent reading books than I am to recall all the years I tried to sell Goldman Sachs-style derivatives to the other children in the neighborhood. But the hindsight bias goes deeper than that. Here is Daniel Kahneman:

A general limitation of the human mind is its imperfect ability to reconstruct past states of knowledge, or beliefs that have changed. Once you adopt a new view of the world (or of any part of it), you immediately lose much of your ability to recall what you used to believe before your mind changed.<sup>47</sup>

I think he's right about this. I remember very clearly when I was a child thinking that adults didn't understand my perspective, that they imposed arbitrary and unfair rules. More importantly, I remember very explicitly pledging to myself that I would always remember how I felt then and take any child's side no matter what. But once I began to have some actual responsibility for children, I instantly broke my pledge. Try as I might I can't think my way back into the righteous child's point of view, just as I cannot think my way back into the point of view of any of the many younger versions of myself who had different values and beliefs from the ones I hold now.

Kahneman also has this cautionary tale about the social costs of hindsight bias:

Hindsight bias has pernicious effects on the evaluations of decision makers. It leads observers to assess the quality of a decision not by whether the process was sound but by whether its outcome was good or bad. Consider a low-risk surgical intervention in which an unpredictable accident occurred that caused the patient's death. The jury will be prone to believe, after the fact, that the operation was actually risky and that the doctor who ordered it should have known better. This outcome bias makes it almost impossible to evaluate a decision properly—in terms of the beliefs that were reasonable when the decision was made. Hindsight is especially unkind to decision makers who act as agents for others—physicians, financial advisers, third-base coaches, CEOs, social workers, diplomats, politicians. We are prone to blame decision makers for good decisions that worked out badly and to give them too little credit for successful moves that appear obvious only after the fact. There is a clear outcome bias. When the outcomes are bad, the clients often blame their agents for not seeing the handwriting on the wall—forgetting that it was written in invisible ink that became legible only afterward. Actions that seemed prudent in foresight can look irresponsibly negligent in hindsight."<sup>48</sup>

All this explains why if you've ever had the Schopenhauer-style intuition that the world is converging on a state where all decisions are massively processed through the guts of a bureaucracy and served up to us by the bureaucracy's fiendish agent "the committee" (though I myself have never had such an intuition), you are probably right. As Kahneman goes on to explain, the surest way to inoculate yourself against the easy-to-make but impossible-to-refute charge that you should have known it all along is to adhere to something called "standard operating procedure"—or to use less Orwellian language, groupthink:

Because adherence to standard operating procedures is difficult to second guess, decision makers who expect to have their decisions scrutinized with hindsight are driven to bureaucratic solutions—and to an extreme reluctance to take risks. As mal-practice litigation became more common, physicians changed their procedures in multiple ways: ordered more tests, referred more cases to specialists, applied conventional treatments even when they were unlikely to help. These actions protected the physicians more than they benefited the patients, creating the potential for conflicts of interest. Increased accountability is a mixed blessing. Although hindsight and the outcome bias generally foster risk aversion, they also bring undeserved rewards to irresponsible risk seekers, such as a general or an entrepreneur who took a crazy gamble and won. Leaders who have been lucky are never punished for having taken too much risk. Instead, they are believed to have had the flair and foresight to anticipate success, and the sensible people who doubted them are seen in hindsight as mediocre, timid, and weak. A few lucky gambles can crown a reckless leader with a halo of prescience and boldness.<sup>49</sup>

Our own hindsight bias is an apparently enlightened state of mind from which it is always tempting to moralize about things that other people should or should not have done. Kahneman rightly points out that "Bin Laden Determined to Strike in U.S"—the President's Daily Brief from August 6, 2001—looked like a red glaring siren of a signal a mere thirty-six days later. But at the time she received the briefing, the national security advisor could not have seen the warning as anything other than one piece of data among many.<sup>50</sup> Thus Monday morning quarterbacking, however tempting, is almost certainly misguided.

A further point: Jane Austen was having a bit of a laugh at Emma's Don Quixote-like penchant to weave her own romantic fantasies. But when Emma suddenly discovers that she loves Mr. Knightly and then reorients her past to support her new point of view, she is in fact acting rationally. For the mind makes inferences according to the best evidence it has—indeed the mind is brutally rational in all the ways it needs to be, if not rational by mathematical standards. The cognitive biases that are so easy to second-guess are almost certainly byproducts of perfectly adaptively rational cognitive strategies.<sup>51</sup> The hindsight bias is a perfect case in point. Our memories are notoriously imperfect. When we recall past events, we largely reconstruct our experience after the fact and incorporate our current knowledge into the story we tell. This means that we weight the story of our experience towards its ending. This procedure is almost perfectly rational in an evolutionary sense: after all, "Remembering the real state of affairs (e.g., whether something is true or



really happened) is generally more important than remembering what one thought about it before learning the truth.”<sup>52</sup> As our environment changes, we do better to pay closer attention to more recent developments than to maintain a perfectly accurate record of all the things we used to think.<sup>53</sup> Unfortunately for us, other people aren’t as charitable towards the evolution in our beliefs—as anybody who has even very loving siblings can testify, families don’t update our old files as quickly as we might like. Thus the unwitting tone of many of these new unconscious books verges on triumphant assertion that our brains are really idiots, that we are easily fooled. And they are right. We are easily fooled, but not so much in real time. Rather we are fooled in artificial situations—such as laboratory experiments—that slow time down and watch us think.

A final example. The English literary canon starts off with a joke about automaticity. Automaticity is one of the most sensitive topics to arise out of unconscious research. And it isn’t hard to see why: “*Automaticity* refers to control of one’s internal psychological processes by external stimuli and events in one’s immediate environment, often without knowledge or awareness of such control; automatic phenomena are usually contrasted with those processes that are consciously or intentionally put into operation.”<sup>54</sup> This definition is just understated enough to deflect the obvious discomfort: the prospect of “one’s internal psychological processes” being controlled by “external stimuli and events in one’s immediate environment, often without knowledge or awareness of such control” is the stuff of endless horror movies featuring zombies, parasites, space aliens, germs. Yet decades of social psychology research has shown us that ordinary healthy individuals can easily be controlled by external stimuli and events. These examples range from the innocuous (just pasting the blurred image of a pair of eyes over a jar where people leave money for coffee and tea will prompt a good deal more honesty) to the tragic (the instinct to coordinate with other people in a disaster turns out to have been a fatal part of the reason people didn’t leave their desks after the first plane hit the World Trade Center on 9/11).<sup>55</sup>

Geoffrey Chaucer makes automaticity into a joke. In the opening lines of *The Canterbury Tales*, spring comes, nature goes into overdrive, and small birds start to sing. Lust runs through their veins like electric sap. Once the sap hits their feathered little nervous systems, they make melodies and sleep all night with their eyes open. (How uncomfortable.) Then people long to go on pilgrimages to seek the holy blissful martyr who had helped them when they were sick. The joke rests in that tiny conjunction “then.” The people are just like the birds, only they don’t know it. The season is the reason. Religious desire is bird lust served up with a giant helping of theology.

If the pilgrims were like most other humans, they would vigorously reject the analogy. Very few humans can even entertain it. After all, the pilgrims have reasons, values, and higher motives. They are seeking the unseen, the ineffable. But the invisible is certainly a strange thing to want. At least the birds, stiff and open-eyed though they are, can find feathered partners to tread on all night. Their desires hook pretty comfortably onto the world they are in. Humans, by contrast, seem weirdly misaligned. They want something they cannot see or touch, such as a long-dead martyr. Instead of running straight to their goal, they gather together in a group and set off on a meandering journey. What’s worse,

they tell stories. Many of the stories are about sex. A few of the pilgrims are drunk. Others are uncooperative. From time to time, they pick on each other—one drunken fellow even tells another that he wishes he could rip off his balls and stuff them in a barrel of pig shit.

When I was first teaching Chaucer I used to think that this kind of joke, which will be repeated again and again throughout English literature, was an instance of the sort of satire at which British writers excel. Satire rubs our noses in our animal nature. Not only are we animas but we are animals who don't seem to fit as neatly into our ecological niche as other animals do. But I now think that the questions about automaticity are not merely snarky play, though satire may serve as a defense. English writers strike me as genuinely posing questions about how much free will we have, how much of our behavior is determined by our circumstances, and whether character is fixed or malleable. Questions, in short, about our own individuality and its relation to our circumstances.

One of the sweetest and saddest moments in *Paradise Lost* is when Satan finds himself becoming good almost by accident. He sets off to encounter Eve, who is working alone. When he sees her, he is so overwhelmed by her beauty that he goes into a kind of trance:

That space the Evil one abstracted stood  
From his own evil, and for the time remaind  
Stupidly good, of enmitie disarm'd,  
Of guile, of hate, of envie, of revenge.

Of course however good Satan might stupidly be, he is in fact not a character but a personification—hence he can never move too far from the line of his own evil.

But the hot Hell that alwayes in him burnes,  
Though in mid Heav'n, soon ended his delight,  
And tortures him now more, the more he sees  
Of pleasure not for him ordain'd: then soon  
Fierce hate he recollects, and all his thoughts  
Of mischief, gratulating, thus excites.<sup>56</sup>

How far are we able to move from our own line? How much of a role do we play in our own choices? Literature, it turns out in hindsight, got there first.

## NOTES

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