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Useful Fictions

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Frontiers of Narrative

SERIES EDITOR

David Herman,

Ohio State University

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MICHAEL AUSTIN

Useful Fictions

Evolution, Anxiety, and the Origins of Literature

University of Nebraska Press
Lincoln and London

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To write at all is to exploit both the patience and the intelligence of one's friends. A book like this one—which forced its author to acquire familiarity with several disciplines not his own—required even more exploitation than usual. The first inklings of an idea for this book came in 2005, during an honors seminar on human nature that I taught in collaboration with two other Shepherd University professors: Larry Daily from the Department of Psychology and Tom Patterson from the Department of Sociology. Throughout this course, Larry introduced me to the basics of evolutionary psychology, and Tom made sure that I understood why everything about it was totally wrong. Both improved my own thinking immeasurably.

During the 2006–2007 school year, Larry continued to mentor me and many other faculty members in a monthly discussion group entitled "Evolution, Cognition, and Culture." Other members of this group included Laura Renninger, Peter Vila, Don Patchel, Heidi Dobish, Ruth Conley, John Sheridan, Laura Robertson, and Mike Raubertas. The year that we spent reading and discussing work from across the disciplines provided the background information that was necessary for me even to think about writing this book. My thanks go to each of them and to one other colleague from Shepherd—Dr. Burt Lidgerding, Dean of Math and Science and Professor of Biology—who answered a daily stream of "Darwin questions" during the entire time that I was writing *Useful Fictions*.

When I first ventured into the somewhat murky waters of cognitive literary studies, I found several extremely welcoming hands already extended. The first of these belonged to Lisa Zunshine, who has not only written several major books in the field, but who also provided me with constant encouragement, support, and, perhaps most importantly, reading lists as I was beginning work on this project. Lisa read and helped me

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revise several of the early chapters of *Useful Fictions* and introduced me to other people whose support has been invaluable. Nancy Easterlin also read several chapters and invited me to be on an "Evolution and Literature" panel that she organized at a joint conference of the Popular Culture Association and the American Culture Association. Kathryn Duncan, another participant in that panel, has over the years stimulated my thinking about evolution and literature through her thoughtful writing and intelligent conversation on topics that we were both exploring.

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INTRODUCTION: *The Big Question*

Almost all of the phenomena that are central to the humanities are puzzling anomalies from an evolutionary perspective. Chief among these are the human attraction to fictional experience (in all media and genres) and other products of the imagination.

—John Tooby and Leda Cosmides, "Does Beauty Build Adapted Minds?"

The Big Question

Here are some of the questions that this book will try to answer: Why do stories with sad endings make us cry? Why do we like scary movies but not scary situations in real life? How is it that we can think of a fictional character as a "friend" whose triumphs thrill us and whose misfortunes cause us pain? Why will we continue to watch a movie or television show that we don't really like just to see how it turns out? Why can a single summer blockbuster movie earn more than a billion dollars in worldwide box-office receipts and licensing fees? Why, in other words, do we like stories so much—especially fictional ones? That is the big question.

On one level, of course, the big question has an easy answer: we like stories because they give us pleasure. But this doesn't really settle the matter; it just pushes it back to another level. Pleasure is a bribe for us to engage in activities likely to enhance our chances for survival and reproduction. Most of the things that give us pleasure—food, sex, playing with our children, the feeling of satisfaction that comes with solving a difficult problem—are so clearly related to our genetic fitness that there is no need to analyze them further. Some kinds of stories, too, have a clear evolutionary value, such as the narratives that we use to communicate accurate information. As Brian Boyd explains in *On the Origins of Stories*, it is easy to understand the evolutionary advantage

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of *true* stories, since human beings depend on reliable information for almost everything that they do. "But the more we gain from sharing the information in true stories, the less need we would seem to have for the false information of fiction."[1]

This is not a trivial problem. Some form of literature or oral storytelling plays an important role in every human culture. We devote enormous resources to the pursuit of fictional information—books, movies, television programs, interactive video games, and just sitting on the front porch bragging about things we have never done—that have no obvious impact on our survival or reproduction. Daniel Dennett writes in *Freedom Evolves* that "any phenomenon that apparently exceeds the functional cries out for explanation. We don't marvel at a creature doggedly grubbing in the earth with its nose for we figure it is seeking its food; if, however, it regularly interrupts its rooting with somersaults, we want to know why."[2] Given the enormous effort required to compose something like *Remembrance of Things Past*—whose author died young without contributing a single gene to the pool—evolutionists might be forgiven for seeing literature as the cognitive equivalent of a pig doing backflips.

Over the last few years, scholars in both literature and cognitive psychology have proposed a number of ingenious answers to the big question. I will summarize a number of these answers in Chapter One and will draw heavily on several of them for the remainder of the book. But since it is a big question it has room for many answers. My own answer to the question relies on the concept of "useful fictions"—a fairly common concept in philosophical discussions whose meaning must be tweaked just a bit before we can use it in a discussion of the evolutionary origins of literature.

The word "useful" will require only modest tweaking. We are used to defining usefulness in reference to ourselves. Something is useful to the extent that it helps us achieve our goals, which usually involve being wealthy, happy, healthy, popular, or the like. In evolutionary terms, however, something is useful only to the extent that it helps an organism pass its genes on to other organisms. Nothing else matters. Natural selection did not design us to be happy, and it doesn't care whether or not we are emotionally fulfilled. It operates through a strict, methodical, and very simple set of rules: 1) organisms that survive and reproduce

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leave copies of their genes behind—including copies of whatever genes constructed the physical or mental characteristics that helped them survive and reproduce; 2) organisms that do not survive long enough to reproduce leave no copies of their genes behind; so 3) over long periods of time, genes that help organisms to survive and reproduce will tend to dominate within a population. These are the terms upon which I will base my judgments about what makes a fiction useful.

The word "fiction" is more problematic, as it has several distinct connotations that are relevant to this study. Literary critics often try to limit the definition of the term to something like, in Dorrit Cohn's words, "a literary nonreferential narrative text." As Cohn notes, however, at least four other uses of the word have crept into literary discussions: "fiction as untruth, fiction as conceptual abstraction, fiction as in (all) literature, and fiction as (all) narrative."[3] For Cohn, these are all distractions that divert our attention away from the kinds of fictional texts that literary critics ought to be criticizing. For the most part, I agree with this sentiment. I am not interested in contributing to what Marie-Laure Ryan characterizes as the postmodern "destabilization of the borderline between fiction and nonfiction."[4] I have no desire to show that what we call "fact" is just another species of fiction, nor do I believe that we can only have access to factual discourse through the narrative tools of the fabulist. Truth with a capital "T" can rest safely for the remainder of this book.

In attempting to trace the possible evolutionary basis of our attraction to literary fictions, however, I do not limit my discussion of "fiction" to the self-consciously made-up stories that Cohn sees as the most legitimate object of literary study. This kind of fiction developed too recently to be the subject of the kind of evolutionary analysis that I am proposing. In my attempt to understand how such fictions became attractive to human beings, I will need to consider at least two of Cohn's alternate and competing definitions of the term: 1) fiction as untruth, and 2) fiction as conceptual abstraction. I incorporate these other definitions, not to advance a specific understanding of what fiction should mean in a literary sense, but to address issues of counterfactuality and adaptation that are crucial to the evolutionary argument that I am making.

Some of the most elemental fictions that I will examine are examples of Cohn's first definition, fiction as untruth—or to revise slightly, fiction

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as non-fact. This definition, which still retains great semantic force in set phrases such as "pure fiction" or "fact verses fiction," bears directly on a central question of this book: "why did natural selection—with its well-documented tendency to reward the use of factual information—design creatures who are universally attracted to non-facts?" All kinds of non-facts are relevant to this line of inquiry—mistaken beliefs, deliberate deceptions, convenient generalizations, counterfactual propositions, and, of course, novels and plays. But before we can understand the evolutionary function of literature, we must first grapple with the adaptive value of non-factual information generally. And it is from this perspective only that I consider examples from this very broad definition of "fiction."

My discussion also owes much to Cohn's second definition of the word, fiction as conceptual abstraction. These are the fictions created by philosophers and mathematicians as thought experiments or theoretical placeholders—things like negative numbers and pre-societal states of nature. One of the best-known discussions of conceptual fictions is Hans Vaihinger's 1925 classic *The Philosophy of "As If."* The consummate pragmatist, Vaihinger believed that human inquiry—especially scientific inquiry—was forever in the position of trying to know and describe the unknowable and indescribable. For Vaihinger, we all resort to conceptual abstractions of one sort or another—and then proceed *as if* they were true—because the alternative is complete cognitive paralysis. Jeremy Campbell aptly sums up both Vaihinger's definition of "fiction" and its relationship to Darwinian natural selection in his book *The Liar's Tale*:

> Given [the] impossible aspirations of the intellect, Vaihinger suggested it would be better not to chase after absolute truth, but rather to acquire knowledge by means of ideas we know to be false, but nevertheless are of great practical usefulness in accessing reality. These ideas he called "fictions". . . . Vaihinger saw an intimate connection between these serviceable untruths and "what Darwinism calls useful illusions formed by natural selection". . . . The world of such figments is just as important as the world of the so-called real or actual, he stressed, and far more consequential when it comes to ethics and aesthetics.[5]

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These "serviceable untruths" stand between non-facts and invented stories. They are generally not narrative in content, and they are often not even communicated to other people. Rather, they are propositions that we use when accessing, storing, and processing the information that we need to survive. We employ them as if they were true, even though we know that they are not—which distinguishes them from mistaken beliefs, deliberate deceptions, and other things that are fictions only under the first definition of the word.

For my purposes in this book, then, I shall define a "useful fiction," as "any statement, proposition, narrative, or piece of information whose adaptive function does not require it to be true." Useful fictions contribute to our chances of surviving and reproducing whether or not they are accurate because their purpose is to do something other than convey accurate information. It is precisely this phenomenon that the well-known evolutionary biologist David Sloan Wilson remarks upon in *Darwin's Cathedral*. "Clearly, I need to accurately perceive the location of a rabbit to hit it with my throwing stick," he acknowledges. "However, there are many, many other situations in which it can be adaptive to distort reality. . . . Even massively fictitious beliefs can be adaptive, as long as they motivate behaviors that are adaptive in the real world."[6]

What Hath Thag Wrought

Useful fictions, I will argue, have been a basic component of hominid cognition for millions of years and provided the cognitive scaffolding upon which our well-documented love of fictional stories might well have been built. To explore this concept further, I must now invoke a (hopefully useful) fiction of my own: an intrepid Pleistocene hunter-gatherer named Thag, who lived some one hundred thousand years ago on the African Savannah.[7] Three stories from Thag's life will illustrate the concept of the useful fiction:

> Scenario One: One morning some of the members of Thag's group inform him of an impending disaster: a sick hippopotamus has died in the spring and is decomposing slowly in their only source of fresh water. The water is undrinkable, and many of the children are showing early signs of dehydration. What can they do? Thag pauses for a moment and tells them a story: a week or so ago, he

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was hunting over the far hill and saw several animals drinking at a large watering hole. He tells the members of the tribe exactly how to get to this watering hole, and everyone picks up their belongings and moves immediately. When they get there, they see a fresh spring with more than enough water for everybody, and the group is saved.

Scenario Two: That same night, Thag is lying in his cave, unable to sleep. For several days he has been hearing a strange "caw, caw" sound outside, and he remembers his mother telling him that the spirit of death always comes with the sound of "caw, caw" to take people in their sleep. Thag is terrified that death will come for him in the night if he allows himself to go to sleep, so he has been forcing himself to stay awake. He knows that this is starting to affect him during the day. He is running slower and hunting less, and yesterday he almost fell off of a cliff while trying to walk back to camp. In order to keep himself awake, Thag decides to take a walk outside, and, as he is walking, he sees an unfamiliar black bird flying out of a nearby cave. With enormous relief, Thag decides that the noises have been coming from this bird all along. He goes back into his cave and, within seconds, is enjoying the best sleep he has had in weeks.

Scenario Three: Two days later, Thag is out hunting by himself again in an unfamiliar part of the savannah. As he is passing a large bush, he hears an ominous rustling of leaves. He immediately concludes that it is a dangerous animal and sprints back to camp as fast as he can move. He never finds out what the noise was, but he is glad to be back home safe and sound.

In the first scenario, Thag's narrative has survival value only if it is true. If the water is where he says it is, then he and all of the members of his group will survive to hunt and gather another day. If it is not, they will all die, along with their children, removing their genes from the human pool forever.

In the second scenario, the truth of the proposition is incidental to its survival value. Thag needs to sleep so he can have the strength to hunt, gather, and evade predators in the morning. Any proposition that

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allows him to sleep has value, whether or not it is true. It could well be the black bird making the "caw, caw" noise. But it could just as easily be something else. It simply doesn't matter what is making the noise (unless it really is the spirit of death); the only thing that matters is that Thag find a way to get some sleep.

In the third scenario, there might actually be a negative correlation between the probable truth of the proposition and its adaptive value. The noise could be coming from a dangerous predator, or it could be coming from a harmless animal. But Thag must choose immediately whether or not to flee. Stopping to ascertain the truth could be fatal. Even if the odds overwhelmingly favor a harmless animal, it is still a good idea to run away. Let's suppose that, in Thag's world, ninety-nine percent of strange noises come from harmless animals like squirrels and rabbits, while only one percent come from dangerous predators like lions and tigers. This means that Thag will be wrong ninety-nine out of every one hundred times that he assumes danger and runs away. If he were to make the statistically defensible assumption that every noise he hears is a harmless animal, he would have the intellectual satisfaction of being right ninety-nine percent of the time; however, he would also be dead one percent of the time—which would be far worse for his Darwinian fitness than running away from cute, harmless creatures every day of his life. A proposition that has a ninety-nine percent chance of being true is, in this instance, far less useful to Thag than one that is only a rounding error away from being one hundred percent false.

The second and third scenarios present clear examples of useful fictions in action. They also introduce another important topic of this book: the propositions and narratives that we generate in response to anxiety. Anxiety is one of our deepest and oldest responses to the environment; its evolutionary roots precede the arrival of hominids by hundreds of millions of years. In most organisms, anxiety most often takes the form of a fight-or-flight response to potential predators. However, humans think largely in narratives—even when faced with mortal danger—so our anxiety always has a narrative component. Therefore, so must its resolution. In this book, I will pursue the following chain of reasoning in an attempt to illustrate the role of anxiety in the evolution of literature: 1) human cognition is inextricably bound up with the creation of narratives that frame our sensory perceptions; 2) when

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we experience anxiety we feel compelled to resolve it, and this resolution often involves the creation of a narrative; 3) the narratives that we generate do not always have to be true in order to respond successfully to anxiety— in many cases counterfactual narratives work better than the truth; 4) the "useful fictions" humans evolved to create in response to anxiety were available to form part of the cognitive design space in which fiction, storytelling, and other narratives we call "literature" developed.

The first two chapters will set out the foundational assumptions of this study. Chapter One surveys different theories of the adaptive value of literature and situates them within a discussion of evolutionary spandrels, or tools created in the cognitive design space of other adaptations. Chapter Two examines the role of narrative in cognitive functioning, setting up the argument that storytelling and literary fictions evolved in the design space provided by these more basic internal narratives. The next three chapters explore the role of fictional narratives in resolving various kinds of anxiety: Chapter Three discusses the physiological experience of anxiety and its core connection to narrative processing; Chapter Four discusses anxieties over information deficits; and Chapter Five discusses anxieties caused by other people. The final chapters of the book deal with the fiction (in the "non-fact" sense of the word) of deception—a primary cause of anxiety in our interactions with others. Chapter Six looks, not only at why we deceive others, but at why we often derive some kind of benefit from believing, or at least accepting, communications intended to deceive us. Chapter Seven continues this argument by examining the phenomenon of self-deception as an evolutionary useful strategy.

Most chapters also contain at least one extended analysis of a literary text, usually in the form of a case study related to the central argument of the chapter. These analyses form a crucial part of my study for two reasons. First, they demonstrate the connections between the kinds of small, locally generated narratives that I am discussing in the chapter and at least one cultural narrative that has come to be considered important. Since my purpose is to argue for the usefulness of fictions, some demonstration of how a clearly acknowledged fiction can form a useful case study strikes me as an imperative. But I also hope to show with these analyses that an evolutionary approach to the origins of fic-

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tions in general can open up interesting avenues for studying specific fictions and specific authors.

In conclusion, I would like to emphasize the highly speculative nature of trying to say anything about either human cognition or human evolution. We know very little about how the brain works today, and even less about how it worked five hundred thousand years ago. The scholarly literature on evolution and literature, though still very young, is already crowded with books and articles attempting to explain *the* cognitive basis of all storytelling and literature. I have no such expectations for the simple chain of assumptions in this book. Evolution has been going on for a very long time, balancing an unimaginably large number of interrelated factors with each new generation. I would be very surprised to discover that the human love of stories could be attributed to a single evolutionary cause. And even if it could, I would be utterly astonished if this cause could be rooted out once and for all by a literary critic whose formal scientific training consists of a single gen-ed chemistry course taken in 1984.

I fully acknowledge that criticism is a consummate fiction—and rarely a useful one at that. Nothing in this book will help you hunt, gather, build shelters, find mates, produce offspring, or raise children to adulthood. I do believe, however, that the current work being done on evolution and human cognition in a dozen different disciplines is both exciting and important—exciting because it has the potential to provide real answers to questions that have always been considered unanswerable, and important because the answers to these questions may someday help us solve problems that have always been considered unsolvable. Before this can happen, several enormously complicated puzzles have to be solved. My great ambition for *Useful Fictions* is simply that it will contribute in some way—either by being right or by being wrong—to that effort.

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1

Scheherazade's Stories and Pangloss's Nose

And Scheherazade perceived the dawn of day and ceased saying her permitted say. Then quoth Dunyazad, "O my sister, how pleasant is thy tale, and how tasteful; how sweet and how grateful!" She replied, "And what is this compared with that I could tell thee, the night to come, if I live and the King spare me?" Then thought the King, "By Allah, I will not slay her until I hear the rest of her tale, for truly it is wondrous."

—Richard Frances Burton's translation of *The Book of One Thousand Nights and A Night*

Scheherazade's Gambit

We begin this study—as so many previous studies of storytelling have begun—with perhaps the most impressive collection of stories in human history: *The Book of One Thousand and One Nights*, often called, simply, *The Arabian Nights*. Though this collection contains hundreds of individual stories, all of the stories are placed within the context of a single frame tale: the story of Scheherazade and Shahryar. This famous tale begins three years after the great Sultan Shahryar vowed to avenge his wife's infidelity by marrying a new woman each night and executing her the following morning. Determined to put a stop to this barbaric practice, Scheherazade forces her father, the royal vizier, to allow her to marry the sultan, assuring her father that she has a plan to end the bloody practice. Her plan is simple: every night Scheherazade tells Shahryar a story, or a fragment of a story, that ends somewhere in the middle of the action. Many of these stories are didactic, and some

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are even thinly veiled allegories of Shahryar's own situation, but Scheherazade aims to do more than simply rehabilitate the sultan with pedagogically sound morality tales. She weaves her stories together, often using multiple frames and levels of embedded narrative, to make sure that the night always ends in the middle of at least one story, and each morning, the sultan postpones his death sentence for one day so that he can hear the story's conclusion.

Over many centuries the story of Scheherazade became a platform for introducing other stories that had filtered into the Muslim world from Arabia, China, Western Europe, Africa, India, the Byzantine Empire, and anywhere else that touched or was touched by the Muslim world. At the height of Islam's golden age, the annual pilgrimage to Mecca brought together devoted Muslims from Samarkand to Spain to worship but also to trade goods and stories—many of which found their way back to Baghdad and into the rapidly expanding text of *The Arabian Nights*. Unlike other famous Medieval frame narratives such as *The Canterbury Tales* and *The Decameron*, *The Arabian Nights* has no single author, no fixed table of contents, no date of composition, and no standard version that can be considered authoritative. While many of the earliest stories in the collection are clearly related to the story of Scheherazade and Shahryar, as the collection grew the frame became a platform to introduce stories gathered from all over the world and place them into a somewhat coherent whole.[1]

In the current critical environment, *The Arabian Nights* has once again become a platform, not for new stories, but for new interpretations of the role of literature in society. The book itself offers contemporary literary critics a nearly inexhaustible trove of narrative treasures that, with amazing precision, incorporates most of the major concerns of modern criticism: colonialism, Orientalism, patriarchal oppression, ambiguous gender roles, intertextuality, disputed authorship, complex narrative patterns, and so on. In this critical environment Scheherazade—the woman who saves her people with stories—offers critics of all kinds a way to explore the function and value of literature. For example, a prominent Freudian introduces Scheherazade as a classic example of a "superego-dominated ego which has become so cut off from selfish id that it is ready to risk the person's very existence to obey a moral obligation." A well-known feminist critic sees her as "a sexual being,

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who manipulates discourse (and men) through her body." One of the world's best known Marxist-historicist scholars of fairy tales sees Scheherazade's stories as conveying "the aspirations and wishes of a strong middle class . . . who, like Sinbad and Junar, continually take risks to make their fortune."[2]

From any perspective that we choose to view it, the story of Scheherazade speaks to a deep human need for stories. Scheherazade's gambit succeeds—with the Sultan and with readers everywhere—because it taps into this need. Stories have been a source of pleasure for human beings for a long time—much longer than there have been writing systems to record them. During all this time, as Paul Hernadi writes, "the pleasure of succumbing to literary seduction has long served as a psychological reward for what was once and perhaps still is a biologically advantageous thing to do."[3] Scheherazade's stories give Shahryar pleasure—more pleasure, arguably, than the sexual encounters that precede them. In more than a thousand marriages (assuming Shahryar executed his plan for three full years before Scheherazade), sexual pleasure never entices the sultan to suspend his vow. With a vast empire full of potential wives he need never fear an end to such pleasures. However, the pool of wives who can tell stories and bring another kind of pleasure to the marriage bed is much smaller.

The pleasure of narrative alone cannot explain Scheherazade's success; if it could, she would not have to end each night in the middle of a story. Unlike the three characters in her first tale, "Tale of the Trader and the Jinni," each of whom trades the pleasure of a good story for a portion of the trader's life, Scheherazade would be unable to trade a single day's life for the pleasure that her stories afford the sultan. Her plan depends on a different emotion produced by narrative: anxiety. Scheherazade's cliffhangers work on Shahryar for the same reason that cliffhangers work on us today: we expect to find out what happens in a story, and we experience tremendous anxiety when this expectation is frustrated. Anxiety is as deeply rooted in our biology as pleasure. Most of the things that produce anxiety in people—like snakes, spiders, fire, high places, parental separation, contaminated surfaces, and unknown social situations—constitute real threats to our survival. Though knowing the end of one of his wife's stories will not help Shahryar survive or reproduce (except possibly with Scheherazade), the anxiety that he

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feels when confronted with an incomplete narrative is similar to what he might feel were a snake in his bed.

Shahryar is not unique in the way he responds to fictional stories, of course. Almost everyone has at one time or another felt deep anxiety and emotional distress over the plight of a fictional character. A growing body of psychological research suggests that both our minds and our bodies respond to factual and fictional information in strikingly similar ways. In one study, for example, Melanie C. Green and Timothy C. Brock examined how labeling a story either "fiction" or "nonfiction" affects the reader's engagement with the narrative. Subjects were asked to read a graphic story entitled "Murder in the Mall," which was adapted from a bestselling work of nonfiction. Some of the subjects were told that the story was true; others were told that it was fiction. With a survey instrument designed to measure reader engagement (or, in the author's words, "transportation" into a narrative), Green and Brock found that the two different labels "did not affect transportation, critical scrutiny, or attitude change." "Perceived verisimilitude," they conclude, "appeared to override the fiction label."[4] In a later study, Green, Brock, and two other collaborators found that, even though labeling a narrative as "factual" did cause heightened scrutiny among readers, the "fact" and "fiction" labels had no effect on a narrative's persuasiveness.[5]

These and other experimental results simply confirm what Shahryar and most other consumers of fiction have always known: human beings respond to fiction in a way that is remarkably similar to the way they respond to facts. Not knowing how a fictional story ends can fill us with anxiety, and seeing a beloved character die can cause us real grief and pain. In more ways than we can count, fictional characters and invented situations—in books, movies, television programs, and wherever else they may appear—can engage our interests, move our emotions, and challenge our intellects every bit as much as their counterparts in the real world.

Literature as Adaptation

The sociobiology of the 1970s—once on the ropes for its supposed racist and sexist tendencies—has rebounded and served as an inspiration for diverse and important areas of inquiry, such as evolutionary psychology, Darwinian medicine, population demographics, cognitive neuroscience,

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and evolutionary anthropology. The early research by Leda Cosmides, John Tooby, Robert Trivers, William Hamilton, and Robert M. Axelrod has now been explained and expanded in bestselling books by some of this generation's most gifted writers such as Stephen Pinker, Daniel C. Dennett, Jared M. Diamond, Matt Ridley, and Edward O. Wilson. Though literary critics and other humanists have not yet embraced the new evolutionary synthesis wholeheartedly, increasing numbers have succumbed to the siren song of the truth of scientific answers in a field long governed by perpetual questions. They have begun to use this enormous body of evolutionary theory to try to answer some of our deepest questions: "Why do we respond to beauty?" "Why do we enjoy fictional narratives?" "Why do feel compelled to make up stories?"[6]

To the chagrin of those who practice cognitive literary criticism, some of the brightest lights in the field of evolutionary psychology have labeled the creative arts as "byproducts" of other evolutionary adaptations. Steven Pinker, for example, famously argues that artistic pursuits in music, art, and many forms of literature are "pleasure technologies" (like drugs, pornography, and cheesecake) that are "designed to defeat the locks that safeguard our pleasure buttons and to press the buttons in various combinations." Pinker has often been taken to task by scholars in these fields for callously devaluing their cherished subjects.[7] He responds unequivocally: "It is wrong to invent functions for activities that lack . . . design merely because we want to ennoble them with the imprimatur of biological adaptiveness."[8] At least partly in response to Pinker, evolutionary-minded literary critics have proposed a number of different functions for literary narratives that justify the classification of literature as a specific evolutionary adaptation.

The logic behind these assertions is compelling: any behavior that diverts resources away from food production and mate selection must have an adaptive function or it would have been eliminated by the ruthless efficiency of natural selection. The fact that literature exists and appears to be universal would therefore seem to prove that it must somehow enhance genetic fitness inherently rather than as an accidental byproduct of something else. As Dennis Dutton reminds us, however, simply pointing to the continued existence of literature and storytelling does not constitute an argument about their adaptive function. "A thorough-

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going Darwinism makes a specific demand," he explains. "Nothing can be proposed as an adaptive function of fiction unless it explains how the human appetite for fictional narratives acted to increase, however marginally, the chances of our Pleistocene forbearers surviving and procreating."[9] Some of the most common adaptive functions proposed in response to this challenge are as follows:

KNOWLEDGE TRANSFER

One of the most obvious advantages to stories is that they help to preserve and convey information. Human beings inhabit an evolutionary niche in which their success depends on their ability to gather and interpret information. However, as Michelle Scalise Sugiyama points out, "acquiring information firsthand can be costly, inefficient, and downright risky. . . . Moreover, it is extremely improbable that a single individual could acquire through experience all information necessary or potentially useful to the multitude of fitness-related tasks encountered over a lifetime."[10] Scalise Sugiyama proposes a number of ways that stories might have contributed to the transfer of adaptively useful information among early humans: they encourage the sharing of information within groups, they can preserve crucial information across multiple generations, they are "strikingly memorable" and make the information they contain easy to recall, and they create a rough simulation of reality from which people can derive useful content. Oral narratives can preserve for posterity a store of communal knowledge—the records of how previous generations solved problems relating to such vital areas as gathering food, avoiding predators, curing illnesses, and dealing with "environmental fluctuations that occur at intervals longer than the average human lifespan."[11]

Along with preserving information vital to survival, stories and narratives can also transmit a community's expectations and values. Stories can teach us that our culture expects men to be virtuous, like Odysseus or Rama, and women to be virtuous and submissive, like Penelope or Sita. Stories can tell us that sons must avenge their fathers at all costs, as Orestes did or an entire community could end up suffering the fate of Hamlet's Denmark. Stories can explain the value that a community places on ceasing to strive after worldly ambitions, of treating wounded travelers kindly, or of submitting absolutely to a divine power. Stories

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can even illustrate—as Scheherazade's do—the value and importance of telling stories. The values conveyed through stories might have real survival value (When walking through the woods alone, don't stray from the path) or they may reflect arbitrary cultural values (If your brother dies while attacking the city, bury him, no matter what your uncle the king thinks). Stories of either kind are valuable, the former for obvious reasons and the latter because those who understand the values and expectations of their communities have a greater chance of surviving, and a much greater chance of reproducing, than those who do not.

MAKING SPECIAL

In her books, *What Is Art For?* (1990) and *Homo Aestheticus* (1992), Ellen Dissanayake advances the theory that the purpose of art—including the literary art of poetry, narrative, and drama—is to make certain objects, ideas, and spaces "special" or to attach them to a conceptual realm set off and elevated from normal day-to-day experience. "At some point in their evolution," Dissanayake argues, "humans begin deliberately to set out to *make things special* or extra-ordinary, perhaps for the purpose of influencing the outcome of important events that were seen as uncertain or troubling." Art is one way that we create the extraordinary; two others are play, through which we exercise our imaginations and engage in counterfactual pretense, and ritual, through which we create communal responses to our deepest fears and anxieties. "In play, ritual, and art," she concludes, "things [are] less real or more real than everyday reality."[12]

The evolutionary payoff of the ability to make things special is social cohesion. Ritual and art both "unit[e] their participants and their audiences in one mood"; consequently, "everyone shares in the same occasion of patterned emotion" and "the hard-edges of their customary isolation from each other are softened or melted together or their everyday taken-for-granted comradeship is reinforced." Though Dissanayake does not make the claim that art and literature facilitate cohesion through some kind of group selection, she does argue that the ability to mark certain phenomenon as beyond the ordinary constitutes "a behavioral tendency that helped individuals who possessed it (and by extension a social group whose members had it) to survive better than individuals and groups who lacked the tendency."[13]

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PROPOSITION TESTING

Many scholars—including Pinker himself—have proposed that literature might have evolved as a way to test potentially useful propositions that do not represent a current reality. Pinker proposes that the two Horatian functions of literature—to delight and to instruct—must be considered separately: "It is helpful," he writes, "to distinguish the delight, perhaps the product of a useless technology for pressing our pleasure buttons, from the instruction, perhaps a product of a cognitive adaptation." For Pinker, then, the "poetic" functions of literature—rhyme, meter, pleasant images, and the like—are evolutionarily unimportant, but the scenarios that literature creates may be adaptive because they allow us to create a store of potential solutions to problems that we may someday face. "Life is like chess," Pinker argues, "and plots are like those books of famous chess games that serious players study so they will be prepared if they ever find themselves in similar straits."[14]

Because stories can create worlds that in many respects look like our own, they allow us to posit and manipulate different counterfactual problems to see how various solutions might work out. Modern computer simulations are just sophisticated "narrative builders" designed for this purpose; their essential function has been carried out by stories for thousands of years. I can still recall, for example, the elaborate plans I made for bird-proofing my house after seeing Alfred Hitchcock's *The Birds* on television for the first time during my junior year of high school. The narrative in the film provoked my response and allowed me to "see," by following them through to their logical conclusions, which of my plans might actually prevent my family from being killed by armies of avian kamikazes. Though the exact scenario portrayed in Hitchcock's film may never be encountered in the real world, the security plans it inspired might be useful in any number of situations—from fending off predators to saving money on my heating bill.

COGNITIVE PLAY

In his magisterial book *On the Origin of Stories*, Brian Boyd asserts that art, and specifically fiction, should be viewed as "a kind of cognitive play . . . designed to engage human *attention* through [its] appeal to our attention and to our preference for inferentially rich and therefore *patterned* information."[15] This definition, though simple, is remarkably

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suggestive. It helps explain why stories are so pleasurable and may be valuable. Physical play, which is common among adolescents in many cultures, often helps the young exercise important adaptive skills such as predator avoidance ("hide-and-seek," "tag") or intraspecies combat ("cowboys-and-Indians," "war"). In the same way, the cognitive "game" of fiction reading might help humans exercise critical mental functions—especially those that facilitate interactions with others. As Boyd argues, "the high intensity of pretend play and fiction and their rapid switches of place, time, and perspective must make social cognition, like any other well-learned and much practiced skill, faster, more efficient, and more accurate, and speed up the capacity to guide and redirect social attention."[16]

This notion of fiction as a cognitive workout is central to Lisa Zunshine's argument in the crucial book *Why We Read Fiction: Theory of Mind and the Novel*. Zunshine argues that literature trains us to use verbal and nonverbal cues to infer another person's thoughts and feelings. To prosper in any social environment we must be able to understand other minds and use this understanding to predict behavior. Like most human endeavors, however, reading other minds takes practice. Literature allows us to practice interpersonal skills in an environment that minimizes the consequences of mistakes. Misreading the intentions of a powerful multimillionaire in real life could have disastrous results; misreading Mr. Darcy's intentions in *Pride and Prejudice* allows us to learn from our mistakes without suffering any real consequences. Zunshine argues that fictional representations of reality allow us to encounter fictional minds so that we can get what Zunshine refers to as a "pleasurable and intensive work out for [our] Theory of Mind."[17]

SEXUAL ADVERTISEMENT

In his 2000 book, *The Mating Mind*, psychologist Geoffrey Miller argues that sexual selection had a larger role in the development of human culture than what is commonly assumed. The creative arts, he suggests, function in the same way as the peacock's tail or the bowerbird's nest: they advertise sexual fitness. "The great challenge facing artists," Miller argues, "is to demonstrate their fitness by making something that lower-fitness competitors could not make, thus proving themselves more socially and sexually attractive."[18] Miller's argument does not require

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that artistic creations contribute to survival (though it certainly does not preclude the possibility either). According to the peculiar, frustratingly circular logic of sexual selection, a trait can be sexually attractive simply because it is *considered* sexually attractive. In fact, cumbersome ornaments such as an elaborate tail actually slow a peacock down and increase its chances of being caught by a predator. However, once members of one gender within a population consider an attribute of the opposite gender to be attractive—even if they do so for reasons that are random or based on erroneous perceptions—selection pressure to pass that trait on to offspring will tend to distribute that attribute throughout the entire population, thus increasing their sexual attractiveness.[19]

However, Miller makes more claims about storytelling's ability to increases sexual attractiveness than he does about the other creative arts. He argues—using Edmund Rostand's *Cyrano de Bergerac* as an example—that a male's ability to craft a good story demonstrates intelligence and, therefore, the ability to acquire resources. Intriguingly, Miller also argues that storytelling forms part of a female mating approach that he calls "The Scheherazade Strategy" after the ubiquitous heroine of *The Arabian Nights*. The Scheherazade Strategy arises in women as a response to the male tendency to lose interest in a mate after she has born children. Such roguery makes eminent biological sense: after a man has had several children with a woman and she is nearing the end of her childbearing years, the man has a strong genetic incentive to find a younger mate who can continue to bear children. Women, on the other hand, have a similarly strong incentive to keep men around to provide resources for them and their children. This requires that women find ways to "keep men sexually attracted to them over the long term." Miller sees the story of Scheherazade and Shahryar as an extreme example of this conflict of interests, with storytelling becoming tactic to keep a man sexually interested in a woman:

> The pressures on Scheherazade were intense. Given a sexually jaded despot obsessed with his paternity uncertainty and caught in a pathologically short-term mating strategy, how could she elicit the long-term investment in herself and her offspring? Her verbal courtship ability proved her salvation. She invented stories that kept him entertained, and which persuaded him of her intelligence, creativity, and fitness.[20]

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Finally, this proposed adaptive function of literature and storytelling is one that has been advanced by some of the most well-known figures in both evolutionary psychology and literary criticism, including John Tooby and Leda Cosmides. Tooby and Cosmides, whose work has formed much of the foundation of the discipline, argue that "the kind of truth conveyed in art . . . consists of the increased mental organization that our minds extract from experiencing art." Though they are skeptical of the proposal that narrative is itself a cognitive adaptation, they suggest that our minds might be hard wired to sequence the information that we receive from others "in a form that resembles individual experience."[21] Because our experience of reality is sequential and (to our minds) purposeful, narrative structures provide a comfortable way to structure information that we receive from multiple sources. Deriving pleasure from narrative, therefore, is a way to train humans to sequence information in ways that allow the information to be used to enhance fitness.

Literary critics have expanded this argument to create stronger arguments for literature as an adaptation designed to help integrate radically dissimilar aspects of our cognitive architecture. The human mind evolved over hundreds of millions of years and contains some of the same instincts and reflexes as the minds of early primates, small mammals, reptiles, and other early living things. These instincts exist uncomfortably with some of the more complex cognitive traits that are unique to humans. Joseph Carroll, an early pioneer of evolutionary criticism, argues that an essential evolutionary function of literature is to reconcile the "old" and the "new" parts of the human mind:

> Works of literature thus form a point of intersection between the most emotional, subjective parts of the mind and the most abstract and cerebral. This feature of literature is not incidental to its adaptive function. Literature provides imaginative structures within which people can integrate the ancient, conserved elements of their nature—elements conserved from pre-mammalian systems of approach/avoidance, mammalian affectional systems, and systems of primate sociality—with the conceptual, thematic structures through which they make abstract, theoretical sense of the world in which they live.[22]

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None of these proposed evolutionary functions of literature exclude any of the others. Natural selection almost always works on multiple factors and in multiple directions at the same time, and all of these functions contribute to an evolutionary explanation of literature that I find extremely compelling. That said, it does not follow from any of these proposed functions that literature and storytelling be seen as specific adaptations for literature and storytelling. As I argued in the introduction, the universal presence of literature in human cultures requires an evolutionary explanation, but that is not the same as saying that storytelling itself must be an evolutionary adaptation. There is, I believe, enough room between "specific adaptation" and "mere byproduct" to carve out a meaningful evolutionary rationale for the human love of stories.

Dr. Pangloss's Nose

The tendency to see storytelling as a specific adaptation flows from a compelling, though ultimately flawed, argument about the way evolution works: that any behavior that diverts resources away from food production and mate selection must be an adaptation or it would have been eliminated by the ruthless efficiency of natural selection. Literary endeavors, therefore, must enhance genetic fitness in some way, so all we need to do is figure out how. One of the greatest satires of this kind of logic, Voltaire's *Candide*, was published in 1759, exactly one hundred years before Darwin's *The Origin of Species*. In *Candide* the hero's tutor, Dr. Pangloss, argues consistently that despite unimaginable suffering the world we live in must logically be "the best of all possible worlds":

> Since everything was made for a purpose, it follows that everything is made for the best purpose. Observe, our noses were made to carry spectacles, so we have spectacles. Legs were clearly intended for breeches, and we wear them. Stones were meant for carving and for building houses, and that is why my lord has a most beautiful house. . . . And since pigs were made to be eaten, we eat pork all the year round. It follows that those who maintain that all is right talk nonsense; they ought to say that all is for the best.[23]

In a 1979 article, Stephen Jay Gould and Richard Lewontin became the first to apply Voltaire's satire—originally intended as a critique of

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Gottfried Wilhelm Leibniz's philosophy of optimism—to contemporary debates in evolutionary biology. They criticize the "Panglossian paradigm" of contemporary adaptationist thinking which "regards natural selection as so powerful and the constraints upon it so few that direct production of adaptation through its operation becomes the primary cause of nearly all organic form, function, and behaviour."[24] To combat what they see as the Panglossian excesses of some evolutionary biologists, Gould and Lewontin offer a metaphor from the world of architecture: a "spandrel," or a triangular space created between an arch and another arch or between an arch and a rectangular enclosure. In the great Cathedral of San Marco in Venice, the spandrels are elaborately designed, "so harmonious and purposeful that we are tempted to view it as the starting point of any analysis, as the cause in some sense of the surrounding architecture."[25] Nonetheless, the space these elaborate designs inhabit is simply the consequence of putting a round arch in a rectangular frame.

Though Gould and Lewonton have never presented it as such, the evolutionary spandrel has often been considered something inferior, or at least less functional, than a full-fledged adaptation. This, in turn, has forced discussions of literature onto an unnecessary dichotomy, which John Tooby and Leda Cosmides articulate in "Does Beauty Build Adapted Minds?" They insist that there can only be two evolutionary explanations for the creative arts: they must either be 1) "the functional products of adaptations that are designed to produce this engagement"; or 2) "an accidental and functionless byproduct . . . of adaptations that evolved to serve functions that have nothing to do with the arts *per se*."[26] With this dichotomy governing the debate, it is no wonder that literary critics have felt compelled to posit specific adaptive functions for their craft.

But let's go back to the original spandrels of San Marco. The mosaics that Gould and Lewontin describe are not themselves "spandrels"; they are beautiful works of art created in the space produced by an architectural design. The design space, not the design, is the "spandrel," and, therefore, the byproduct of something else.

We can get a better understanding of this concept by applying evolutionary logic to Dr. Pangloss's naïve optimism about noses and spectacles. Noses have been designed to perform a function that has obvious survival value—just think how many of our ancestors were saved from

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1. Spandrels at the Library of Congress Building in Washington DC. Photo by Einar Einarsson Kvaran. Use authorized under the GNU Free Documentation License.

rancid food by their ability to smell. Spectacles enhance our ability to see, thereby giving us important information about our environment. For those who need corrective lenses, spectacles have a much greater survival value than the noses they rest on. It does not follow, as Pangloss believes, that noses were designed to hold spectacles; but spectacles are not a "functionless side-effect of nasal design" or "tactile cheesecake" that somehow tickle pleasure sensors on our faces. Spectacles were designed to exploit part of our facial architecture to serve a valuable function that, while not part of the face's original design, is no less adaptive in the current environment than the nasal cartilage that holds them up. Once invented, spectacles spread quickly by cultural diffusion to become, within just a few hundred years, an important tool available to nearly all humans.

So it is with the tools used by the mind. Humans did not evolve specific cognitive mechanisms for reading newspapers, computing quadratic equations, or programming computers. The processes that allow us to

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do these things evolved to handle other tasks and solve other problems. These activities are clearly adaptive in our current environment; they are not byproducts of something else, even though the cognitive spaces they inhabit are. Storytelling and imaginative literature should be placed into the same category as these activities. It is unlikely that our propensity to tell and respond to stories evolved because of any adaptive value that these activities held for our ancestors. These propensities simply developed too recently to be full-fledged adaptations. However, it is highly probable that, once the capacity for simple forms of storytelling evolved, stories became useful tools for transferring knowledge, building communities, attracting mates, and all the rest. Tools—both material and cognitive—can be remarkably useful and have tremendous survival value without being specific adaptations.

By most accounts, the cognitive architecture of human beings had developed in its modern form by the Upper Paleolithic period—which led to the cognitive revolution that produced such inventions as improved stone tools, bone tools, hunting weapons, cave art, funeral ceremonies, and probably storytelling. Like the other Upper Paleolithic inventions, storytelling would have constituted what Dennett refers to as a "good trick," or an idea that clearly improves an organism's chance for survival and therefore spreads rapidly through imitation and cultural diffusion. Both imitation and cultural diffusion are Lamarckian processes that work much faster than the geological time span required for natural selection to work.[27] Once natural selection had created minds with the cognitive horsepower necessary to tell and respond to narrative, storytelling (like stone tools and wheels) only had to be invented once to become universal. Useful tools spread like fire (also a useful tool). Like most other tools, storytelling was constructed in a design space made possible by other adaptations.

What might these other adaptations be? What Panglossian nose might have supported the spectacles of literature? Almost anything could work; a clever engineer could design a pair of spectacles to fit over any bit of bone or cartilage that natural selection could place in the vicinity of a face. I suspect—as do many who study cognitive narratology—the answer lies somewhere in the rudimentary temporal and spatial sequences that the mind generates to process and structure sensory and perceptual information. However, stating that complex stories have been built

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on simple narrative sequences simply states the obvious, or at least the very easy to deduce. It doesn't really answer the question of what narrative might be built upon. To know where narrative comes from we must look further into our evolutionary history, past even the emergence of the human species, into areas of cognitive design space that may not have been originally designed for the production of narratives. Natural selection builds upon features and functions that already exist. Though only human beings wear spectacles, many species have noses; similarly, while only human beings tell stories, many species must have bits and pieces of the cognitive architecture that makes storytelling possible.

In the following pages I will propose several evolved cognitive operations that might have served as the design space for storytelling and literature. In doing so, I do not intend to diminish the power and beauty of stories. Whatever evolutionary forces may have been behind the human love of narrative, stories are an integral part of what humans have become. This, I believe, is the most basic lesson that we can learn from Scheherazade. Though the obligatory happy resolution has been tacked onto most published versions of the *Arabian Nights*, the original frame presents stories themselves as both an urgent and an infinite element of the human experience. To be human is to tell stories, to experience pleasure in their construction, and to feel anxiety at their interruption; and, like Scheherazade, we will cease to exist as a species the moment that we have no more stories to tell. Any theory that presents itself as an account of human nature must come to grips with the immense power and urgency of stories.

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