The Secrets of Scheherazade: Toward a Functional Analysis of Imaginative Literature

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A functional analysis of selected aspects of imaginative literature is presented. Reading imaginative literature is described as a process in which the reader makes indirect contact with the contingencies operating on the behavior of story characters. A functional story grammar is proposed in which the reader's experience with a story is interpreted in terms of escape contingencies in which the author initially introduces an establishing operation consisting of a source of tension, which is resolved in some way by the outcome of the story. Although escape contingencies represent the functional basis for the structure of stories, they are to be understood in a context of many other reinforcers for reading fiction. Other contingencies that maintain reading are discussed. Functional analyses of imaginative literature have much to offer, both in improving literary education and in understanding the behavioral processes that occur on the part of the reader.

Key words: fiction, literature, story, story grammar, establishing operation, identification, escape conditioning.

Fictional stories are ubiquitous. We encounter stories in fairy tales, folk tales, fables, ballets, operas, many forms of poetry, plays, short stories, and novels. In popular culture stories are the basis of movies, television shows, commercials, urban legends, jokes, music videos, and video games. Adults read stories to children as soon as they can be understood and remain a staple throughout our lives.

In a story, characters face a problem, conflict, or difficulty that is somehow resolved by the end of the story. The problem or conflict can range from a minor source of irritation, like a couple whose silences grow longer and longer, to a life-and-death drama with the fate of thousands of people at stake. The resolution of conflict can be blissful, tragic, or somewhere in between. The story pattern of problem/conflict and resolution is usually conceived as applying to works of fiction, but writers of non-fiction, including histories and biographies, often retell actual events in such a way that they fit more easily into a story template. In a recent economic history Gordon (2004) acknowledges:

Historians inescapably both write with the benefit of hindsight and shape the stories they tell. So history always appears much tidier and more dramatic to the reader than the events depicted seemed to those who lived though them day by day. Human beings have to live with a future that is always unknown while enveloped in the fog of mere existence that can be as hard to penetrate as the far better recognized fog of war. (p. 317)

Despite the pervasiveness of stories relatively little work has been done in the behavioral sciences to understand their appeal and influence. Lindauer's (1974) portrayal of the separateness of the fields of psychology and literature remains largely true. Interdisciplinary teaching in psychology and literature has been generally restricted to the application of Freudian concepts to literature (Grant, 1986). Whereas psychology seeks to understand human behavior through empirical observation and experimentation, authors of fictional literature are conceived as exploring human experience through subjective methods in which fictional behavior is invented in order to illustrate characters, themes, and motifs. The goals of literary works are cited in metaphorical terms such as touching the human heart.

The purpose of the present paper is to do a functional analysis of stories on the behavior of the reader. In the material that follows,

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imaginative fiction is described as narrative descriptions of contingencies that include the behavior of fictional characters. Readers of stories make indirect contact with the contingencies described in stories. A functional story grammar is described in which the central conflict or tension in a story functions as an aversive stimulus for the reader, which establishes escape from the tension or conflict as a reinforcer. This escape occurs at the climax of the story, when the tension is dispelled. Other reinforcers for reading are also discussed.

IMAGINATIVE FICTION AS
INDIRECT CONTACT
WITH CONTINGENCIES

Stories are narrative descriptions of specific instances of antecedent events, characters' behavior, and behavioral consequences. Through narrative description authors represent a hypothetical set of interactions characters have with their environment, such that the reader indirectly or vicariously shares the experiences of fictional characters and the contingencies their behavior includes. The narrative form of stories ensures, at least on one level, that there is a direct focus on behavior in literature. Any of the author's attempts to stray very far from specific behavioral descriptions into discussions of abstractions will effectively remove the work from the sphere of imaginative literature and into an essay. [Skinner's *Walden Two* (1948) goes about as far as a novel can into discussions of abstractions without losing status as a novel.] In this respect behavior analysis and fictional literature share a focal interest on behavior, and this interest is at the level of the individual organism.

The indirect or vicarious participation in a set of hypothetical contingencies has the considerable advantage of allowing the reader to encounter contingencies that exist in distant locations, in different cultures, at times in history long past, as well as in imagined futures. Contingencies too dangerous, too expensive, or otherwise impossible to encounter directly can be contacted through literary experiences. Different racial and ethnic groups can make contact with the contingencies that affect other groups. Wealthy people can experience the contingencies that operate on poor people, and vice versa. Careful people can make contact with the contingencies acting on libertines.

Young people can learn that the world of outward appearances is misleading, that characters that seem either attractive or unpromising can be the reverse. Everyone can get a sense of the way in which interesting causal sequences play out. The ability to extend one's personal experience by contacting contingencies indirectly, even apparently from inside the skin of another person, is responsible for much of the appeal of literature. The personal growth that is thought to occur as a result of reading imaginative literature is due in large part to indirect contact with contingencies. Manguel (1996) writes:

Experience came to me first through books. When later in life I came across an event or circumstance or character similar to one I had read about, it usually had the slightly startling but disappointing feeling of *déjà vu*, because I imagined that what was now taking place had already happened to me in words, had already been named. (p. 8)

Contingencies indirectly contacted through literature seem to influence behavior at least to some degree as contingencies that are directly encountered. Studies in vicarious processes have showed that observing another individual's behavior be rewarded or punished has parallel response-strengthening or response-weakening effects on the observer's behavior (e.g., Bandura 1965; Walters & Parke, 1964). These effects also extend even to the deleterious effects of aversive response-independent stimuli (i.e., "learned helplessness"): Observing an individual experience response-independent aversive stimuli impairs the observer's subsequent avoidance responding (DeVellis, DeVellis, & McCauley, 1978). These vicarious effects are in part due to properties of the observed individual: Models with competence, high status, and similarity to the observer are more likely to be emulated, as are models who are emotionally upbeat and consistent. (Bandura, 1969)

Of course the central concern of an author of imaginative fiction is not to encourage the reader to imitate fictional characters. The studies showing the effects of observed contingencies on the observer nonetheless empirically demonstrate the effects of indirect contact with contingencies, with imitative responding as an indicator of this influence.

Authors are normally interested in providing the reader with the total contingency experience of the main character in stories so that the reader is left with an overall sense of what it feels like to be the character: To see and hear what the character sees and hears, to feel the emotions the character does, and to experience the behavioral consequences the character does. By sharing a fictional character's environment, thoughts, feelings, behavior, and behavioral consequences, we come to know the character in much the same "from within" fashion in which we know ourselves. This overall contingency experience allows readers both to understand the character's outlook and widen their personal experience.

FUNCTIONAL STORY GRAMMAR

A story grammar (e.g., Rummelhart, 1977) is the ordered structure of a story that includes (a) an initial state in which there is some problem or tension; (b) a description of events in which the problem or tension is resolved or dispelled at the climax of the story; and (c) a conclusion in which the resolution of the problem is detailed, the theme of the story is underscored, loose ends are tied up, and the action is brought to a logical end. In behavioral terms the three parts of a story grammar can be understood in terms of reinforcement contingencies. In a story, the initial state of the problem or tension represents a state of aversive stimulation, the ensuing dramatic action reduces or eliminates the aversive stimulation, and the conclusion has several miscellaneous functions such as elucidating a rule, principle or theme that unifies elements of the story.

Literary Establishing Operations

At the outset of a story, the author establishes the effectiveness of some reinforcer for the reader to be made available later in the story. Two ways of establishing the effectiveness of a reinforcer are (a) to induce a state of deprivation of that reinforcer, which increases its reinforcing effectiveness; or (b) to create a state of aversive stimulation, which increases the reinforcing effectiveness of removal of the aversive stimulation (Keller & Schoenfeld, 1950). Authors, of course, cannot directly deprive the reader of a reinforcer to make that reinforcer effective, so they are left with the

option of creating a state of aversive stimulation, which they do by describing a character who is faced with a problem, conflict, or perhaps only something mildly disquieting. The aversive stimulus, the author's description of the problem situation, acts as a *conditioned establishing operation* (Michael, 1993), because the aversiveness generated by verbal stimuli is dependent on the reader's prior learning history: The reader has to have learned to read, has to discriminate the referents of the words, and has to have learned to be aversively stimulated by verbal descriptions of characters and their circumstances. If the author's description is successful in creating a state of aversive stimulation for the reader, then removal of the aversive stimulation becomes dependent on the reader's continuing to read. (The author can describe a character who is deprived of an unconditioned reinforcer, but if the description is effective, this acts as a source of aversive stimulation for the reader, not a state of deprivation.) In this way plots of stories motivate people to continue reading. In everyday language, we say that the story is "gripping" or a "page turner" when the author's establishing operation is highly effective in inducing the reader to continue with the story until the aversive stimulation is removed. The establishing operation provides the motivation for the action in the story and is something like the concept of potential energy in physics. Introducing the establishing operation is analogous to winding a clock, creating a tension that has to be released at some later point. Removal of the aversive stimulation is of course dependent on reading more pages. Use of an establishing operation in a story can be simply termed a *literary establishing operation* or *story establishing operation*, to distinguish it from establishing operations encountered in nonstory contexts.

In many literary establishing operations, the aversive stimulation arises at least in part from the reader's empathetic responding: the description of the aversive conditions affecting the story protagonist also acts as an aversive stimulus for the reader. In such a circumstance we say the reader "identifies" with the protagonist: Both the protagonist and the reader are affected in the same way by the same conditions and the character's and reader's contingencies become isomorphic in this sense. Identification is furthered if the protagonist is similar to the reader and if the writer leads the reader

to say the same things as the protagonist, a process Skinner (1957, p. 275) has analyzed in terms of building a correspondence between the behavior of the speaker and listener.

The reader does not have to be aversively stimulated by the aversive conditions affecting the protagonist in order for a literary establishing operation to take place. The uncertainty of the protagonist's circumstances alone is often sufficiently aversive to increase the reinforcing effectiveness of the ultimate outcome of the events in the story. Even if the reader doesn't identify with the protagonist and doesn't care what happens to him, the circumstances of the protagonist may be sufficiently interesting and uncertain so that learning the outcome of the story is nonetheless reinforcing. Even if readers don't identify with a man described as about to open only one of two doors, they generally want to know whether the lady or the tiger is on the other side.

Literary establishing operations are most conspicuous in simple stories as seen in the plots of comic books or action movies. In the initial part of the story, the author creates, nontechnically speaking, a villain the audience loves to hate. With an aversive stimulus firmly established, its removal in the form of the demise of the villain can sustain reading and viewing.

In formulaic stories aversive stimulation is often provided by description of a characteristic aversive event. For example, in mysteries the aversive stimulation takes the form of an unsolved crime, typically a murder. Because any human life is a reinforcer for most readers, a murder, and even the description of a fictional murder, is aversive, and this aversiveness is increased because the murder is unsolved. Some of the aversive stimulation associated with a crime can be removed if the perpetrator is identified and brought to justice. The fact that unsolved crimes are aversive makes the solution to the crime, the identity and punishment of the criminal, commensurately reinforcing. These contingencies are responsible for the fundamental popularity of crime mysteries: Descriptions of reprehensible unsolved crimes make the identification and punishment of the perpetrator so reinforcing that many people are eager to pay to read well-written stories in this genre.

The process of creating a state of aversive stimulation in order to make removal of the aversive stimuli reinforcing is traditionally dis-

cussed in terms of escape conditioning in behavior analysis. Typical aversive stimuli in applied and basic research include loud noises, electric shock, time-out, and other bad things that are clearly unpleasant. The consistent use of such typical aversive stimuli has imbued the terms "aversive" and "escape" with the connotation that the stimuli referred to are unambiguously unpleasant, which does not properly represent the nature of these stimuli in stories. Possibly because the subtle forms of aversive stimuli of the sort that occur in literary establishing operations have not been extensively studied and discussed, the term "aversive" tends to overrepresent examples of high-magnitude negative reinforcers and punishers. This problem of misleading connotations of technical terms is also seen with the use of "punishment" (Foxy, 1996; Grant & Evans, 1992).

In literary establishing operations, the nature of the aversive stimulation the writer creates is better captured in nontechnical language by the notion of *tension*, which in heightened form becomes *suspense*. Our subjective experience of tension in reading a story is not an unpleasant state of affairs we wish to escape from with the same intensity we flee from a burning building. The tension in a story is a source of interest to the reader and seems not to become subjectively unpleasant unless the author fails to dispel it honestly and authentically. The tension holds the reader's interest partially because of the reader's history with the general story pattern in which the tension is normally resolved in some way. If the tension were not resolved or dispelled in stories, they would not be true stories and would have less reinforcing appeal for readers. Mild aversiveness or tension is also an important element in music appreciation, in which movement away from the tonic note of a composition (i.e., the key signature note) produces tension, which is released when the tonic note is played again (Winner, 1982). For this reason musical compositions generally end on the tonic note, which is subjectively experienced as a sense of completeness.

Although stories take many different forms, two broad classes of literary establishing operations seen in simple stories are those in which tension arises from (a) a sympathetic protagonist who is deprived of a reinforcer or encounters a source of aversive stimulation or (b) an evil protagonist who is a source of aver-

sive stimulation to others. In the case of a sympathetic protagonist with whom the reader identifies, the establishing operation sets up reinforcement in the form of the protagonist either obtaining the reinforcer he or she is deprived of or removal of the source of aversive stimulation. In the case of an evil protagonist the establishing operation sets up reinforcement for the reader in the form of the demise of the protagonist, which serves to curtail the source of aversive stimulation. In simple stories these contingencies often work in tandem through inclusion of an heroic protagonist and an evil opponent.

Although very simple story formats are often popular for children and many adults, serious adult fiction and literature depart from simple formulas in which a virtuous hero overcomes an aversive conflict or problem. These departures take the form of adding complexity to the story through the introduction of multiple sources of tension and subplots. For example, in Dashiell Hammett's *The Maltese Falcon*, the protagonist, Sam Spade, is solving his partner's murder. But Spade is not entirely virtuous as he has had a love affair with his partner's wife and throughout the novel he becomes sexually involved with his female client, whom he never trusts and suspects of murder. Spade also violates the law by withholding evidence from the police, who pursue him throughout the story. These multiple tensions, which are eventually resolved, add much more interest and authenticity to the story than would be the case if an entirely virtuous hero were pursuing a completely evil villain.

Escape from Tension

The tension of the story is at once a source of aversiveness to the reader and a source of interest. It appears to be the case that the prolongation of tension normally makes its release more reinforcing, and the story better. Consider the encapsulated story: "The day after Mike had vandalized Mrs. Taylor's car, he lost several months of savings on his way to school. Mrs. Taylor saw him drop the money and returned it to him, leading Mike to confess to the damage he had done." The literary establishing operation consists of the description of the loss of money and the vandalism, which creates a state of tension for the reader, which is in turn removed by the return of the money

and the confession. The tension created by a potentially interesting plot is not maintained for a sufficiently long period of time. In addition, there are no details in the story to heighten the tension and to explore the protagonist's efforts to seek solutions to the problem. One famous literary controversy is the question of why Hamlet procrastinates instead of killing Claudius immediately, and various explanations, including psychoanalytic perspectives, have been advanced. One more basic interpretation is simply that the story is made more reinforcing if the tension is prolonged so as to make its resolution more effective.

As discussed earlier simple stories, seen in almost all children's stories and many action films, generally have happy endings in which tension is resolved by a hero who removes a source of aversive stimulation, a villain who is removed as a source of aversive stimulation, or a combination of the two. In romantic stories reinforcement occurs in the union of lovers who are initially separated or threatened. In simple happy-ending stories of this type, the reader's reinforcement is usually paramount and subordinates any substantial theme. In fiction that aspires to be literature, however, the reader's reinforcement in the form of a happy ending is often subordinated to authenticity and theme. Tension in serious literature is resolved, but, for example, in Greek and Shakespearean tragedies this often takes the form of the deaths of the protagonists. In the cases of Hamlet and Macbeth, Shakespeare placed the protagonists in very difficult circumstances that created such enormous tension that a happy ending would neither be authentic nor able to support a theme of any depth.

The importance of the sequence of an establishing operation that creates and prolongs tension followed by an outcome that resolves tension is seen in cases in which a reader is informed of the outcome of the story before or while reading. This information, aptly called a "spoiler," removes any uncertainty regarding the outcome of the story. The spoiler either prevents the literary establishing operation from creating tension (if the spoiler occurs before the story is read) or prematurely curtails the duration of tension (if the spoiler occurs after the literary establishing operation, but before the climax of the story). The net effect of the spoiler is to remove or diminish the reinforcement for reading the story.

REMAINING QUESTIONS

Two potential questions that arise from the present account are: 1) if literary establishing operations are aversive, shouldn't they punish reading? and 2) how can the tension in a story be both a source of interest to the reader that attracts attention at the same time functioning as an aversive stimulus?

Do Stories Punish Reading?

The interpretation that the tension in a story is at least mildly aversive raises the question of whether the aversive stimulation punishes reading. Readers seem to give up reading a story more often during the initial stages of a story than later on, suggesting that punishment of reading does sometimes occur due to the literary establishing operation. Early quitting, however, could also be due to the large response requirement demanded of readers at the outset of stories. Many readers avoid beginning stories in which the initial events are highly aversive, such as harm to a child. Robert Pinsky (1997), a former Poet Laureate of the United States, provides a vivid example of a child torn between the reinforcing and aversive features of stories:

I know a woman who as a child used to be afraid to begin a new book. In the inert little object, in the squared-off ranks of black sentences, lay a terrible power she had not elected: within a few pages she would become subject to that power. She might start to care about the fate of a character the author could thwart, humiliate, even kill, the character a hostage not even to fortune but to the authorial need to create just that caring my friend dreaded while also craving it. (pp. 205–206)

Likewise, novelist Elinor Lipman (1997) describes a punishment effect in which response suppression generalized to male authors as a result of a childhood reading of Hans Christian Andersen's *The Little Match Girl*: "And *The Little Match Girl*—what a betrayal, death. For a long time, I steered away from male authors." (p. 145). In *The Little Match Girl* the girl's death occurs at the end of the story, but it nevertheless illustrates that descriptions of aversive events can punish reading, and this effect is presumably independent of the placement of the event in the story.

Experienced readers learn to continue reading stories they initially dislike because they have discriminated their previous patterns in reading in which stories they initially find aversive become interesting as the literary establishing operation takes hold. Even children who cannot yet read seem to be able to discriminate the story pattern and comprehend that the tension of the story is temporary and will be resolved.

The aversive features of the tension of the story also have to be understood in the larger context of the reader's life. Whereas the tension of a story is mildly aversive, the reader's decision to read rather than do something else is due to the summation of effects of reinforcers and aversive stimuli dependent on reading *relative to* the summation of reinforcers and aversive stimuli dependent on alternative activities. A common theme in anthologies of writer commentaries on the experience of reading is the relative attractiveness of the worlds mediated by literature relative to the reader's day-to-day contingencies (Dorris & Buchwald, 1997; Fraser, 1992; Salwak, 1999). For example, novelist and playwright John Mortimer (1992) explains:

I was sent away, as was the practice in middle-class families in the 1930s, to a boarding prep school. It was thought that I needed company, but at school I endured a loneliness which made my life as an only child in what was then the remote countryside seem overcrowded. Books were not a luxury, but a necessity. I desperately needed to inhabit another world, far away from the icy dormitories, the bleak changing rooms that smelt of dirty gym shoes, and the numbing boredom of organized games. I wanted a brighter, more adventurous, funnier and more elegant world; above all I wanted a world in which I could be the hero, something I was certainly never going to achieve on the soggy north Oxford playing fields. (p. 70)

Similarly, writer Caroline Leavitt (1997) recalls:

At sixteen I was a loner in my working-class high school, smart and offbeat looking and belonging nowhere. I was threatened with being beaten up, ridiculed for my good grades. In defense, I began carrying something to read with me everywhere. With a book in my hand, I was somewhere else, where extraordinary pos-

sibilities—and different lives—could be mine with just the turn of the page. I wasn't in a sour-smelling cafeteria dodging slurs and flying pats of butter, but I was a dancer in Spain. I was in love in a Paris café. I read about other writers and because their struggles seemed close to mine, because they seemed to love and need words as much as I did, I began to think I could be a writer, too, creating new worlds as well as experiencing them. (p. 141)

Can Tension Be Both Attractive and Aversive?

The suggestion that the literary establishing operation creates tension, a mild aversive stimulus, that is at the same time attractive is not a contradiction. By analogy, consider a physician who examines a patient with a disease. Initially, in diagnosing the disease the physician's inspection and testing of the patient is reinforced by discovery of the nature of the disease. Following the diagnosis, the physician engages in behaviors that will remove the disease such as prescribing drugs or changes in diet. From the outset the disease is aversive for the physician, but to eradicate the disease it is necessary that the physician be attracted to the disease, so to speak, and the physician's activities (e.g., tests) that reveal the disease are reinforced. Similarly, for the reader the difficulties of the character in the story, which are generally universal human problems, are initially a source of interest to the reader. Once the author has described and explored the nature of the difficulties, the problems become a source of aversive stimulation: The reader reads to discover how the difficulties are resolved. For both the physician and the reader, the eventual reinforcer is removal of the problem, but before this is possible it is necessary to identify, describe, and comprehend the problem.

OTHER REINFORCERS FOR READING

Reading a story is not simply a zero-sum game of consequences in which the literary establishing operation's aversive features are "traded in" for the reinforcing escape from tension-aversiveness that occurs at the climax of the story. Although the tension of the story and its resolution give the story its structure, other consequences reinforce and maintain reading.

Sounds and their juxtaposed patterns are most important in making poetry reinforcing but are also an element of prose as well. Many readers find characters in stories reinforcing as quasi-friends (e.g., Bloom, 2000; Lipman, 1997). Voyeuristic reinforcement is also available when the reader has the experience of living among and especially within story characters. (e.g., Bloom, 2000). Other readers find it reinforcing to read about people in difficult tension-generating situations because this diminishes, by apparent contrast effects, the lesser problems in the readers' own lives (e.g., Walpole, 1926). Discovering the theme or underlying message of a story often reinforces reading. In more complex stories experienced readers gain reinforcement in discovering various types of irony, as when utterances have different meanings for the characters and the reader. Reinforcement is similarly available for recognizing allusions, identifying symbols, appreciating metaphors and other literary devices. There is often an educational function in stories that is reinforcing. Children's reading is often reinforced when they discover competent fictional characters who overcome their problems through resourcefulness and skill. Even today, for example, reading a Jane Austen novel can instruct the reader through examples of the consequences of social sensitivity and lapses in good manners. This list of reinforcers for reading is far from exhaustive. As indirect contact with contingencies, imaginative literature offers all the reinforcers available in the real world—writers like Hemingway are even famous for their descriptions of delicious food.

Many students encounter serious literature during their schooling, where grades reinforce reading rather than literary content, so in practice much reading of literary classics is maintained by contrived reinforcers rather than tension-resolution and other reinforcers built-in to the work itself. For many such students, the contingencies associated with the literary establishing operation and the other intrastory reinforcers never take hold. This is especially unfortunate because almost all very young children come to love simple stories, suggesting that educators mismanage or neglect the child's transition from simple stories to more complex literature. Even among adults the effectiveness of intrastory reinforcers is often diminished, perhaps by reinforcer contrast effects when

other contingencies are imposed on reading. Many students who enjoy stories naturally try to take up literature as a field of study, only to be disappointed by the arcane contingencies that operate in the field of literary criticism. Alyce Miller (1997), an academic who admits the contingencies of her profession no longer permit her to read "strictly for pleasure," recalls:

Graduate school had its pleasures, but reading began to feel like work, and my arbitrary habits of the past year [i.e., reading what she liked] were not a promising foundation for academic success. I did well only if I liked a course. James Joyce was almost ruined for me by a professor teaching a highly prescriptive version of a class precariously titled "Literature and Psychoanalysis." I never fully recovered from his decimation of *Portrait of the Artist*, but fortunately someone thrust *Dubliners* into my hands before he could butcher it, and I recovered. (pp. 166–167)

The above citation was not selected to disparage psychoanalytic explanation, but instead to illustrate the harmful effects of any contingencies associated with levels of literary analysis that detract from the reinforcers obtainable within the story itself.

In his interview with Robert Evans (1981) Skinner said, "We shouldn't teach great books; we should teach a love of reading. Knowing the contents of a few works of literature is a trivial achievement. Being inclined to go on reading is a great achievement" (p. 73). Understanding imaginative literature in terms of the functions of literary establishing operations may be helpful in providing clues for devising more effective approaches to teaching a love of reading. In particular, teachers of literature, for example, might consider more stepwise procedures in which salient tensions, like the good versus evil of fairy tales, are gradually replaced by stories in which the tension is increasingly more subtle and emanates from multiple sources. As it is, many students are assigned stories with ineffective literary establishing operations that fail to create tension. In addition, stories with happy endings, which remain popular with even nonliterary audiences beyond childhood, might also be proportionally better represented in effecting the transition from simple stories to adult literature. It is

eventually desirable for the reader to find the wisdom of the theme of the story reinforcing and to subordinate the happiness/sadness of the ending to the nature of the theme, but this is a delicate transition that has to be managed carefully.

TOWARD A FUNCTIONAL ANALYSIS OF IMAGINATIVE LITERATURE

In the fictional story of Scheherazade, a sultan marries a young girl every day only to behead her on the following day as a means of ensuring her fidelity. Confident in her storytelling abilities, Scheherazade, the daughter of an important government official, volunteers to marry the sultan. On the first evening of their marriage she tells him a suspenseful story all night, but interrupts the tale at dawn, leaving the story unfinished. The sultan, eager to learn how the story ends, postpones Scheherazade's execution so that he can learn the outcome of the story the next evening. Scheherazade continues to tell fascinating stories and the sultan continues to put off her execution, night by night, until he ultimately relents and decides her life should be spared.¹ In the meantime, the stories she tells come to compose what is now called the *Arabian Nights* or *A Thousand and One Nights*.

What were the secrets to Scheherazade's survival? At least part of the answer involves her adroit use of literary establishing operations to make the outcomes of her stories effective reinforcers, such that she was able to make the story outcomes dependent on the sultan's daily postponements of her execution. In the present paper I have maintained that authors of imaginative fiction do something similar to all readers: They create a literary

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¹Nell (1988) examined the *Arabian Nights* break points, the points at which Scheherazade supposedly ceased telling the evening's story. He found that they do not always occur at the "cliffhanger" points or moments of maximum suspense. (Though perhaps Scheherazade was too preoccupied to schedule the cliffhanger points precisely at dawn.) He uses this as one source of evidence that suspense is not an essential feature that contributes to the enjoyment of stories, but at the same time he acknowledges that most people find it transparently clear that suspense is a key ingredient to the enjoyment of stories.

establishing operation that functions to increase the reinforcing effectiveness of the outcome of the story and then they make the story outcome dependent on the reader's completion of the story.

Advocates of experimental literature have sometimes disparaged the story format. As Bauer (2003) notes, Virginia Woolf resented the market forces that compelled writers to adhere to the story format and preferred fiction with "no plot, no comedy, no tragedy, no love interest, or catastrophe in the accepted style" (cited in Bauer, 2003, p. 66) while E. M. Forster described the story as a "low atavistic form" (cited in Bauer, 2003, p. 66). Stories, including those of Woolf and Forster, have nonetheless remained popular, while alternative experimental forms of fiction writing have never gained much acceptance. The success and persistence of the story format are due to the built-in reinforcement contingencies in stories: The use of the literary establishing operations to boost the reinforcing effectiveness of the story outcomes.

It would clearly be helpful to support the notion of the literary establishing operation with experimental evidence and experimental analyses of story reading behaviors. It should, for example, be possible to alter certain parameters of stories so as to ascertain whether the reinforcing effectiveness of story outcomes varies according to, for example, the intensity of the aversive stimulation inherent in the establishing operation, the nature of the resolution of the tension in the story, the delay between the onset of the establishing operation and the presentation of the story outcome, etc. The question of under what conditions the happy ending is a reinforcer is an empirical question, as well as the conditions under which a happy ending undermines the reinforcing effectiveness of the theme of the story for experienced readers. It should be possible to examine such things as the extent to which the introduction of aversive stimuli associated with the literary establishing operation punishes reading and to determine under what conditions this occurs. It should also be possible to determine empirically whether the effectiveness of story outcomes as reinforcers is maximal at points of high suspense in stories. Basic animal and human laboratory research also has implications for many of these parameters of stories. In any case, behavior analysis concepts

and principles seem to have much to offer in furthering our understanding of the structure of stories and well as the appeal and influence of imaginative literature.

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