The function of fiction is the abstraction and simulation of social experience

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Running Head: Function of Fiction

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Abstract

Fiction literature has largely been ignored by psychology researchers because its only function seems to be that of entertainment, with no connection to empirical validity. We argue that literary narratives have a more important purpose. They offer models, or simulations, of the social world via abstraction, simplification, and compression. Narrative fiction also involves simulation in that readers enter a deep and immersive simulative experience of social interactions. Together these two forms of simulation make the communication and understanding of social information easier and more compelling, achieving a form of learning through experience. Engaging in the simulative experiences of fiction literature can facilitate the understanding of others who are different from ourselves, and augment our capacity for empathy and social inference.

Keywords: Narrative, Story, Simulation, Fiction Reading, Social Cognition

Literary fiction has traditionally been given low priority within psychology. This history is curious considering, first, that we humans spend much time engaged with carefully crafted narrative products such as films, novels, plays, and TV dramas, and second, that while engaging with such products we undergo a form of experience not found elsewhere, reacting to represented events "as if" we were a part of them. These interesting and important observations appear to have been over-ridden by a sense in the scientific community that narrative literature fails even the most elementary tests of empirical probity, and that its role is of mere entertainment without other functions (important exceptions to such judgements are discussed in detail below). Here we offer a theory that carefully crafted literary stories are not flawed empirical accounts, but simulations of selves in the social world. They function to abstract social information so that it can be better understood, generalized to other circumstances, and acted upon. The theory we propose thus offers a framework for the serious consideration of literary fiction in psychology. Our proposal makes empirical predictions in matters that are currently of considerable interest, such as theory of mind, the understanding of intentions, the nature of empathy, the improvement of social skills, and the reduction of prejudice.

Simulation is related to narrative fiction in two distinct ways. The first is that consumers of literary stories experience thoughts and emotions congruent with the events represented by these narratives (Gerrig, 1993; Oatley, 1999). Readers of novels, filmgoers, and theatergoers, all undergo simulations of events. They experience what feels like genuine fear, for example, when a serial killer bursts through a door, despite the fact that the threat being portrayed is not real. The second way in which literary narratives are related to simulation is that stories model and abstract the human social world. Like other simulations (e.g., computer models), fictional stories are informative in that they allow for prediction and

explanation, while revealing the underlying processes of what is being modeled (in this case, social relations). Understanding stories as simulations can help explain why they provide a special kind of experience. The abstraction performed by fictional stories demands that readers and others project themselves into the represented events. The function of fiction can thus be seen to include the recording, abstraction, and communication of complex social information in a manner that offers personal enactments of experience, rendering it more-than-usually comprehensible. Narrative fiction models life, comments upon life and helps us to understand life, in terms of how human intentions bear upon it.

In this paper, we begin by commenting on definitions of narrative. We then explore the idea that stories model social life. We next describe how these simulations can evoke deeply-felt experiences of a particular kind in readers and audiences. Then we discuss how these experiences may be achieved, and what outcomes can occur. Finally we consider parallels, complications, and contrasts to the account we have given, ending with an agenda for future empirical research.

Defining and Comprehending Narrative

Carefully crafted literary stories are accounts in narrative form. Before exploring the function of such stories, a discussion of how to define narrative is necessary. Such a discussion has been offered by G. M. Wilson (2003; see also a companion discussion of fiction by Lamarque, 2003). The most usual kind of definition is that narratives include a series of causally-linked events that unfold over time (Graesser, Hauft-Smith, Cohen & Pyles, 1980). This level of analysis has been useful for examining reader processes related to memory and comprehension, but falls short of depicting stories as we experience them. Moreover, in trying to pin down what defines a narrative, any categorical statement seems to invite counterexamples that threaten to make the proposed structure sway, if not topple.

Even something as apparently unexceptional as Aristotle's proposal (330 BCE/1987), in *Poetics,* that a story should have a beginning, a middle, and an end, was undermined by Edgar Allen Poe (1846/1967) who wrote *A Cask of Amontillado*, a rather good story with no beginning, only a truncated middle, and mainly an end. The debate on what constitutes a useful categorical definition of a narrative may be a conceptual dead-end. Perhaps it is not how a text is structured that really defines narrative, but its content and our responses to this content. A prototypical-content, rather than categorical-structure, approach could thus provide greater utility.

From this perspective, consistency can be found in what narrative fiction is about: most crafted stories are about autonomous intentional agents and their interactions (see e.g. Palmer, 2004). Even quite odd novels that take inanimate objects as characters necessarily anthropomorphize these objects and imbue them with a human psychology, complete with personalities, desires, goals and intentions (e.g., *Skinny Legs and All*, by Tom Robbins, 1990). An extensive analysis of narrative themes found across the world found that the two most common are love (toward an other), and conflict (with others) (Hogan, 2003). Literary narratives fundamentally deal with relationships among individuals and the navigation of conflicting desires. This reflects the fact that much of human experience is about coping with such issues. Because we exist within a richly social context, all individuals must learn to interact with others who inevitably embody unique percepts, predispositions, beliefs, intentions and goals (Dunbar, 2004a; Frith & Frith, 1999). It is therefore comprehensible that, as cultural products, crafted stories revolve around this issue so central to the human condition.

In this paper the narrative fiction medium we concentrate on is that of literary stories. Rather than starting with a definition, we take the core statement as that of Bruner

(1986), who proposed that "[n]arrative is about the vicissitudes of human intentions" (p. 13), and that it constitutes a distinct mode of human thought, which may be distinguished from the paradigmatic mode in which the workings of physical world are explained. Bruner observed that narrative is that mode of thought by which we make meaningful sense of people (ourselves and others), their doings, and their interactions. Literary fiction describes narratives that are carefully crafted, written and re-written by authors intending their products for public consumption. Typically they contain episodes that depict relationships among people and among their goals. These episodes often include a conflict, then describe events that result in rising action toward a climax, followed by a denouement (Hodgins, 1993; Stein, 1995). Rumelhart (1975) and Schank and Abelson (1977) offered influential hypotheses about the structure of episodes, but for our purposes the central elements of a narrative lie at a broader level. What makes literary fiction unique is how fiction stories enable us to be "transported" into an imagined world (Gerrig, 1993), offering a form of cognitive simulation of the social world with absorbing emotional consequences for the reader (Oatley, 1999).

A great deal of work has been conducted on how readers comprehend written discourse, both narrative and expository (for reviews see Clifton & Duffy, 2001; Graesser, Millis & Zwaan, 1997). While processing a text, readers develop a mental representation or model of the text's meaning (Johnson-Laird, 1983; 2006, van Dijk & Kintsch, 1983). In order to build these models of a situation, readers employ top-down integrative processes and are subject to bottom-up constraints (Gernsbacher, 1997; Kintsch, 2005). These include both automatic memory-based processes (Gerrig & O'Brien, 2005; McKoon & Ratcliff, 1998) as well as conscious intentional and strategic processes (Graesser, Singer & Trabasso, 1994; Kintsch & van Dijk, 1978; see also Rapp & van den Broek, 2005; van den Broek,

Rapp, & Kendeou, 2005). Our mental representation of what a fictional story depicts plays a great role in our inference and understanding of spatial relations (Glenberg, Meyer, & Lindem, 1987), as well as goal-based intentions (Trabasso & Wiley, 2005) among other types of inferences. Indeed, readers appear to monitor many different aspects of a narrative during comprehension (Zwaan & Radvansky, 1998). Work conducted along these lines has gone a long way towards uncovering how readers understand connected discourse. Our focus, in the current model, is to postulate what readers acquire from reading literary fiction and the nature of their experience while reading.

Narrative Fiction as a Simulation of the Social World

Functions of Simulations

Simulations serve two main purposes. One is to provide information by offering a model when access cannot be direct. A clock is a simulation of the apparent rotation of the sun and stars round the earth. It has become essential to modern life because one cannot judge the positions of the sun and stars accurately, and often one cannot see these celestial objects at all. Comparably, people form models of the minds of those with whom they interact. It is important because although we have no direct access to such states, they are determinants of others' behavior (Frith & Frith, 2001) – behavior that may have an impact upon our own lives. In literature, and to some extent in ordinary life, a mental model of this kind is known as character. It is a simulation that allows us to know what another might be wanting, thinking, and feeling. This ability that is referred to as theory of mind, mentalizing, mind-reading, or adopting the intentional stance in psychology (Carruthers & Smith, 1996; Dennet, 1987)

The second purpose of simulations is to understand, and to some extent predict, the behavior of systems made up of many processes in interaction. Although humans are

relatively good at understanding one process at a time, we are less good at the unaided understanding of interactions among processes within a complex. The weather is such a complex, and the modern prediction of weather is based on computer simulations that include components such as barometric pressure, humidity, wind, and temperature. Though adages based on single observations such as "Red sky at night, a sailor's delight," may once have been useful, accurate weather forecasting cannot be done without detailed simulations.

The social world is also a complex system, in which we can understand individual causal processes quite easily: if a person falls in love, he or she will want to be united with the loved one; if someone harms another, that other will want vindictively to retaliate, and so forth. Things are rarely this simple, however, and become far more interesting when two or more ideas are combined: what happens when a person is harmed by someone he or she loves? More details of the relationship are required and we must imagine what this would be like. If the perpetrator loves the victim, might the victim seek revenge by harming his or her own self, knowing that such hurt will indirectly harm the perpetrator? Literary fiction provides simulations of social complexes as they unfold, as characters interact with each other, with the repercussions of plans, and with the intrusions of accidents. These intricate interpersonal situations, such as a person being tempted to retaliate in complicated ways against someone he or she loves, is the kind of material that constitutes narrative fiction of the sort that humans find fascinating.

Literary stories embody both of the above-described functions of simulation. They enable the understanding of minds that would otherwise be opaque, and they aid the comprehension of social complexes. To work, however, all simulations rely upon abstraction. The programmer of a weather forecasting simulation will represent barometric pressure as a function of location, averaged over some area. This is an abstraction, a

necessary simplification. Abstraction also entails selection and exclusion. For causal analyses

of weather simulation, the velocity and direction of winds for instance, is more useful than

including (say) the amount of light being reflected from the atmosphere in different places.

Similarly, the abstraction employed by literary narratives involve similar processes of

simplification and selection. Fiction stories are not direct copies of reality. Such a thing

would be impossible, since reality is ineffably complicated and detailed. Like simulations of

any kind, stories depend on abstractions and the particular kinds of abstraction must be

carefully chosen.

The Nature of Simulations

　　　Abstraction through selection and simplification. The idea that stories involve abstraction

was proposed by Robert Louis Stevenson (1884) in a reply to Henry James (1884) who had

declared that: "A novel is, in its broadest definition, a personal, a direct impression of life"

(p. 398). Stevenson disagreed. He wrote:

> Life is monstrous, infinite, illogical, abrupt and poignant; a work of art in
> comparison is neat, finite, self-contained, rational, flowing, and emasculate.
> Life imposes by brute energy, like inarticulate thunder; art catches the ear,
> among the far louder noises of experience, like an air artificially made by a
> discreet musician (p. 182).

Stevenson went further, comparing literature to mathematics:

> Geometry will tell us of a circle, a thing never seen in nature. Asked about a
> green circle or an iron circle it lays its hand upon its mouth . . . Literature,
> above all in its most typical mood, the mood of narrative, similarly flees the
> direct challenge and pursues instead an independent and creative aim. So far
> as it imitates at all it imitates not life but speech, not the facts of human
> destiny but the emphasis and the suppressions with which the human actor
> tells of them (p. 182).

Mathematics is a constructed system that enables a mode of thinking about the physical

world that is both more abstract and more generalizable than intuitive everyday thinking. For

instance, a line in geometry has length but not width. A circle is a line that at every point is

exactly equidistant from its center. Such things are pure ideas, but we cannot do without them if we want to understand the principles that underlie the physical world. Moreover, this same system allows us to expand creatively into this world, to produce engineered objects within it.

Our proposal parallels that of Stevenson: like mathematics, narrative clarifies understandings of certain generalizable principles that underlie an important aspect of human experience, namely intended human action. This idea follows Aristotle (330 BCE/1987) who wrote in his *Poetics* that whereas history is about what has happened, poetry (read: fiction) is more important and more general. It does not eschew memory, and can help comprehend what has happened, but it is unique in providing a model of what could happen. Works of imaginative literature – stories – are one means by which we make sense of our history, our current life, and make predictions and decisions regarding our future world.

As novelist Graham Swift (1983) has put it:

… only animals live in the Here and Now. Only nature knows neither memory nor history. But man—let me offer you a definition—is the story-telling animal. Wherever he goes he wants to leave behind not a chaotic wake, not an empty space, but the comforting marker-buoys and trail-signs of stories (pp. 62-63).

Swift's marker-buoys and trail-signs provide a guide to those who come after, readers who wish to benefit and learn from the life experience of others.

If it is correct, as Stevenson (1884) suggested, that fiction is abstract like mathematics, what do we really mean? When we say stories are abstractions, we do not mean they are unreal in comparison to observable behavior that is real. Quite the contrary. We mean they are explanations of what goes on beneath the surface to generate observable behavior.

As with any abstraction, a literary simulation is a simplification. Only factors thought to be important are incorporated. Although fiction stories are not simple *per se*, they are simpler than the social world they represent. The literary idea of plot epitomizes the process of abstracting events and complements the abstraction of personality formed by literary character. Our experience in the real world is certainly more complex than can be adequately described. Even the most trivial of experiences, such as going to buy a newspaper, is replete with details that could fill volumes. As we walk along the sidewalk, denizens of the city go about their business, birds bustle in trees, automobiles roll, passersby pass by, airplanes fly overhead. The plots of literary stories simplify this experience by selecting only those elements fundamental to the goals of characters in relation to the whole narrative, integrating them into a meaning-making framework (Oatley, 1992b). When certain environmental details are mentioned, they are often intended (or are viewed as intending) to communicate a theme or mood. Readers know that if "it was a dark and stormy night," not much good will occur; unlike in real life, in literature the weather is never coincidental.

Mar (2004) has pointed out that while attention selects elements relevant to current goals in real-world processing, narrative-processing partially entails the inference of an author's goals by observation of what is included in a narrative. Such a process is based upon the idea that everything included in the story is relevant, that all the elements of a story are coherent (Bartlett, 1932; Graesser et al., 1994). Aristotle (330 BCE/1987) made such an observation in *Poetics*, noting that each constituent of a narrative should be integral to the whole so that any removal or reordering would disrupt the representation. Coherence is thus a defining feature of narratives.

For literary stories, coherence is directly related to attention: we are invited to attend to exactly those elements in an narrative that are essential to it. In ordinary life, we know that

attention is important, for instance in the way we attend to the direction of another's gaze. (Illusionists regularly capitalize on this phenomenon to misdirect the audience's attention during sleight-of-hand tricks.) This ability is present from infancy onwards, and has been identified as a basic form of empathy (Repacholi, 1998). We not only direct our attention as a function of personal goals, but we understand that others direct their attention towards objects that are relevant to them. By turning our gaze toward another's target of attention, we are automatically engaging in a shared experience with another, and from this point can choose to proceed with more complicated inferences such as understanding that person's mental state, be it a goal (e.g., is she looking covetously at my chocolate cake?) or an emotion (e.g., why is she looking fearfully over my shoulder?). Persons with autism, who possess broad social impairments and may lack a properly developed understanding of others' mental states, exhibit deficits in joint-attention and other problems with social attention (Dawson et al., 2004; Pierno, Mari, Glover, Georgiou, & Castiello, 2006). Abrams (1953) has argued that with the advent of modern technologies that reproduce and copy, it has become clear that art does not so much imitate (a frequent translation of *mimesis*), as direct attention. He recommends substituting for the idea of art as a mirror of nature, the idea of art as a lamp that illuminates. Comparably, in his recent book that combines both literary theory and the empirical study of reading, Miall (2006) argues that the principal effect of literariness in literature is to bring particular phrases and images into the foreground so that we may experience them freshly. When watching a film we understand that the things on which the camera focuses are elements to which the director wants to direct our attention. One relevant technique is a shot known in filmmaking as a "leave-behind": a shot of an object, typically in isolation, that appears to have no bearing on the immediate situation but will come to play an important role later on. In horror films, the camera will often linger on a

household object (e.g., a fireplace poker or letter-opener) that will come to be used as a weapon in a pivotal scene to come. Without this shot, the subsequent scene flows less smoothly, with characters seeming to pull objects out of nowhere. This technique has parallels to literary foreshadowing, and a well-known quote by Chekhov, who wrote in an 1889 letter to A. S. Gruzinsky that "[o]ne must not put a loaded rifle on the stage if no one is thinking of firing it." In literature, the leave-behind has become known as "Chekhov's gun." This phenomenon has been demonstrated empirically, in that visual foregrounding of information in films both prompts and constrains the predictive inferences of viewers (Magliano, Dijkstra, & Zwaan, 1996).

In psychological research, the abstraction of social experience is represented in the idea of schemas (Bartlett, 1932) and scripts (Schank & Abelson, 1977). Serving as structural frameworks for the portrayal, storage, and communication of information, they have been the topic of investigation by both memory researchers (e.g., Alba & Hasher, 1983) and social psychologists (e.g., Taylor & Crocker, 1981). Scripts are sequenced representations of prototypical elements of a common interaction, such as visiting a restaurant. They are abstract at a level beyond that of stories, appearing more like stage directions and lacking the subtlety of a story. The beginning of a script for visiting a restaurant may be as follows: greet host, announce party size, get seated, order drinks, examine menus, order meal. In contrast, a story might include all these elements but a far richer description of the situation (the warm, dark wood of the restaurant) and the mental world of the characters (the husband distractedly adjusting and re-adjusting his tie, his mind drawn to the memory of having brought his mistress to this same place for their own anniversary).

With regard to function, the basic concept of schemas and scripts is that previously held expectations for prototypical presentations of information bias processing in

predictable ways. Many have noted that stories tend to have an underlying prototypical, schematic structure (Mandler, 1984; Propp, 1968; Schank & Abelson, 1977), although as we mentioned above, transforming this observation into a categorical definition of what determines a narrative has been difficult. Why is it that many literary stories appear to possess some common frame? Narrative fiction abstracts the intentional behavior that composes our existence over both micro-temporal (minutes, hours) and macro-temporal (days, years) spans (Trabasso & Magliano, 1996; Trabasso & Wiley, 2005). We are intimately familiar with the pursuit of goals, both proximal and simple (buying milk at the corner store) and distal and complex (hoping for a spot at a prestigious university), as well as the disruptions of these intentional goal pursuits. In a sense we possess a schema for stories (as Rumelhart, 1975, put it) because on some level a story is a schema (an abstraction, albeit a far richer one than the typical understanding of schema) of our experience as beings with intentions, immersed in a world of somewhat opaque conspecifics who also have intentions. Stories exist panculturally because they represent a predicament common to all human cultures, the difficulty of navigating a sea of friends and foes, intimates and acquaintances.

Advantages of Abstraction. Although selection occurs in a simulation, abstraction as such need not involve the loss of important information. Take for example the differential equation for simple harmonic motion of a pendulum. It neglects the color of the pendulum's bob, what it is made of, and what it is suspended on. To a first approximation it neglects the weight of the bob and frictional losses of energy. This abstraction, however, allows one to gain a deeper understanding of the sinusoidal function of reciprocating transfer between potential and kinetic energy in the pendulum, without important loss of information in this regard. Abstraction also means compression, greater portability, and ease of communication. Much like the way a differential equation can summarize the properties of a pendulum,

fictional literature abstracts, summarizes, and compresses complex human relations by selecting only the most relevant elements. This abstracted level of comprehension also enables one to see how these principles apply elsewhere, how they may be generalized. In the case of the differential equation, we can see how such movements apply beyond the pendulum to the spring and shock-absorber systems of suspension in cars, to oscillations of electrical circuits, and to the harmful vibrations of suspension bridges in the wind. For literary stories, the understanding gleaned from complex social events can be seen to generalize from one instance to many similar instances.

In *Poetics*, Aristotle (330 BCE/1987) discussed the appropriateness of basing poetry on real historical events. He said that the events of history may also represent future possibilities, thus a good abstraction is a universal that has potential to generalize across situations of the past, present and future, "for there is nothing to prevent some of the things that have happened from being the sort of things that may happen according to probability, i.e., that are possible (p. 13)." In other words, stories can provide means by which we learn from history about how things may occur in the future.

Abstracting and generalizing this information is tied to the cognitive capacity to comprehend abstractions in general. Since the work of Piaget (e.g., Piaget & Inhelder, 1969) it has been accepted that cognitive development involves a progression in the capacity for abstraction, from a position of comprehending only one's own perspective (egocentrism) and being closely tied to specific features of the stimulus array in the pre-operational stage, to a position of decentration and being able to think in abstractions in relation to mathematics (e.g., number), in relation to the physical world (e.g., area and volume), and in relation to the social world (Donaldson, 1978). Paul Harris (2000) has suggested the ability to cast questions into the pretend-space of one's imagination allows one to engage in syllogistic

reasoning and to generalize abstract rules across numerous situations. Consistent with this idea, O'Neill, Pearce and Pick (2004) have demonstrated that narrative ability between the ages of three and four, predicts mathematical achievement two years later. Only in a simulation space can one engage beyond the immediate. Only in the abstract can one understand what is concrete and yet beyond one's experience.

While literary narratives are abstractions of real-world experiences, it is worth noting that they are also substantially less simple than other more explicitly didactic representations of social information that tend to be non-narrative in structure. Whereas expository representations tell us information, literary narratives show us things by having us experience them first-hand. This simulated experience results from a number of factors, including a richness of information not typically found in non-narrative expositions.

Simulative Experience in Narrative Fiction

The idea of a simulation-space, or the world of the imagination, appears closely linked to our subjective experience while reading narrative fiction. Why is it that we feel "wrapped up" in a novel, immersed in the represented events? One reason could be that, because stories are abstractions, they rely on the participation of the reader in order to be completely comprehensible. We have to project ourselves into a story-world in order to understand what the characters are thinking and feeling. The idea that experience in literary narratives derives from simulation rests on a number of key components, including the evocation of imagery.

Simulation and Imagery

Long, Winograd, & Bridge (1989) review a body of research showing that instructions or practice in producing mental imagery while reading leads to improved comprehension and may aid semantic rather than verbatim recall. They also point out that

several text elements are linked to the evocation of imagery, such as: descriptions of sensations and emotions, use of analogies and other figurative language, and the inclusion of dramatic climaxes. These tropes are more likely to be found in narrative fiction compared to other types of texts, such as expository nonfiction.

Imagery may also rely upon memories to fill in experiences suggested by the text. Research by Larsen and Seilman (1988) speaks directly to this possibility. They used a method they called self-probed retrospection, in which subjects marked a text at points at which memories came to mind and later, after reading, said what those memories were. They found that a literary narrative, as compared to an expository text, prompted more autobiographical memories in which the subject was active, than in which the subject was an observer. We expanded on this method (Eng, 2002, Mar, Oatley & Eng, 2004), using materials developed from previous researchers that controlled for all other variables save the narrative versus expository genre of the text (Satterfield, Slovik & Gregory, 2000). In our research, narrative as compared with expository text was more likely to prompt vivid autobiographical memories in which the reader was an actor or active observer of scenes, rather than more abstract conceptual memories. Thus, even when we had added controls that Larsen and Seilman did not include, we found advantages for narrative fiction in vividness, and in the prompting of personal memories. These results imply that there might be qualities of narrative as such that aid mental simulation. Other research has corroborated the important role of imagery in fictional narratives. Sadowski, Goetz and Kangister (1988) had students read three short stories and rate imagery, emotion, and importance to the story of each paragraph. They found that specific paragraphs were often rated high on all three variables by a large proportion of readers, indicating an association between importance and imagery (as well as emotion). Halasz, Short, and Varga (2002) presented subjects with three

short narrative extracts of similar style and dramatic content, one from a novel, one from an autobiographical letter quoted in a biography, and one from a newspaper. For each extract, subjects were told the source of the text, sometimes correctly and sometimes differently from its real provenance. The participants responded in ways that were specific to the texts, independent of genre attribution. It thus seems it was the actual content of the material that affected readers' responses, not expectations derived from the genre of text they read. Using quite different methods, research by Green (2004) has demonstrated that personal experience plays an important role in how transported or immersed in a piece of narrative fiction a reader becomes. In her study, readers of a story (about a homosexual man attending a fraternity reunion) who had knowledge or experience of the themes (e.g., homosexual friends or relatives, familiarity with fraternities), reported higher scores on a measure of transportation than did those without such knowledge. This transportation score indicates more cognitive engagement with the story, greater emotional involvement, and the evocation of more mental imagery (Green & Brock, 2000).

The issue of imagery raises an apparent paradox for our proposal. How is it that, if literary narratives are a kind of abstraction, they are successful when they offer concrete experience-prompting detail? A thought-provoking article by literary scholar Elaine Scarry (1995) illuminates this issue. Scarry asks: what is it about a literary text that gives it vivacity, and that distinguishes author-prompted imagination from day-dreaming? She points out that successful immersion in a literary narrative does not, and cannot, compete with vividness of visual perception. Instead it works by suggesting to the reader a set of perceptual processes, that the reader then uses to construct a particular idea or experience. For instance, the solidity of a wall can be prompted by mention of a shadow or a patch of light that passes over it. The writer thus provides elements close to cues for visual depth perception that can

prompt constructive processes. We suggest that these constructive processes are precisely those that make a narrative simulation run, and that Scarry's "vivacity" is close to what we have discussed as absorption and transportation. The resolution of the paradox of detail and abstraction is that, since the work of Rosch (1975), it has been recognized that people more readily think in prototypes than in specific exemplars. A detail can invoke a prototype open to generalization, and it can do so with vivacity. Gluckberg's (2003) widely recognized theory of metaphor is exactly of this kind. He has shown that metaphorical expressions like "my job is a jail" are understood as quickly as more concrete literal expressions, and that they mean generalizations such as: "my job is a member of the category of situations that are extremely unpleasant, confining, and difficult to escape from" (p. 96). When it is prototypical, a concrete detail can prompt an abstraction. Earlier we discussed the idea of "Chekhov's gun." A gun is not only a prototype of a killing tool, but in Chekhov's idea, if you introduce it early in a story, then you must have a character who is thinking of firing it. The detail "gun" not only prompts the reader regarding what should be attended to, it provides an abstract generalization regarding necessity. Moreover, as Lodge (1990) says in his discussion of how the prose of novels prompts imagination: "The cinema, and other visual arts, can do more immediate justice to the visible world, but cannot match the power of language to *mean*" (p. 153).

Despite studies of vividness and vivacity, the question of how narrative—or specific features of narrative such as descriptions of sensation, metaphors, and metonyms—may be especially suggestive and succeed in prompting processes of the more personal and reflective kind is not well understood. More empirical studies in this area are required. It may be, for example, that figurative language demands a certain amount of cognitive participation on the part of the reader in order to achieve comprehension (as with Scarry's explanations of

shadows sliding over solid surfaces), and this involvement results in more imagery and more reference to personal experience.

Factors separate from the features of a text may also determine how readers approach stories. Zwaan (1994) has shown that expectations regarding genre affect the reading process and its outcomes, in contrast to the findings of Halasz and colleagues (2002). Participants who read identical narrative texts labeled as either a literary story or a news piece processed the stories in different ways depending on their expectations. Specifically, those who believed they were reading a fiction story spent a longer time on the text than those who thought they were reading a piece of news. It's possible that these longer reading times reflected a more attentive approach to the text, which when combined with certain text features such as metaphors and rich descriptions, aids in producing a simulative experience.

Simulation in the Brain: Embodied cognition and neural bases

The simulative experience afforded by narratives may be rooted in theories of embodied cognition (Barsalou, 1999; M. Wilson, 2002), and illuminated by research on the neural substrates of perception, action and imagination. A possible candidate for the basis of such a simulation system is suggested by the discovery of mirror neurons, cells in the brain that fire both when an action is observed and when that same action is enacted by the observer (for reviews see Gallese, Ferrari, Kohler & Fogassi, 2002; Rizzolatti & Craighero, 2004; Rizzolatti, Fogassi, & Gallese, 2001). Although first discovered in the brains of macaque monkeys, evidence has been found for comparable areas in the human cortex (Iacoboni et al., 1999; Nishitani & Hari, 2000; Rizzolatti et al., 2001). Different theorists have proposed that the human mirror system may account for the foundations of imitation (Arbib, Billard, Iacooni & Oztop, 2000; Iacoboni, 2005), language (Rizzolatti & Arbib, 1998; Rizzolatti & Craighero, 2004), and theory-of-mind (specifically the simulation-theory

account, Blakemore & Decety, 2001; Carruthers & Smith, 1996; Iacoboni & Dapretto, 2006; Frith & Frith, 1999; Gallese & Goldman, 1998; Gallese, Keysers, & Rizzolatti, 2004). All of these phenomena appear to rely upon the experiential simulation of perceived actions and events, in one form or another. In this way, mirror neurons appear to offer an intermediate step and preadaptation (see Oatley & Mar, 2005) for how symbolic forms of narrative presentation could result in the mental simulation—as if it were enacted by oneself—of experience. Such an account does, however, not yet address adequately the simulation of abstract symbolic stimuli.

One step towards a description of this more complex process comes from demonstrations that humans spontaneously ascribe intentional states even to simple circles and triangles, when they move in ways that look like chasing, fighting, and so on (Abell, Happé, & Frith, 2000; Heider & Simmel, 1944; Klin, 2000; Oatley & Yuill, 1985; for a review see Mar & Macrae, 2007). The brain regions activated during observation of these stimuli are the same as those engaged during other theory-of-mind tasks (Castelli, Frith, Happé, & Frith, 2002; Castelli, Happé, Frith & Frith, 2000). Taking this evidence further are preliminary findings that humans have the capacity to mentally simulate actions that are merely implied by pictorial stimuli, rather than explicitly depicted. Kourtzi and Kanwisher (2000) demonstrated that the same brain areas associated with the perception of human movement (the medial temporal/medial superior temporal cortex and STS) were relatively more active during the perception of still photographs portraying athletes in mid-motion than photographs of humans at rest. Similarly, the fusiform face area is as activated during the perception of cartoon faces as it is when actual face-stimuli are presented (Tong, Nakayama, Moscovitch, Weinrib, & Kanwisher, 2000). It thus appears that there are areas in the brain that code for actions and objects regardless of whether they are actually perceived

or merely implied by visual stimuli. This might explain the comprehension of certain written languages, such as early Egyptian hieroglyphs and Chinese ideographs, that employ signs that approximate the pictorial form of their referents. For example, the Chinese character for "horse," particularly in its earlier forms, looks like a sketch of an actual horse. Viewing such word-forms may evoke brain activation parallel to that witnessed during perception of the word's referent.

There is some evidence that this process may also be true of Western script, which is completely symbolic and nonrepresentational. Zwaan, Stanfield, and Yaxley (2002) demonstrated that nouns automatically evoke representational shapes of the objects to which each noun refers, in the mind. Moreover, these symbolically-activated representations were sensitive to the context in which these nouns were presented. Thus, in one sentence, the word "egg" may refer to an egg in its shell whereas in another example this same word may describe an egg in a frying pan. The shapes of these two objects differ, and only the appropriate image or shape is activated upon reading the sentence. Zwaan (2004) has subsequently offered a theory of discourse comprehension that emphasizes the simulation of experience afforded by language. He proposes that words automatically evoke neural activations similar to those that occur during perception of the words' referents, and there are some indications that this is the case (e.g., Pulvermüller, Härle, & Hummel, 2001). Others have argued that the brain supports a simulation of experience during abstract cognition, that all of cognition is "embodied," supported by areas of the brain devoted to perception and action. Barsalou (2003), for example, claims that the primary function of the cognitive system is to create a simulation that mediates objects of perception and possible action across different modalities.

One route by which the simulation of experience during reading may take place lies within an individual's imagination. Memories and imagery are often evoked in the mind of readers (Long, Winograd, & Bridge, 1989; Oatley, 1992) and this phenomenon may aid the experience of narrative engagement. In support of this, it has been demonstrated that similar brain regions are activated both when moving stimuli are perceived and when these same presentations are imagined (Goebel, Khorram-Sefat, Muckli, Hacker, & Singer, 1998). Parallel findings exist with regard to real and mentally simulated hand movements (Gerardin et al., 2000), human motion (Grossman & Blake, 2001), auditory perception (Kraemer, Macrae, Green & Kelley, 2005) and object perception (Kosslyn, Thompson, Kim, & Alpert, 1995; but see Mellet et al., 1996). Thus, imagined settings and characters evoked by fiction literature likely engage the same areas of the brain as those used during the performance of parallel actions and perceptions. Consistent with this proposal, four of the five brain areas commonly associated with narrative processing (Mar, 2004) are also commonly implicated in studies of social processing (the medial prefrontal cortex, temporoparietal junction/posterior superior temporal sulcus, posterior cingulate and temporal poles; Frith & Frith, 2003; Lieberman, 2007; Saxe & Wexler, 2005). There is clearly a shared neural basis for attempting to make sense of real people, and processing fictional representations of persons (e.g., cartoon shapes or characters), although it does appear that our brain is preferentially responsive to actual social agents (Mar, Kelley, Heatherton, & Macrae, in press).

The simulation of events portrayed in imaginative literature appears possible through two different routes. Words may evoke something close to direct experiences of referents, or a fictional text may prompt more constructive imaginative processes, which then create an experience that has some of the attributes of actuality. In all likelihood, both processes play a

role in constructing the unique simulation that readers experience when entering narrative worlds.

<center>*The Functions of Narrative Simulation*</center>

The simulative experience that derives from narrative fiction is not only unique as a kind of experience, it also has unique implications. It both encourages empathetic growth (Nussbaum, 1995; Vitz, 1990) and allows for the persuasive transmission of social knowledge (Carroll, 1999), communicated through vicarious experience (Gerrig, 1993; Oatley, 1999). Among our everyday experiences (and for most, experience with fictional narratives of some sort is a daily event) no other can boast these benefits.

Sympathetic and Empathic Growth

An important theoretical statement of the psychological functions of literature was made by George Eliot (1856/1883) who proposed that: "The greatest benefit we owe the artist, whether painter, poet or novelist, is the extension of our sympathies" (pp. 192–193). She was amplifying an idea that had been put nearly a hundred years earlier by Adam Smith (1759/1956), who proposed that each of us can be a "judicious spectator" who imagines vividly what it is like to be another person. This spectator:

> . . . must, first of all, endeavour, as much as he can, to put himself in the situation of the other, and to bring home to himself every little circumstance of distress which can possibly occur to the sufferer … and strive to render as perfect as possible, that imaginary change of situation upon which his sympathy is founded (1. 1. 4. 6).

Smith, notably, uses literary reading as the model of this mode of mental life and argues that it enables emotions to be rational. Nussbaum (1995) adopts this same idea. She gives a reading of Charles Dickens's *Hard Times* (1854/1985)*,* and uses Smith's idea of the judicious spectator as a way of thinking about our private and public relationships, informed by a sympathetic understanding of those with whom we interact.

In Adam Smith's time and in George Eliot's, sympathy included what we now mean by empathy. The word empathy is a modern coinage; it emerged initially in aesthetics, for instance with Lipps's (1900) idea of art as inviting one to feel oneself into it. In psychology, the term stems from Titchener's (1909) translation from German of the word *Einfühlung,* which roughly corresponds to "feeling into." Whereas sympathy is now used to mean feeling concern, compassion, or sorrow, for another person in a particular predicament, empathy is usually now thought of as meaning accurately feeling to some extent the emotions of another person (Eisenberg, 2000). Empathy with others emerges in pre-school children, and both sympathy and identification with protagonists in fiction stories probably derive from it (Oatley & Gholamain, 1997). Because emotions are activated in ourselves during the empathic process, we have (in life and in art) a feeling of intimacy with the person for whom we are feeling.

The process of identification-as-empathy is more complex than merely projecting oneself mentally into the personhood of a protagonist. Empathy occurs by a partly innate and partly learned feeling on behalf of someone else whom one witnesses as suffering, or joyful, or angry, but the feelings one experiences are not exactly pain, joy, or anger. As Indian literary theorists insist, aesthetic emotions, *rasas,* are related to everyday emotions but are not identical to them (Ingalls, Masson & Patwardhan, 1990). They are, indeed, the emotions of empathy. The process is abstract, even schematic: for instance feeling pleased when someone we like is doing well. In stories, the elicitation of empathic emotions relies partly on the progress of a character's intentions in the plot (Trabasso & Chung, 2004), and partly on moment-by-moment depictions of emotions by a writer or actor. Zillmann (1994), for instance, discusses an unpublished experiment by Sapolski in which different versions were made of an erotic scene. After the same beginning of a heterosexual couple engaged in

foreplay, the camera was either in the position of one of the actors (embodying the idea of identification as identity) "simulating the visual perception of the male or female engaged in intercourse," or in a more objective portrayal that "isolated either the male or the female, showing his or her action on the partner whose presence was only suggested" (p. 38). As measured by the heart rate of a viewer, the identity position did not work well. Sapolski and Zillmann concluded that the idea of identification as the viewer entirely taking the place of an actor is an incorrect characterization. What works best is indeed the kind of view favored by film-makers of following the intentions and plans of a liked fictional character, in which the actor is shown acting in a recognizable way. Such a perspective best allows for the empathic understanding of fictional others as they enact plans in a fictional social world, mirroring as it does the perspective from which we empathize with real-world others. An interesting variation of empathy in cinema is demonstrated by the Kuleshov effect (see M. Smith, 1995), in which a shot of an actor's face looking without facial expression at something is followed immediately by a shot of what he or she is presumably looking at, for instance of something disgusting, or frightening, or sad. The audience members consequently feel disgusted, or fearful, or sad, and tend to attribute this experience to the skill of the actor in communicating these feelings.

The simulation of social experience that literary narratives afford provides a forum that is ideal for empathic growth. It trains us to extend our understanding toward other people, to embody (to some extent) and understand their beliefs and emotions (Keen, 2006; Mar, Oatley, Hirsh, dela Paz & Peterson, 2006; Zunshine, 2006), and ultimately also to understand ourselves (Moore & Macgillivray, 2004). Importantly, fictional literature brings to close attention distant worlds that would otherwise remain unknown. Fictional stories not only allow us access to environments and situations that are difficult to experience firsthand,

such as faraway countries and cultures, but it also takes us to places impossible to reach, such as past societies. Moreover, literary narrative allows us to experience rare situations many times over. In much of literature, the author challenges readers to empathize with individuals who differ drastically from the self. While Green (2004) has demonstrated that personal experience congruent with the themes of a fiction story results in greater transportation, it may also be the case that transportation into a narrative can help us learn to empathize with individuals of kinds with whom we have no personal experience. For this reason, literature may be helpful for reducing bias against out-group members. In order to comprehend such narrative fiction, we must acknowledge the common humanity present between ourselves and dissimilar others. Without the reader assuming the same (or similar) emotions, desires, and beliefs as the protagonist in the story, the phenomena of transportation, enjoyment, and ultimately understanding would remain elusive.

Some empirical support for this assertion, that narrative has the potential to encourage empathy with often marginalized others, has been gathered. In the late 1960s, in the USA, Litcher and Johnson (1969) attempted to change the attitudes of White second-graders toward African-Americans by including characters from different ethnic backgrounds in their readers. Students then read these stories for four months. A control group of children kept their old reader, which contained only White characters. They found that for those children who read stories with multi-ethnic characters, attitudes towards African-Americans were markedly improved. Katz and Zalk (1978) conducted a similar study, using only high prejudice children from both the Second and Fifth Grade. Although these researchers used a far briefer manipulation (exposure to only one 15 minute story), children exposed to African-American characters exhibited less bias and prejudice than children exposed to White characters. Surprisingly, this manipulation proved more effective

than having White children interact with African-American children on a shared task, and the positive influence of the story-intervention was still present after a four-month interval. More recently, research by Galinksy and Moskowitz (2000) indicates that empathy may be the mechanism of this effect, demonstrating that taking the perspective of another person reduces stereotyping and in-group favoritism. Perhaps mediated contact, that is indirect contact with stigmatized others through the medium of fictional stories, allows individuals to approach these individuals with sufficient psychological distance and feelings of control to promote true empathy and perspective-taking. Direct contact may be experienced as threatening, or otherwise emotionally arousing, for a great deal of empathy or even sympathy to take place (although, direct contact between groups does reduce prejudice; Pettigrew & Tropp, 2006). The structure and expectations of literature that encourages empathy in order for comprehension to occur, while still permitting the reader to pull back cognitively and emotionally when desired, may be ideal for fostering understanding between different groups.

Concrete demonstrations of how empathy relates to literature for adults also exist. We have recently shown, for example, that individuals who have been exposed to more fictional literature tend to exhibit better empathic abilities (Mar et al., 2006), and that this relation cannot be explained by individual differences in personality (Mar, Oatley & Peterson, submitted). Further research from our group indicates that reading appears to invoke a social-processing mode in readers, priming them for the understanding of social relations (Mar, Oatley & Peterson, in preparation).

To summarize: identification, transportation, and the Indian concept of *rasas* are literary ideas, based on abstractions during the running of literary simulations. Their equivalents in ordinary life are empathy, imagination, and emotions. Because we run literary

simulations on our own minds, the effects of identification, transportation, and *rasas* are on ourselves. As George Eliot said, they extend our sympathies beyond the boundaries of our ordinary lives.

The Communication of Social Knowledge

Narrative simulation has implications not only for empathy and perspective-taking, but also for the transmission of social knowledge. As argued above, the content of literary fiction is largely about people and the problems that arise when their desires, emotions and goals come into conflict. We are attracted to literature because we are social creatures who are interested in one another. Social information, importantly, is not only fascinating, but also possesses survival-value (Carroll, 1999; Miall, 2006; Oatley & Mar, 2005). In order to survive the harsh environments of our history, early humans needed to form and maintain groups so that protection from external threats, hunting, gathering, and other necessary pursuits were more likely to be successful. Such conditions required consummate skill in social-navigation. The social environment probably ensured that throughout human history fictional stories played an important role in the communication of information relevant to social skill, a role that seems more important than the need for amusement. In more contemporary times, only a unique set of individuals succeed in producing and publishing public, crafted literary narratives. These authors are experts in understanding human psychology and behavior, and may think deeply about an issue for years. By consuming the wisdom and observations of these individuals, we may thus stand on the shoulders of giants.

A number of researchers have demonstrated that we appear to learn from our experiences in the fictional worlds of literary narratives. There is evidence that the type of storybooks children are exposed to affect their perceptions of what sort of emotions are ideal in their own culture (Tsai, Louie, Chen, & Uchida, 2007). Reading a short story leads

people to adopt attitudes that are more congruent with those expressed, explicitly or implicitly, within the story (Green, 2004; Green & Brock, 2000; Prentice, Gerrig, & Bailis, 1997; Strange & Leung, 1999; Wheeler, Green, & Brock, 1999). Fictional stories not only change attitudes, they also lead to the acquisition of general knowledge about the world, both accurate and inaccurate (Marsh, Meade, & Roedigger, 2003; see also Schank & Abelson, 1995); this acquisition appears largely automatic and difficult to disrupt (Marsh & Fazio, 2006). We argue that the information communicated through fictional literature is not primarily general world knowledge, but social knowledge. Just as importantly, literature possesses a number of advantages over the expository communication of social information, advantages afforded by both the abstraction and simulation of social experience.

Abstraction of Social Information. As noted above, one key benefit of narrative fiction lies in its generalizability, which in turn derives from its abstract quality. The most important access that a reader has to the social information embedded in a story is through its characters. By mentally running the simulation of a novel or play, a reader generally identifies with a protagonist (Black, Turner & Bower, 1979; Özyürek & Trabasso, 1997). In so doing the reader may come to like, and then to become somewhat more like, the character. The psychological effects of character, then, include the pleasing surprise of recognition, the satisfaction of being able to understand visible behavior in terms of deeper principles, the insight of seeing both others and ourselves in terms of human attributes that are both valuable and also problematic, as well as some movement in our mental makeup.

In experiments with short stories by Alice Munro and Ambrose Bierce, Kerr (2005) found that identification with a main character increased literary involvement, as measured by the number of emotions readers experienced while reading the stories. The degree of involvement was correlated significantly with increased insight. Understanding characters in

a story, then, is a means through which we can come to understand ourselves and others better. The impact of character in a novel or short-story is that, as the reader enters, Alice-like, through the looking glass of the narrative he or she can enter another mind (Palmer, 2004). This mind is in some ways like his or her own, and in some ways unlike. The impact of this experience illuminates the nature of selfhood, by means of the literary idea of character. Because this experience of being within another mind is accompanied by other impressions also, such as the character being seen by others, it offers the reader not just the possibility of clarifying his or her mental models of self, but also of their transformation; such a potential is unique to fictional narratives.

Within the simulation of narrative worlds, then, the idea of character can become more elaborated than our usual everyday ideas. Although the specificity of literary characters is maintained, the understanding of human mentality and action that is depicted becomes more abstract. Because of this, an understanding can, perhaps, be applied more generally than an understanding derived from gossiping about an acquaintance.

How is this abstraction and generalization achieved? First, with some literary characters we can experience an ironic distance that allows us simultaneously both subjective experience and external observation. This is an effect accomplished in Flaubert's *Madame Bovary*, as explained by Lubbock (1921). In the novel, we see Emma Bovary's world through her eyes as she becomes in turn wearisome, resigned, and ecstatic. At the same time we see her actions and her objects of thought as vulgar and sentimental, through the eyes of the author Flaubert. Our consciousness of a story-protagonist thus goes beyond the kind of knowledge we can easily have of ourselves or of other people. Surprisingly, then, we can come to know a fictional character better than someone in real life, better perhaps in some respects than ourselves. This kind of knowledge also generalizes beyond knowledge of any

specific character. Secondly, the insight afforded by a window into a character's "inwardness" provides one with an evocative framework from which inferences beyond the text may be developed. This possibility is based upon a departure from the creation of characters who are determined solely by their material environment (Woolf, 1924). An understanding of how characters are abstractions susceptible to generalization appears to develop with children's age. McKeough and Genereux (2003) have found gradual progress in the abstraction of characters in the written fiction stories of adolescents. Participants from various age groups (on average 10, 12, 14 and 17 years) were asked to write a short story about a character who has a problem, and to include at least one flashback. The researchers found that older children as compared with younger children, tended to include more interpretive descriptions of characters of a kind that would generalize beyond immediate motivations. An increase was even observed between the two oldest groups of children, indicating that this capacity continues to grow during late adolescence.

The abstraction of social knowledge achieved by literary fiction can also be understood as the presentation of human relations and their outcomes in a compressed format. Because stories are primarily about social relations, they present a focused examination of social experience with other daily concerns placed in the background. Novels often capture the qualities of complex relationships in a relatively pure form, among families, friends, and between lovers. Literary fiction serves not only to communicate this abstracted social knowledge explicitly and directly, by acting as a model or simulation of the social world, it also supports a simulation of experience that illustrates this information. This deeply-felt simulative experience results in substantial benefits for the communication, comprehension, and adoption of this knowledge.

Simulation of Information. Literary fiction allows us to experience social situations vicariously, thus allowing for personal consideration of response and action. The simulation of interacting ideas and emotions evoked by a story simultaneously permits the exploration of our own ideas, feelings, and desires, and our own potential reactions to the story's plot. Constructing a complex simulation of concepts, ideals or emotions allows for an arena within which we can test out our own affective reactions. Fiction is a laboratory (Hakemulder, 2000) that allows us to experiment in a controlled and safe manner with intentions, emotions and emotion-evoking situations that would be impossible and often highly undesirable in the real world. From narrative fiction we can explore what it would be like to be a participant in war, for example, without the risk of injury or post-traumatic stress disorder. Individuals who have personally faced the horrors of such experiences rarely wish to visit them again. Along parallel lines, those who have imagined, through a deeply felt simulative experience, what it would be like to participate in the horrors of war, are similarly less likely to advocate on behalf of such actions.

Projecting ourselves into these difficult circumstances also provides us with an opportunity to grow emotionally. Fictional literature not only allows us to simulate ideas and situations, it can enter our emotional system and prompt it toward the experience of emotions that we might otherwise rarely acknowledge. By engaging in these emotional experiences, we may not only gain a greater understanding of emotions, their breadth and quality, but we may pick up emotional cues implicitly communicated by the author.

In contrast, reading purely expository non-narrative accounts of a war in charts and tables of death tolls, does not have the same effect. As George Eliot (1856/1883) put it: "Appeals founded on generalizations and statistics require a sympathy ready made." What

literature can do, she continued, is to offer "a mode of amplifying experience and extending our contact with our fellow-men beyond the bounds of our personal lot" (p. 193).

Simulating a complex interaction between story characters may also prepare us for a similar interaction should it take place in our own future. For example, a difficult breakup between a literary protagonist and his or her beloved cannot help but lead us to explore what it would be like were we in the same position. This knowledge is an asset when the time comes for us to cope with such an event in our own lives. While people can mentally simulate such interactions in the absence of fictional stimuli, narrative materials provide more than fanciful ideation. Story engagement is the structured re-creation of an abstracted social interaction. This supplies advantages beyond spontaneous imagination. When reading, we are also recipients of a narrator's or protagonist's construal of the situation and its solution, and such a contribution may provide us with new perspectives and possibly new solutions. Narratives allow us to try out solutions to emotional and social difficulties through the simulation of these experiences, as we try to comprehend the actions of protagonists and ponder how our own responses may compare were we presented with the same situation.

Literary fiction may not only help us with the future, but also aid us in comprehending the past (e.g., Scheff, 1977). Narrative fiction evokes personal memories (Larsen & Seilman, 1988), often emotional in nature. By both experiencing the story we are reading, and re-experiencing similar events in our past, we may come to a greater understanding of the latter through the former. Some evidence exists that simulating the experiences depicted in fictional stories can help individuals cope with past personal difficulties. Anecdotally, it has been noted that among a population of highly distressed, carefully observed children, each child chose from a specially-prepared library those books that related to his or her own personal troubles (Alexander, Miller & Hengst, 2001). As well,

in a controlled study, Greenberg, Wortman & Stone (1996) recruited a group of young

women who were pre-selected for the presence of a personal trauma and asked them to

narrate either their own traumatic event, or their emotional reactions to an imaginary

traumatic event that they did not personally experience. Both groups of women experienced

a decrease in the frequency of illness-related visits to a medical practitioner. The authors

hypothesized, much as we propose above, that experience with a fictional account allows

one to explore complex and often extreme emotions in a safe and controlled manner. In

support of this idea, they observed that:

> . . . participants who benefited the most from the imaginary-trauma
> intervention were those that became affectively immersed in the imaginary-
> trauma scenario, yet were able to modulate and limit these reactions such that
> relief and diminished negative affective arousal were reported in subsequent
> weeks. (p. 600)

This idea that fictional stories allow for a controlled experience, at what Scheff (1977) has

called an optimal aesthetic distance (neither overwhelming nor overdistanced) from

potentially stressful situations, parallels our interpretation of the research on mediated

contact with out-group members mentioned above.

Narrative fiction often provides a better mode of instruction than certain kinds of

exposition (Satterfield & Slovic, 2004) because it represents learning through experience and

invokes a kind of understanding that is socially based. Literature brings information to us in

human fashion (e.g., Strange, 2002), eschewing the presentation of ideas without reference.

All good rhetoricians understand the power of an anecdote as illustration. Politicians enjoy

telling audiences about "young Nathan Singer of Boise Idaho who asked me about the price

of gas," because they know that the best way to communicate an idea, and the best way to

persuade, is through narrative. Researchers interested in persuasion have recently begun

empirical investigations into this phenomenon (Green, Strange, & Brock, 2002; Prentice et

al., 1997). Dal Cin and colleagues (2004), for example, have argued that fictional stories may be especially persuasive for those who hold strong countervailing attitudes because the ideas embedded in a story are implied rather than stated explicitly and the simulation demanded by stories leaves few resources for counterarguing.

Parallels, Complications, Contrasting Views, Future Research

A number of issues arise from the model of fiction's function that we have just proposed. How does our proposal relate to other, non-literary, forms of narrative such as life-narratives and personal anecdotes? Are all forms of literary fiction equally likely to facilitate social growth? How does the argument we make here about literary fiction relate to other narrative media? What opposing views exist with regard to our proposal? Where should we go from here?

Life Narratives

We have argued that literary narrative is a way of understanding selves in the social world. For comparable reasons a narrative approach has become important in the fields of autobiographical memory, identity formation, and life-span development. McAdams (see review, 2001), has been a pivotal figure in this work, arguing that people give their lives unity and purpose by understanding them as narratives. This has amounted to what could be considered a new paradigm, with numerous researchers now working independently along similar lines (e.g., Bluck & Habermas, 2001; Brockmeier & Carbaugh, 2001; McAdams, Josselson, & Lieblich, 2006; Singer, 2004; for the health benefits of narrating experience see Pennebaker & Graybeal, 2001; Smyth, 1998). As the focus of our article is on literary narrative, an extensive discussion of life narratives would not be appropriate here. The approach of life narratives has, however, enabled exploration of relevant matters such as: (1) the influence of culture and available literary genres on how people understand themselves

and their lives in narrative terms (Bruner, 2003; Nelson, 2003a; 2003b; Wang & Brockmeier, 2002), (2) recognition of the mental aspects of other social agents (Cupchik & Hilscher, 2004), (3) links between remembered episodes and current episodes in people's lives (Fivush & Haden, 2003), and (4) the relation of identity to important events in life (McLean & Pratt, 2006). All these findings amplify the conclusions of our discussion of literary narratives. In addition, there are cross-fertilizing influences: literary genres such as biography and autobiography affect how people construct their own life narratives (McAdams, 2006), and important biographical work is now being based on our understanding of the life-span development of character (Magai & Haviland-Jones, 2002). In terms of our proposals about coherence and abstraction, Habermas and Bluck (2000) found that the ability to understand one's own life narrative with the coherence characteristic of literary narrative begins in adolescence. Similarly, Tversky (2004) has found that when people construct narratives of their lives, on about 60% of occasions there are distortions of details but a far lower rate of distortion of more generalized (abstract) truths. In other words, abstracted and compressed information about our lives is less prone to transformation.

There are, however, some reasons to question whether our proposal can be transplanted wholesale into the realm of life-narratives. Literary narratives are different from life-narratives in a number of ways. Lamarque (2004; in press) has argued that life-narratives and literary narratives are similar with regard to only the most superficial aspects, whereas the qualities of literature that make it most interesting (e.g., it's careful construction and fictive imagining) do not apply to the stories we tell about our own lives. The important and unique aspects of fiction literature that pertain to our model include the simulative experience evoked by literature and the careful writing and re-writing that takes place during composition, including the construction of imagery-related tropes. The careful observation

and abstraction of deep human psychological truths achieved by accomplished authors is also likely to be a rarer occurrence in the everyday narration of our own and others' experience. Although much of human conversation does appear to be based on the transmission of useful social information about fellow peers (e.g., Dunbar, 2004a; Kashima, Peters, & Whelan, in press; Mesoudi, Whiten, & Dunbar, 2006).

Are All Stories Useful Social Guides?

In light of our proposal that the function of fiction is to abstract and simulate the social world, some may question whether this is true of all stories. After all, many stories appear to lack even the most superficial correspondence to the real world, populated as they are with wizards, dragons, spaceships, barbarians, and pirates. While this lack of correspondence is undeniable, we would argue that most fiction strives for realism in the most important aspect of human experience, the psychological and the social. Even novels with fantastical themes and settings (e.g., science fiction or fantasy novels) strive for verisimilitude with respect to human emotions and interpersonal interactions (Oatley, 1999); in short, writers attempt to create characters who possess a recognizable psychology. Books that fail in this regard are derogated as "cheesy" or not believable, whether the setting is a faraway planet or downtown Toronto. It is this psychological realism that determines whether we can learn useful social information and processes from a work of fiction, not the superficial characteristics of the setting. A science fiction novel that takes place on a distant space station may have greater psychological realism than a pulpy novel set in modern times in a familiar locale.

While our proposal is about literary fiction in general, there do appear to be some genres of fiction that characteristically lack realistic portrayals of human psychology and may not be helpful in illustrating social principles. Perhaps the most obvious target for skepticism

is romance novels, in which the representation of interpersonal relations bears little resemblance to the relationships of real people. The problem here is not that these stories sometimes take place on a pirate ship, the problem is that they tend to espouse an idealized form of passionate romantic love rarely realized in the real world. It is possible that readers who consume this genre of fiction to the exclusion of others may come to adopt unrealistic expectations about romantic relationships. In support of this idea, Diekman, McDonald, and Gardner (2000) have shown that women who read more romance novels have more negative attitudes toward condom use, report less frequent condom use in the past and less intention to use condoms in the future. These risky sex behaviors are all consistent with the "swept away by passion" script embedded in most romance fiction. The work of Marsh and her colleagues has also demonstrated that people can adopt incorrect information from stories, although this work does not pertain to social knowledge specifically (Marsh & Fazio, 2006; Marsh et al., 2003). More generally, it is clear that some stories are more instructive and more useful in terms of psychological insight. Some thinkers, perhaps most notably Elster (1999), have put forth proposals regarding which authors are worth reading for this purpose. In considering this issue it is worth recalling the ideas of Booth (1988), who likened books to close friends. There is no doubt that friends influence us, and so do books of fiction. Just as we are careful in choosing the friends who surround us, so should we be careful in choosing the books with which we spend our time.

Another set of genres that on the surface might appear to lack psychological depth are espionage and other thrillers. While it may be that less emphasis is placed on character and significantly more on plot for these novels, stories of this type often involve the monitoring of a multitude of characters and their motivations. Keeping track of these characters as they cross and double-cross each other could draw on cognitive processes

useful for avoiding deception in real life, and for developing recursive layers of understanding others (he knew that she believed that he wanted, etc.; this is known as second-order or third-order theory-of-mind). Dunbar (2004b) has argued that these capabilities are fundamental to human social evolution. A related genre, mystery, is quite different from the spy thriller as it often pivots on issues of character, motivation and intention. Most of the enjoyment of mystery novels is derived from figuring out why someone would be driven to murder, rather than contemplating exactly how it was that he or she killed the victim. These motivations are often drawn from interpersonal conflict, the substance of much fictional literature.

It may be difficult for a reader to know whether any particular book will impart useful knowledge or provide a compelling simulative experience before reading it. Reading a diversity of literary fiction, however, over an extended period of time is likely to do more good than harm with respect to one's social understanding, in the sense that it is likely to increase pluralism, which is important in democratic society. We suggest that for the most part, authors of literary fiction are interested in portraying fundamental human truths rather than purveying falsehood. The purveyance of motivated falsehood in written form has a particular word, separate from "literature": propaganda. Moreover, even if a story depicts social relations that may be unhealthy or not recommended, it is not necessarily the case that all readers will adopt this information thoughtlessly. It possible that exposure to certain actions or behaviours in a piece of literary fiction could prompt thoughts about how our own response would be quite different (cf. uses and gratifications theory in mass media psychology; R. J. Harris, 2004).

Other Narrative Media

In this proposal we explore the function of reading literary fiction. Can these findings be generalized to other media? With respect to the various instantiations of narrative, literature is unusual. It could be considered the most abstract of narrative forms, providing readers with a purely symbolic and nonrepresentational portrayal of the social world and its intentional agents. In contrast, television, cinema, and theatre all provide direct visual and auditory representations of our actual world and its inhabitants. The absence of multi-modal sensory information in novels and short stories results in a need to construct the sights and sounds of the narrative on the part of the reader. Reading is thus thought to involve active participation, drawing upon imagination (and memories) in order to create the experience (cf. Polichak & Gerrig, 2002). In contrast, television and film are seen as passive media, providing nothing for the audience to do but sit there and be entertained. Because of these differences, television is often framed as a "low" medium that requires no cognitive engagement or effort and thus "rots the brain" (cf. Ricci & Beal, 2002; Walma van der Molen & Van der Voort, 1997). In light of these lay conceptions, one might hypothesize that the honing of social-cognitive processes thought to occur during the simulation of social experience evoked by a narrative (Mar et al., 2006) might only occur with written narratives, as opposed to multi-sensory narrative forms. We would argue, however, that the content of the narrative is far more important than the form when predicting a story's possible engagement of social processes or communication of social knowledge. A good film, or television show for that matter, may demand as complicated mental-inferencing processes as a good novel. Many films portray elaborate social relations and consequently involve the audience in a process of complex social-understanding. At the same time, many books make few demands on the reader in this regard. It is the content and complexity of the story that is

important, not the characteristics of its transmission. In fact, multi-sensory narrative

portrayals such as theatre, film and television may be especially useful for learning how to

decode subtle nonverbal cues. Fine actors can communicate a great deal with just a particular

slouch, or a twitch at the corner of the mouth. Typical Hollywood films that present all

information (social or otherwise) in an easily assimilated manner may well not invoke any

complex cognition (with respect to mental-inferencing or not). There are, however, films

such as Bernardo Bertolucci's *Besieged* (Cortesi & Bertolucci, 1998) that deal almost

exclusively with the complicated motivations and emotions underlying superficially

incomprehensible behavior. (In this case, a pianist's unrequited love for his African maid

leads him to sacrifice everything in order to reunite her with her imprisoned husband.) One

key aspect of the content in these cases is an acceptable amount of ambiguity that prompts

inferences with regard to emotions, beliefs, intentions, goals, and the like. A study by Peskin

and Astington (2004) illustrates this idea. These researchers exposed children to storybooks

that were either filled with mental-state language (the experimental condition) or had such

language removed (the control condition) and examined the preschoolers' theory-of-mind

development. Somewhat counter to their hypothesis, they found that the group who were

read stories that did not contain mental-state language actually out-performed the

experimental group on a later test of false-belief reasoning. Their interpretation of this

finding, one that corresponds to our proposal, is that children in the control condition

needed to draw their own inferences about characters' mental states whereas the

experimental group had to exert no such effort. It was the act of drawing these inferences,

and of struggling to understand the mental states of somewhat opaque characters, that led to

the more rapid development of theory of mind in the control group. We believe that

challenging narratives of this sort exist in a variety of narrative media, including film, television, theatre, as well as literature.

Contrasting Views

While we have cited a number of theorists and researchers in support of our proposal, there are also those whose views could be interpreted as lying in contradiction to our own. There are, for example, some who doubt that fiction stories impart useful information to their readers. Narvaez (2002), heavily influenced by the ideas of Nash (1997), has made such a case. She argues that storybooks are an inadequate and flawed method of moral education for young children, as these readers may misinterpret the author's intended moral or theme, may have difficulty extracting the moral from a story, and may lack the moral development necessary to draw more complicated moral inferences. Upon close examination, however, her ideas do not lie in perfect opposition to our own. Narvaez (2002) stresses that readers are active, constructing rather than collecting meaning from story texts, which is consistent with our idea that readers may respond to the actions of protagonists rather than adopt them unthinkingly. Furthermore, the majority of her empirical work (Narvaez, Gleason, Mitchell, & Bentley, 1999; see review, 2002) has demonstrated that while children have difficulty inferring themes from a story, older children and adults can do so successfully. While she has made the case that young children may not glean the intended moral information from moral stories, children do appear to learn other social information from storybooks. The work by Tsai and her colleagues (2007), mentioned above, indicates that children can learn societal norms for emotional ideals from books, and the work of Peskin and Astington (2004) indicates that social-inferencing processes can be honed by certain kinds of storybooks. More work on this topic would clarify the degree of caution that must be exercised in applying our proposal to younger readers.

Future Research

In some parts of the landscape we offer, the evidence is spotty. These gaps are amenable to empirical study, however, and our proposal may thus influence future work with regard to research questions, methods, with resulting implications for various other areas of study.

The model we have proposed has shone light on a number of interesting questions, that are only now starting to be answered. What are the literary mechanisms that prompt the simulative social experience felt by readers of narrative fiction (e.g., Miall, 2006)? How do cognitive and attentional capacity relate to the potential for narrative tropes to spur transportation into a piece of fiction (e.g., Nell, 1988)? How is literary simulation enacted in the brain, and how might it be different from imagination or day dreaming (e.g., Mar, 2004; Mar et al., in press; Scarry, 1995)? What role do individual differences in absorption play in the experience of transporting oneself into a fictional world (Kuiken et al., 2004)? Can literary fiction provide useful strategies for coping with specific stressors (e.g., Alexander et al., 2001)? Such matters are of interest to both psychologists and literary scholars, and answering these questions will require an integration of their respective methods.

To the psychologist, fictional literature offers a set of scenarios that can be both experienced and potentially understood. Some such scenarios provide unique opportunities to produce emotions that transform into other emotions, and/or are transformed by them; this is relatively difficult to approach using the conventional techniques of laboratory studies (Elster, 1999; Nussbaum, 1990; Oatley, 2005). Ideally, researchers should begin employing longer, more ecologically-valid examples of literary fiction. While the use of textoids and similarly brief forms of connected discourse have told us a great deal about reading inferences and the construction of situation models (Graesser et al., 1997), these fail to elicit

the deeply felt experience of simulation that most fiction readers report. Becoming deeply immersed in a text is not an obligatory experience, certain conditions facilitate this experience and care should be taken to produce these conditions whenever possible. These factors can be text-related, such as providing stories that are engaging, well-written, and artfully constructed, or may pertain to the reading context. The methodologies employed in this endeavour should be drawn from as many different disciplines as possible, including those from the social sciences, cognitive sciences, neuroscience, developmental psychology, personality and social psychology. Similarly, this research may have an impact on diverse areas of study.

Using this model, social psychology could benefit from a new perspective on how social processes are potentially fostered and maintained, as well as how these same processes may be flexibly applied to a range of different stimuli. Cognitive psychology may benefit from a new topic of study, the unique cognitive process that provides for a deep simulation of experience that is not quite the same as imagination or daydreaming, but similar and one that occurs in conjunction with language processing (already a well-developed topic). Ideas of how mediated experience can aid coping have already been somewhat tentatively explored to date, but further movement in this direction with respect to literary fiction could result in promising research for clinical researchers. Researchers in developmental psychology have already paid a great deal of attention to the narrative skills of developing children (e.g., Haden, Haine, & Fivush, 1997), but somewhat less attention has been directed toward how carefully constructed pieces of children's literature may affect development outside of linguistic competence (although notable exceptions exist: e.g., Alexander et al., 2001; Bar-Haim, Fox, VanMeenen, & Marshall, 2004; Peskin & Astington, 2004; Tsai et al., 2007). In sum, we feel that the model for the function of fiction put forth herein provides a fertile

starting point for a great deal of future research, while incorporating numerous ideas and developments that have brought us to this point.

Conclusion

Although narrative is entertaining, it is not mere entertainment. Moreover, literary art is not a set of descriptions by authors ignorant of the most elementary principles of empirical psychology. Rather, authors of fiction literature and research psychologists are both interested in the same thing, understanding human behavior and its underlying cognitions and motivations. The product of an author's investigation into human nature is a story, which is a simulation in two separate senses. First, stories simulate, that is model, the social world through abstraction. This abstraction condenses complex information regarding interactions between multiple autonomous and intentional agents without substantial discarding of key elements, while simultaneously revealing the principal underlying chords of the social world. Second, the abstraction of experience found in stories evokes, through various mechanisms that depend on imagery and literary language, a simulative experience that allows for the compelling and efficient transmission of social knowledge. Just as the idea of computer simulation extended conceptual understandings of the cognitive psychology of vision and reasoning, we propose that the idea of fiction as a kind of simulation that runs on minds will extend our understanding of selves in the social world. In doing so, it might bring members of the departments of psychology and of literature closer together, which would be a very good thing.

Author Note

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