Stories About Stories

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We must be wary of the possibility that knowledge in one domain may be organized according to principles different from knowledge in another. Perhaps there is no single set of notes and relations for constructing all possible knowledge bases at will. A desire for generality and elegance might inspire a theorist to seek a "universal" knowledge system, but if you try to imagine the simultaneous storage of knowledge about how to solve partial differential equations, how to write song lyrics, and how to get fed when you are hungry, you will begin to glimpse the nature of the problems. (Schank & Abelson, 1977, p. 3)

There are two modes of cognitive functioning, two modes of thought, each providing distinctive ways of ordering experience, of constructing reality. . . . Efforts to reduce one mode to the other or to ignore one at the expense of the other inevitably fail to capture the rich diversity of thought. . . . A good story and a well-formed argument are different natural kinds. (Bruner, 1986, p. 11)

Bruner is an optimist. There are two modes of thought, but two are not enough. Schank and Abelson were right in 1977; all knowledge cannot be reduced to one system, even if that system is stories. Before pursuing this thesis, I need to briefly describe Bruner's claim for different natural kinds. According to Bruner, a good story is not a good argument. A good story convinces you of its truth; an argument does not. A good argument has consistency and noncontradiction. It is either conclusive or not. Whereas a good argument provides universal truth conditions, a good story makes particular connections among particular events. It endows experience with meaning. It incites action in time and place.

In Knowledge and Memory: The Real Story, Schank and Abelson do well what they have done well in the past (Schank and Abelson, 1977); they paint a vivid strokes a bold theory that addresses important issues. This strength carries with it
this weakness: Earlier, often more cautiously, attempts at the same issues are often ignored, both when they are contingent and, more importantly, when they might lead to modifications. The elegance of The Real Story is that for the genre of scientific papers, the perspective in remarkably consistent with the theory. The Real Story claims a privileged position for stories at the same time it makes use of the narrative style of stories. In Bruner’s terms the target article usually does not argue a consistent point, it tells a story. Carefully selected anecdotes and experiments are skillfully mixed into an convincing, believable narrative. As the authors note, very strong claims are changed into strong claims and back to very strong claims with little attempt to carry a set of unchallenging claims through to their logical conclusion for experimental results. If Bruner’s dictionary is accepted, this distinction in style between a story and a well-formed argument is not trivial. Use of the narrative mode takes The Real Story out of one realm of discourse and puts it into another. It affects what is evidence, what are the goals, and what makes a good paper. Similar questions exist in much of psychology (Bruner, 1990). Should psychological explanation be more like explanation in history (White, 1981) or explanation in physics? I return to this point at the end of the commentary in dealing with the broader issue of what is needed to do science. For now I will examine The Real Story more narrowly as a psychological theory.

STORY IMPERIALISM AND TALKING HEADS

The three central claims of the target article are the following:

1. Visually all human knowledge is based on stories constructed around past experiences.
2. New experiences are interpreted in terms of old stories.
3. The content of story memories depends on whether and how they are told to others, and these reconstructed memories form the basis of the individual’s “remembered self.” (p. 1)

As the authors note, these claims change a bit over the course of their article, but they remain the central claim. Thus, there is a claim for a schema theory (Alba & Hasher, 1983; Brewer & Nokanama, 1984; Rubin, 1993), but one in which stories are the only form of schema. As I have done in the past (Hyman & Rubin, 1990; Rubin & Kintsis, 1983; Rubin, Stoetf, & Wall, 1991; Robin, Wallace, & Houston, 1993), I provide evidence against the claim that stories (and meaning more generally constructed) are the only basis for representation, and thus for such schema-driven behavior. However, first let us examine how stories get to be so important to The Real Story in the first place.

In order to privilege the status of stories, the target article strips away the physical world, leaving us two people using the oral-natural mode of communication, but not interacting with the rest of the world in any way. The situation the reader is asked to imagine is someone telling someone else a story in a social
situation devoid of things and physical tasks. There is no context, no objects to manipulate, no work to accomplish, and no written document or other artifacts to constrain. One can imagine two professors professing, or the context-free, disembodied talking heads of de Saussure (1916; Jakobson, 1987; Smith, 1994). There is nothing left to do but talk. In this talking heads model, "Two fundamental problems stand out: how do people map natural language strings into a representation of their meaning? How do people encode thoughts into natural language strings?" (Schank & Abelson, 1977, p. 7). That is, for the talking heads, the problem is how to transfer meaning over a verbal channel. If one were to imagine two people building a house, fixing a car, or programming a computer together, then there would still be language strings and stories to encode and decode, but there would be more. There would be a world to be understood, to be manipulated, and to serve as cues; and there would be goals to be met involving the immediate physical environment, not just representations (Norman, 1988; Zhang & Norman, 1994). Stories would help, but so would perceptual and motor representations. Stories would remind (i.e., cue) the people of other stories, but so would the configuration of objects and motor movements. This would be true, even if for a period the people involved were asked only to talk to each other. The Real Story is not the first to make this context-free move. A standard move in establishing linguistics as a separate field was to strip away all context leaving disembodied language as the isolated, reified object of study (e.g., Chomsky, 1965; de Saussure, 1966). There are two areas of research in which I am involved, autobiographical memory and oral traditions, that also use the oral-verbal mode of transmission, and that also usually strip away the physical world. For these areas of research, stories are the central organizing mechanisms, but even in these other forms of organization play important roles. I will examine these two areas in turn to demonstrate ways of using The Real Story's story epistemology.

*AUTOBIOGRAPHICAL MEMORY*

Stories are central to autobiographical memory, and consideration of the structure permeates the area of research. The Real Story's claim that "the content of story memories depends on whether and how they are told to others, and these reconstituted memories form the basis of the individual's 'remembered self'" (p. 1) is a common one in the literature. For example, in discussing especially vivid, or flashbulb, memories, Brown and Kulik (1977) noted that reports of such memories tend to have several canonical categories such as the place, ongoing events, informant, affect on others, own affect, and aftermath. In discussing this, Metzner (1982) noted that these may not be properties of flashbulb memories at all, but rather properties of the narrative genre used to report any news. Thus these autobiographical memories are shaped by "how they are told to others." Similarly, in trying to account for the vividness of such memories, Rubin and Kozin (1984) made the claim that all memories start out as clear vivid memories, but then most fade. The ones that remain are the ones that "are told to others," rehearsed, or
otherwise practiced, and they are shaped by "how they are told to others." The idea that the way memories "are told to others" shapes their final form extends to even the most mundane autobiographical memories. For instance, Barsalou (1988) asked people to recall events from their previous summer in the order in which they came to mind. The structures Barsalou formulated to describe and explain his data, which were based in part on Schank and Abelson's work (1977; Schank, 1982), could be considered either as properties of a memory system or as properties of the narrative structure used to describe those memories to another.

Many other researchers, also not mentioned in The Real Story, considered narrative structure central to the understanding of autobiographical memory. Some come from a psychodynamic framework (Schacter, 1981; Spence, 1982). Others, such as Robinson (1981), are early attempts by cognitive psychologists to integrate theories of narrative from linguistics and folklore into psychology. More recently, Barclay (1986; Barclay & Smith, 1992) examined the schematic nature of autobiographical memory and the way it relates to the local and general culture in which the individual is located, leading to the "conversation nature of autobiographical remembering" (Barclay & Smith, 1992, p. 82). Fitzgerald (1986, 1988, 1992) used concepts like "narrative thought" and "self-narratives" to account for autobiographical memory and the way it changes over the lifespan and with mood shifts. Freeman (1993) tied narrative to autobiographical memory in a more humanistic approach, and on the more applied side, Wagensaat, van Koppen, and Croombag (1993) documented the all too central role of a good story in the legal system. In addition to the pioneering work of Nelson (1993) cited in The Real Story, there has been detailed analysis of the narrative structure of autobiographical memory as observed in social situations, especially in the social situation of parents teaching their children the narrative conventions used in telling, and therefore in having, autobiographical memories (Fivush & Renee, 1992; Miller, Peters, Fang, Hoogstra, & Mintz, 1990; Miller & Sperry, 1988). Thus, autobiographical memory research provides abundant support for some of the claims of The Real Story, but not for the claim that stories are the only form of representation.

To see that other forms of representation are needed to describe autobiographical memory narratives, consider Brewer's (1986, 1992) definition of autobiographical memory based on the psychological and philosophical literature, and on his own phenomenological reports. What is being called autobiographical memory here and in The Real Story, Brewer defines as personal meaning. Here are the main points of his definition:

A personal meaning is a recollection of a particular episode from an individual's past. It frequently appears to be a "reliving" of the individual's phenomenal experience during that earlier moment. The contents almost always include reports of visual imagery, with less frequent occurrences of other forms of imagery. . . . A personal memory is accompanied by a belief that the remembered episode was personally experienced by the self. . . . Finally, personal meaning are typically accompanied by a belief that they are a veridical record of the originally experienced episode. This does not mean that they are, in fact, veridical. (Brewer, 1986, pp. 34-35)
The Real Story stresses the narrative structure of autobiographical memories, which Brewer does not deny. However, Brewer adds another form of representation, imagery. This imagery and the accompanying sense of reliving is a distinguishing feature of autobiographical memories, or personal memories in Brewer's terms. My autobiographical memory of writing this commentary involves an image of me, at home, correcting the text. I have no image or autobiographical memory of reading Schank and Abelson (1977), but I know that I did read the book. Imagery shows up as a characteristic of other researchers' ideas about autobiographical memory, such as that seen in work on flashbulb memories (Winograd & Neisser, 1992). It would be hard to build the self that The Real Story wants to build without images. Yet this form of representation is not reducible to a story. It is a different natural kind.

Imagery is a central feature (as close to a defining feature as one can get) of what most people mean by the term autobiographical memory. The argument is that The Real Story is incomplete. After reviewing the next domain of knowledge, I will argue that this is not a minor omission, but one that will repeat and will require a basic change in the conceptualization of cognitive processes outlined in The Real Story.

ORAL TRADITIONS

Oral traditions are different from the stories on which The Real Story focused, but epics and ballads are real stories nonetheless. In this discussion, oral traditions are used to show a different variety of recall. First, like autobiographical memories but unlike stories in The Real Story, oral traditions depend on more than just gist. Second, in oral traditions, compared with The Real Story, all structures unfold more strictly in the telling rather than in being able to be fully activated or addressed when used by an index or a reminder. As with autobiographical memory, there are points of agreement with The Real Story, but again not with its emphasis on using only stories.

Oral traditions, such as children's counting-out rhymes, jump rope rhymes, folk ballads, and oral epic, depend on human memory for their preservation. If a tradition is to survive, it must be stored in one person's memory and then communicated to another person who can also store and retell it. All this must occur over many generations. That is, the transmission of oral traditions must yield results very different from those obtained by the mnemonics procedure noted in The Real Story, or else the traditions would change radically or die out. Individual pieces change little over long periods, but they do change from telling to telling. A verbatim text is not being transmitted, but rather, the theme, imagery, and poetry are transmitted along with some specific words. Oral traditions have developed forms of organization and strategies to decrease the changes that human memory imposes on the more casual transmission of verbal material. These forms make use of the many strengths and avoid the weaknesses of human memory (Rubin, 1995).
Counting-out rhymes are the most widely known genre I have studied, and the most common of these rhymes is *Eenie meenie*. The variant recalled most frequently by Duke undergraduates is the following:

*Eenie, meenie, minie, moe.*

Catch a tiger by the toe.

If he hollers, let him go.

*Eenie, meenie, minie, moe.*

This rhyme in this form has remained stable for over a century. I found only one permanent change; although many variants exist now and many existed a hundred years ago, and although an individual re-telling may vary unconstrained words such as the toe, hit toe, and the toe (Rubin, 1995). *Tiger* is the permanent change in the rhyme, the original word being expelled by social forces outside the genre starting about the time of World War II. Then, this piece from an oral tradition remained remarkably stable, and the systematic change that did occur fits the meaning constraint of having an animate object with feet and the rhythmic constraint of a two-syllable word with stress on the first syllable. Moreover, in my data collection and search of the folklore records, many substitutions that fit these two constraints were tried in the 1950s through 1980s (e.g., *fellow, monkey, doggie*, but not the one-syllable word *dog*), but *tiger*, the one collectively settled on, increased the sound pattern repetition by this altering with *toe*. A better poetic substitute is hard to find. It is hard to see how writing or other external memory aids could have played a large role in keeping the piece stable in the memory of English-speaking children worldwide. Moreover, both the rhythm and the sound pattern of the poetic devices of the genre are sophisticated (Kelly & Rubin, 1988). It is also hard to see how an analysis of the story alone could describe the rhyme or its stability.

Counting-out rhymes were used as an example because of their familiarity. One could dismiss counting-out rhymes as child’s play, but other oral traditions, such as epic and religious traditions, are important in maintaining the store of a society’s knowledge when written resources are not available (Navehock, 1978), as has been the case through most of our evolution. That is, oral traditions were once stories used instead of, not in addition to, a written storage of knowledge.

The claim of multiple mechanisms made for counting-out rhymes holds for other traditions. In epic poetry, at least the South Slavic epic for which a large database exists, the plot, the rhythm, the general cast of characters available to fall into, the formalistic description of characters and places, and other aspects of the genre and the individual epic are stable, but the exact words sung are not (Laud, 1960; 1991; Rubin, 1995). Epics have elaborate, local narrative structure, including scripts (Schank & Abelson, 1977) that have been studied extensively in Homeric epic (Reese, 1993; Rubin, 1995). Homeric epic has a strict metric structure that severely limits the locations that any given word can occupy in a line, and South Slavic epic, which has weaker metrical constraints, has no more sound pattern repetitions.
For counting-out rhymes the meaning and sound pattern are important. For most adult genres, such as epic, imagery also plays an important role. Most genres of oral traditions consist of concrete, easy-to-image, words and ideas. This is also true of counting-out rhymes to the extent that this genre contains meaningful words of any kind. The clearest observation that oral traditions avoid the abstract, and that the abstract only enters when writing is present to lessen the demands on memory, are made by Havelock (1963, 1978) in his discussions of Homeric epic and the Greek written literature that followed it.

Oral traditions, for the most part, consist of a series of actions carried out by agents whose roles and appearances are well-known to the singers and listeners. In epic, the agents are usually heroes or gods. Heroes and gods are easy to image: They are "larger than life," attention is paid to the details of their dress and stature, and they each have unique features that make them easy to place and to distinguish in an image. Heroes and gods can substitute for abstract concepts that cannot be easily imagined; that is, they each have a characteristic that they personify. As Havelock noted, having a Pantheon of gods has mnemonic advantages over monothelism. Characters, or character types, in other oral traditions often serve a mnemonic role similar to that of the Greek heroes and gods. Each character has an expected image and an expected role to play that exemplifies some more abstract, not easily imaginable, concept. Moreover, Havelock notes that the image of the actions cue one another in recall. Thus, the image of Zeus throwing thunderbolts can invoke the image of Apollo shooting arrows.

Humanists, such as Havelock, have noted that oral traditions contain the concrete rather than the abstract. If imagery is divided into two components, objects and spatial, then oral traditions are also highly spatial. There are graphic scenes, but most of the lines involve movement and location rather than description, and much of the description that does exist is in the form of "formulas" or "convention-plaques." It may be no accident that epic heroes are always on the move; invoking a highly developed spatial memory system increases memorability. If all the actions occurred at one place, more confusions and interference might occur. Moreover, individual images are better for spatial relations than for sequencing, but by using a series of images tied to a path that passes through a known sequence of places, the order of events can be made more stable. In ballads, each stanza is at one location or point of view, and after each stanza or two, the location changes. There are no one scene epics, except in the role. The Odyssey is an odyssey.

Observations of oral traditions in the wild, and integration of the psychological literature in an attempt to understand why memory works so well, leads to a theory of serial recall in which memory structure by itself is not enough. First, items are recalled to the degree that cues uniquely identify them from among all other items in memory on the basis of different forms of organization. Second, different forms of organizations have different properties as memory structures and as cues. Third, recall of text is serial: items already recalled can cue what remains to be recalled. Because different kinds of organizations are involved in coding, some memory recall pattern, both the sound and the gist need to be recalled for effective cuing, not just the gist (Rubin, 1995).
Consider the basic types of organization present in oral traditions: narrative theme, associative meaning, spatial and object imagery, sound pattern repetition, rhythm, and music. They are good candidates for different natural kinds, and all play different roles in increasing the stability of recall. They are different forms of organization. Moreover, they are different processes. For instance, associative meaning acts more quickly than imagery (Falus, 1971) and more slowly than rhyme. Similarly, rhyme cues are more broad than meaning cues, and act differently depending on whether the retrieval cue was present at learning (Nelson, 1981; Nelson, Schreiber, & McEvoy, 1992).

As The Real Story noted, the process of recall is much like the process of construction. However, in contrast to The Real Story, the full meaning of a story does not reveal itself until the tale is told. In summary, oral traditions are situated that have been important to cultures. They can be understood by using the theories, methods, and findings of cognitive psychology, but not by the limited processes and organization argued for in The Real Story.

NATURAL KINDS

The reason for stressing the different kinds of organization seen in autobiographical memory and in oral traditions and their different roles in recall is to demonstrate the need for different natural kinds in cognition. We cannot consider all types of cues or organization as equivalent. Our knowledge gained from behavioral studies, and more recently from cognitive neuroscience, which place our standard behavioral distinctions across different brain systems, will not permit such equivalence. Thus, from clinical cases, and more recently from brain-mapping techniques, we know that there are separate neural substrates or pathways for at least various aspects of language (Cipolani, 1988), attention (Posner & Peterson, 1990), music (Joseph, 1988; Politz & Mowha, 1988; Samson & Zatorre, 1991), imagery (Farah, 1988; Tippen, 1992), and within visual imagery, both object and spatial imagery (Farah, Hamme0, Levine, & Calvano, 1988). At a gross level, these divisions often match the clinical divisions of language devices just given, such as theme, object and spatial imagery, rhyme, and rhythm. At a detailed level, theories based on behavior do not always match those based on neural structures, but it is clear that there will be more than one natural kind. More than narrative is needed for an adequate description of either autobiographical memory or oral tradition. Even casual storytelling among friends probably needs to consider imagery and portmanteau (Chafe, 1990; Tannen, 1987, 1989).

The Real Story ends with the claim that "cognitive and social psychology, in studying knowledge structures, memory processes, and text comprehension, have in our view lost sight of the forest by concentrating on the cellulose in the trees" (p. 82). But this is just not so. Whole areas of study, such as autobiographical memory and the intersection of cognitive psychology with folklore and studies of literature, integrate storytelling with concepts of knowledge structures and memory processes. I have tried to include just a small part of these vigorous research
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programs here, and only in the ideologically way in which it related to my personal story. Moreover, current leaders of cognitive psychology, such as Bruner (1986, 1990) and Neisser (1992, 1993; Neisser & Frick, 1994; Neisser & Wraygrod, 1988; Wraygrod & Neisser, 1992) have made the study of narrative and the way it shapes our behavior a central part of their psychological inquiry. Although these efforts are also not cited or included in The Real Story, they are central to it. We who have been working on similar problems from similar perspectives, welcome The Real Story’s enthusiasm. We will continue to try not to lose sight of the forest by concentrating on the cellulose. We hope the real and our story will not lose sight of the deers and oceans and plains by concentrating on the forest.

BROADER IMPLICATIONS AND SELF-CONSUMING ARTIFACTS

There is a large issue at stake. Bruner’s dichotomy and my multiple mechanisms could be used to privilege different forms of representation for different purposes. If people only tell stories, then scientists only tell stories, but most of us want our scientific work to be more than stories. If people only tell stories, then Schank and Abelson and all the commentators in this volume have told each other stories, and there is no reason to expect to find a way to decide among them, or much consensus on them, anymore than there is a way to decide among, or reach consensus on, the stories of the Iranian spinner and examples in The Real Story. The different theoretical positions, individual histories, and current mores of the storytellers that tell these stories will prevent any such convergence. If people only tell stories, then there is no real story.

Science can be viewed in a special form of discourse done by real people with histories, motives, and favorite stories. However, at its minimum it is a form of discourse fashioned with agreed-upon ways of arriving at a consensus. Moreover, the various forms of consensus found in the past have regularly been the most useful ones on which to base technologies. As Bruner notes in the quote that begins this chapter, the form of such discourse is not the form of a story. From my reading of history, to do science we need at least Bruner’s natural kind of a well-formed argument, imagery (Artsheim, 1968), and a written mode of communication (Havelock, 1978; Babch, 1995). We need more than stories.

REFERENCES


