True Stories, Storied Truth: Stitching Narrative and Logico-Scientific Discourse Together in an Age of "Spin"

Joseph L. Polman
University of Missouri-St. Louis College of Education
One University Blvd.
Saint Louis, MO 63121
polman@umsl.edu

Abstract: This paper includes a framework for combining narrative and logico-scientific thinking in the consumption and production of stories about the real world, such as journalistic and historical accounts. The framework involves graphical representation, at an intermediate level of abstraction, in "storygrams" showing sequences of actions involving agents, using cultural tools, to serve goals, within contexts of interpreted scenes. The framework also involves four elements of "narrative metacognition", including monitoring of perspectives, precedents, symbolism and narrative frames. Utilizing this framework may help learners better develop their facility at moving back and forth between assessments of "narrative truth" and "logico-scientific truth".

A "true" story, twice told

Consider the following two tellings of the story of the Great Plains of North America, paraphrased from descriptions of historian William Cronon (1992):

> *The Great Plains of North America was a virtual wasteland when the white settlers moved in. Unlike the eastern U.S., the Plains were not easily suited to settlement. Farmers could not simply move in and make the soil consistently productive to farming and building, because the plains were semi-arid and largely treeless. But gradually, the settlers' ingenuity led to successful farming using a combination of irrigation for groundwater and windmills to access aquifers, and successful ranching using barbed wire to contain livestock. This led to rapid expansion, which could not be sustained in natural drought periods like that which led to the "dustbowl" of the 1930s. Government bureaucrats tried to use this tragedy as an excuse to force farmers off the land, but the people stayed, and grew closer to the land, eventually living in harmony with its cycles.*

> *Before the white man came, the Great Plains of North America was a fragile but beautiful ecosystem. But capitalist farmers and settlers did not respect the delicate balance of the land, moving in with their technology and social systems of exploitation. By the 1930s, world capitalism was in decline and crisis, and that crisis manifested itself in massive dust storms on the plains. The former natural wonder of adaptation to the cycles of rain and drought literally blew away on the winds of capitalism's greed.*

These story sketches summarize two accounts of the Dust Bowl by professional historians Paul Bonnifield and Donald Worster, respectively. Utilizing Kenneth Burke's grammar of stories, Cronon (1992) detailed a total of *five* very different accounts of Great Plains settlement published by historians over the years. The interesting thing is, the tellers of these tales seldom disagreed on what "the facts" were—there was a dry landscape with certain things in it, farmers moved in, they struggled at first, they did better after utilizing new technologies, and they had trouble again in the drought of the 1930s. Instead, the historians highlight some events and downplay or just leave out others, and frame their accounts with different descriptions of the scenes on which the action took place, as well as motives by the actors, and outcomes or ends of the tales. Thus, the perspective and agenda of the storyteller makes all the difference in the world (Cronon, 1992; Novick, 1988).

This state of affairs should be familiar to watchers of the media at the turn of the twenty-first century. In the United States, conservatives who criticize "liberal media" like the *New York Times*, and liberals who criticize

"conservative media" like Fox News have been lamenting how elusive the truth is amid the spin. When it comes to both past and contemporary events, how is a reader or listener to decide what is true, or at least closer to the truth?

The Problem

The tension described above is the result of the fact that non-fiction or "empirical" stories (e.g., historical and journalistic accounts, Scholes & Kellogg, 1966) relate to two different kinds of thinking or making meaning—narrative and "logico-scientific". Like many journalistic and historical accounts, the empirical stories described above gain their credence from both narrative and logico-scientific coherence. Citizens voting in democratic societies must combine narrative and logico-scientific reasoning when deciding on the believability of candidates' positions. As Bruner (1986, 2002) has pointed out, however, narrative and logico-scientific ways of thinking are not only different but also difficult to combine.

Barton & Levstik (2004), among others, have shown how narrative can lead to oversimplifications in learning history; they thus recommend caution in teachers' use of narrative as a tool for teaching history. But narrative cannot be banished altogether from our discourses. For instance, research has shown how physics professors may ignore their formal knowledge of insulators and choose aluminum foil to keep a soda can cool, because it relates to their narrative memories from childhood (Lewis & Linn, 1994). Relatedly, even well informed U.S. history teachers sometimes promulgate the dominant narrative that all western Native Americans were nomadic, when they know that some tribes were in fact settled farmers (Wills, 1994). In both these cases, educated people are capable of having their logical reasoning "overcome" the compelling—and erroneous—narratives when prompted to use their formal knowledge (Wertsch & Polman, 2001). That tends to be what we do in school: teach students to *erase* their narrative thinking, lest they be fooled. When prompted, students dutifully refer to what the evidence shows or not. But like their teachers, those students are likely to walk through the "everyday" world with narrative "erasing" their logical, critical stance when confronting stories that just sound right.

In both the example of the physics of soda cans and nomadic Native Americans, the light of logico-scientific reasoning reveals falsity in the narrative, but such clarity in determining veracity is not always possible. As Cronon's (1992) analysis referenced above shows, for example, many of the same "facts" can be assembled to tell very different stories—in this case, some of progress, and some of tragedy. But many of these stories cannot be debunked by pointing out flaws in their elements: each part appears logically and scientifically true. Instead, the hearer must decide on a preferred version of environmental history based on overall "narrative truth", which is "judged by its verisimilitude rather than its verifiability" (Bruner, 2003, p. 51). Within political and historical realms, judgments of verisimilitude are too often based solely on what is most comfortable given one's own personal background and biases.

In today's atmosphere of increasingly sophisticated "spin" in political and historical discourse, citizens have a need to stitch together the narrative and logico-scientific. In this paper, I present a set of principles for approaching empirical stories, grounded in the sociocultural approach (e.g., Wertsch, 1998, 2002). I will then briefly describe some practices based on these principles and research on learning.

Towards more sophisticated consumption of true stories

In his analysis of collective remembering of national narratives, James Wertsch (2002) has pointed out that empirical stories serve both a referential and a dialogic function. The referential function of empirical narratives relates to how accurately the story represents the events that actually occurred in the world. The dialogic function of narrative relates to how narratives are told in response to a particular set of circumstances, and for particular purposes; in addition, they are often contested accounts that serve both to describe the events, and position the identities of both creator and the hearer. In order to educate more sophisticated consumers, I propose two main strategies: the development of a representational system for narratives I call "storygrams", and the development of "narrative metacognition."

"Storygrams"

Numerous structural accounts have been developed in narrative theory representing the form and meaning of stories. One of the most extensive was Vladimir Propp's (1968) framework for describing Russian folktales. This framework consists of 7 types of characters or spheres of action, such as the villain, and 31 plot functions, such as "the villain receives information about his victim" and "the villain is defeated." Although it would be possible to

adapt a detailed structural account of narratives such as this or others that grow out of the psychological tradition of describing narrative schemas (e.g., Bartlett, 1995), there are reasons to seek out a simpler system for learners to use in representing stories. First, inscriptional forms such as scientific diagrams gain part of their credence through making their content extremely compact and communicable to others (e.g., Latour, 1988). An inscriptional system incorporating a large but limited set of functions and types to choose from, such as an adaptation of Propp's or that developed by Chatman (1978) for film and fiction would be too cumbersome for any but the very committed to utilize well. Second, inscriptional forms at an intermediate level of abstraction have a greater hope of being useful scaffolds for learners that may be taken up as frames for thinking (White, 1993). An example is Bell's (2002) argument maps, which allow learners to describe a scientific argument using a basic set of primitive categories appropriate to the discipline—in the case of science, elements such as "my theory", "evidence for", and "evidence against" (see also Suthers & Hundhausen, 2003).

As a starting point for "storygrams", I have chosen Kenneth Burke's (1979) pentad, which Jerome Bruner (2005) has referred to as the "universal arguments of action". In particular, I propose creating a modified concept mapping system with symbols representing Wertsch's (1998) terms for the five elements of the pentad (see Figure 1), and hypermedia links to details and source text elements.

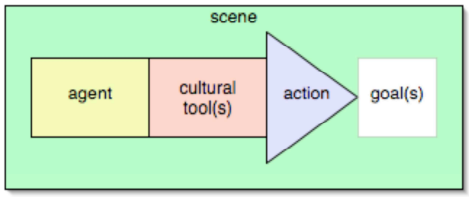

Figure 1: Storygram node with Wertsch's (1998) interpretation of K. Burke's (1979) pentad

The basic unit of the storygram is the action, which according to Burke's analysis always consists of an agent, utilizing cultural tools to take the action, in order to serve a goal or goals, all within the context of some scene. The story is driven forward because of tensions between elements of the pentad, and each major action would be represented on the storygram, with time shown by aligning action nodes from left to right. To make a storygram representing an existing story, a learner would replace the labels of the five elements with descriptors of the scene, agent, cultural tools, action, and goals. The major action sequences that move the story plot forward would be represented, with possibility for further description in notes attached to the base storygram representation, and hyperlinks to source text if desired.

To further clarify, storygrams of the two Dust Bowl in the Great Plains accounts from the beginning of this paper appear in Figures 2 and 3. Figure 2 is a storygram of Paul Bonnifield's narrative, which opened in a scene of a semiarid, treeless, resistant environment. Settlers in this environment could not contain their livestock by building wooden fences as they had done in the lush woodlands of the east, but they adapted by building barbed wire fences. In order to have enough water for their crops, farmers in this environment had to go beyond simple wells, instead building more complex irrigation systems, and using windmills to pump water out of deeper aquifers. Thus, the scene becomes transformed into one of thriving farms within the resistant but changeable environment, and the mood rises. But then conflict arises, when government bureaucrats take advantage of the Dust Bowl droughts to try and force farmers out, with a covert goal of controlling wheat production. The farmers who stayed, however, found ways to re-adapt to this context of government regulation and a changeable environment, coming to thrive and gain more harmony with the land.

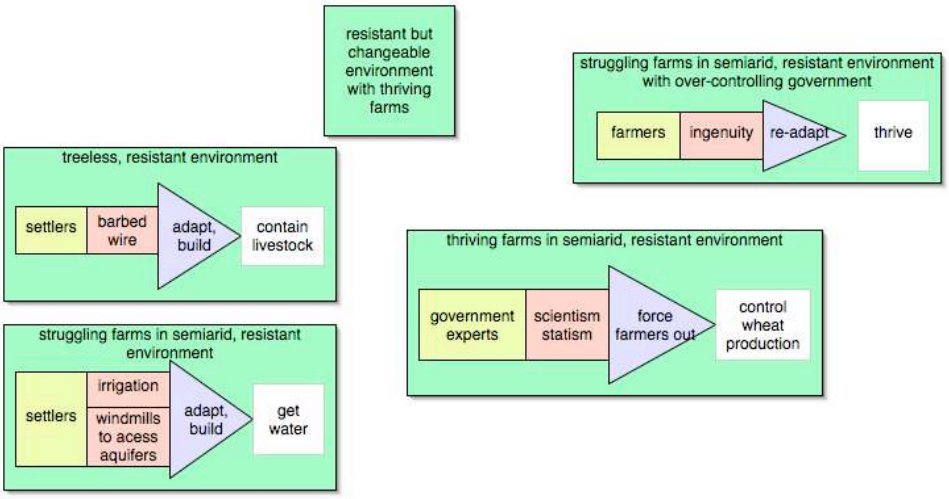

Figure 2: Storygram of Paul Bonnifield's narrative of Great Plains struggle and progress through human adaptation despite government

Donald Worster began with a much different contextual description of the same territory, as depicted in Figure 3. Rather than beginning with merely the physical features of the land, he stressed the decline of world capitalism, within which the unique but delicate ecosystem of the plains existed. As elsewhere, the corrupt capitalist systems exploited the land to expand and grow, using its technology and social systems. Once the ecosystem was knocked out of balance, as exemplified by the droughts, capitalist planners stretched their capabilities in order to prop up their systems of exploitation. Eventually, though, they wasted the landscape, as seen in the Dust Bowl windstorms topsoil blown away.

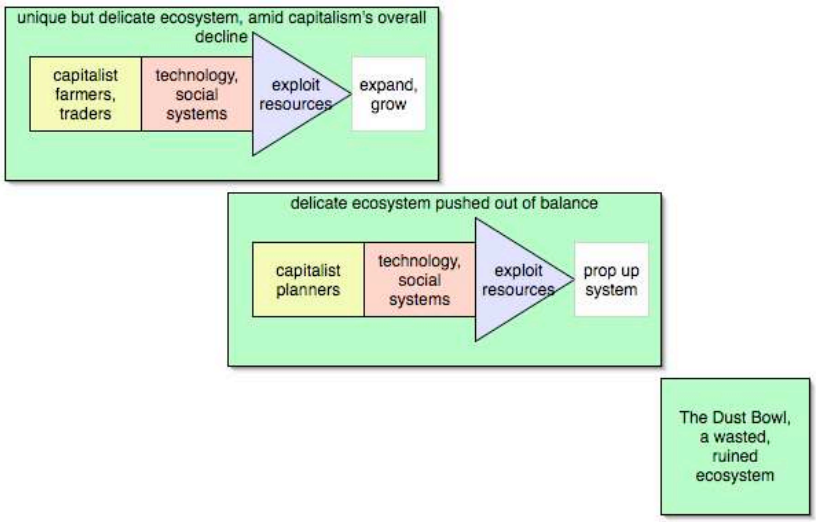

Figure 3: Storygram of Donald Worster's tale of Great Plains declension

As I have conceived of them, Storygrams such as those above could be part of a comprehensive approach to improving the discourse around empirical narratives. Another element of this approach is a focus on developing narrative metacognition.

Narrative metacognition

Educators and researchers have come to recognize metacognition as an important form of thinking across and within disciplines (e.g., Bruer, 1993; White & Frederiksen, 1998). Sophisticated readers use metacognition when they monitor their understandings, while expert problem solvers use metacognition to make predictions on where their work will take them. In order to foster more sophisticated consumption and production of empirical

narratives, I propose educating learners to be more effective at some metacognitive practices particularly important to narrative. These include being aware of perspectives, precedents, and symbolism, as well as monitoring the "story frames" within which an account is cast.

In history and social studies education, there is an existing practice of encouraging learners to focus on the perspectives and biases of those who created the artifacts and accounts used as sources, especially in initiatives involving youth in the "doing of history" research utilizing primary sources (e.g., Britt & Aglinskas, 2002; Holt, 1990; Levstik & Barton, 1997).

In addition to this old standby, however, light can be shed on how narrative impacts understanding by considering the "precedents" or existing accounts with which the hearer is familiar, and which the hearer takes as credible. This is similar to law, where previous legal decisions shape the reactions of the courts to new cases which are in effect narratives crafted to link most strongly to case precedents that will provide the most beneficial interpretation—and thus legal decision. As in the law, all tellers of "true tales" appeal to precedents (Bruner, 2002).

In the literature and language arts classrooms of North America, students have long analyzed the symbolism that helps constitute the meaning and message of fictional stories, but such considerations are rarely explored in the context of journalism or history. But compelling metaphors that are inserted either explicitly or implicitly in empirical narrative texts, as well as imagery or music that creates unconscious cues in multimedia artifacts such as documentary films and television shows, are just as important as in fictional worlds. One interesting approach to textual and multimedia accounts of "social worlds" that concern youth has been proposed and explored by Beach and Myers (2002). In their approach, youth attempt to make sense of, critique, and even transform social worlds, in part by better understanding how symbolism operates within those worlds.

Another aspect of narrative metacognition is appreciating how "spin" operates. Although accusing one's political opponents of spin has become commonplace, it is first important to recognize that *all* sides in political arguments utilize spin, and they may utilize it in both honest and deceitful ways. When cast as an accusation against one's opponent, "spin" is usually an allegation of deceit, involving deliberate misinformation, dropping of relevant information, or innuendo. In addition to such practices, it is worth noting that narrators in political and social realms are sometimes not so much trying to *distort* the truth so much as *create* a reality that is possible, but not yet decided. As an example, consider some comments of David Makovsky about the pullout of Israelis from the Gaza Strip in August 2005:

> There could be two narratives that emerge from this disengagement story. One is, it is the revitalization of a center in Israeli politics and Palestinian politics that was decimated with the Intifada … Basically, both sides acting because they want a better future for their kids, working together to establish a two state solution. If that is the narrative, in my view—and I think it's the correct narrative—[then] this process has a future. If it's going to be that Hamas basically won … if [this event] will be interpreted as a victory for terror and violence, it will be short-lived. If it is interpreted as the re-emergence of a sane center in both Israeli and Palestinian societies, I think this is a first step towards a very important future.

A refreshing aspect of Makovsky's comments is that he is straightforward about the competing narratives, their basis in fact, and goals each might serve. At the end, he also intimates how the interpretation of one narrative or another not only reflects current reality, but helps to create the future reality. This is an important aspect of any human interpretation.

Finally, I propose "frame monitoring" as an essential aspect of a critical stance toward empirical narratives. George Lakoff (2004) has recently popularized the notion that overarching narrative frames influence political storytelling and message creation. He argues that successful conservative politicians consistently appeal to the notion that citizens need a government which acts as a strict father who lays down inflexible rules and imbues the "family"—the nation's citizenry—with a strong moral order. In contrast, liberal politicians generally frame their account of government as a nurturant parent who teaches the children to pursue personal happiness and care for others. I would argue that these are not the only frames that matter, but critical consumers of supposedly true stories would benefit by attending to how the frame an account is put into often conveniently excludes some "facts", or minimizes them by allowing that although they may be true, they may not be particularly relevant to the main

storyline. In addition, the frame chosen for a story includes or emphasizes some apparent "facts", which on closer inspection are revealed as assumptions not supported by evidence but instead a merely coherent storyline.

Learning Environment Design

The above framework, combined with previous cognitive studies of educational practice, could be used as the basis for learning environment design. For instance, a participation structure with narrative metacognition roles (as in Palincsar & Brown's (1984) "Reciprocal Teaching") could be used to externalize the practices of monitoring perspectives, precedents, symbolism, and narrative frames. In such an application of Vygotsky's general genetic law of development, the hope is that the implementation of the roles on the social plane would lead to appropriation by the individual learners. In addition, a computer application for "storygrams" is in prototype (http://www.umsl.edu/~edujpolm/truestories.html) —essentially a specialized concept mapping program that would allow learners to create the narrative diagrams like those in Figures 1-3, with the possibility of embedding hypermedia links to extended notes or commentary on any one element, as well as links to source texts if desired. If groups of learners used this utility to storygram competing empirical narratives, these "cognitive tools" could be used both to support individual understanding, and as props that could drive learning conversations among peers forward. They would thus serve some of the same purposes that "external representations" have been shown to serve in the course of science inquiry, both by children and practicing scientists. As Blumenfeld et al (1991) put it, representational artifacts can become "shared, critiquable externalizations" of knowledge that become useful in learning conversations.

In addition, learners could move from critical consumption such as that described above to production, by involving them in the production of stories about the social or political world. One medium such stories are increasingly utilizing is digital video (e.g., Lambert, 2002). Challenging learners who create public service announcements and short documentaries to take into account the above issues involving the intersection of narrative and logico-scientific thinking could be quite fruitful. This could be encouraged by requiring such projects to adapt the "director's commentary" one sees on commercial DVDs to metacognitive purposes. Specifically, one could interview learners who'd produced media narratives about the decisions made and the motivations for them, or ask learners to write a short paper on this topic. I will be exploring these possibilities for learning environment design over the coming years.

Conclusion

In this paper, I have outlined a framework for understanding the issues involved in narrative representations that are based in empirical reality. I believe exploring the use of this framework, and refining it, may improve democratic participation in discourse about contemporary and historical events. Specifically, learners might be able to improve in both the critical consumption of and production of "true stories." I argue that research on such practices could enable teachers and learners to better develop their facility at moving back and forth between assessments of "narrative truth" and "logico-scientific" truth, so that each way of thinking *informs* the other, rather than *erasing* the other.

References

Bartlett, F. C. (1995). *Remembering: A study in experimental and social psychology*. Cambridge: Cambridge University Press (originally published in 1932).

Barton, K. C., & Levstik, L. S. (2004). *Teaching history for the common good*. Mahwah, NJ: Erlbaum.

Beach, R., & Myers, J. (2001). *Inquiry-based English instruction: Engaging students in life and literature*. New York: Teachers College Press.

Bell, P. (2002). Using argument map representations to make thinking visible for individuals and groups. In T. Koschmann, R. Hall & N. Miyake (Eds.), *CSCL 2: Carrying Forward the Conversation* (pp. 449-485). Mahwah, NJ: Lawrence Erlbaum Associates.

Blumenfeld, P. C., Soloway, E., Marx, R. W., Krajcik, J. S., Guzdial, M., and Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist, 26*(3), 369-398.

Britt, M. A., & Aglinskas, C. (2002). Improving students' ability to identify and use source information. *Cognition and Instruction, 20*(4), 485-522.

Bruer, J. (1993). *Schools for thought: A science of learning in the classroom*. Cambridge, MA: MIT.

Bruner, J. (1986). *Actual minds, possible worlds*. Cambridge, MA: Harvard University Press.

Bruner, J. (2002). *Making stories: Law, literature, life*. New York: Farrar, Straus and Giroux.
Bruner, J. (2003). The narrative construction of reality. In M. Mateas & P. Sengers (Eds.) *Narrative intelligence*. Amsterdam/Philadelphia: John Benjamins Publishing.
Bruner, J. (2005). Keynote presentation. First Congress of the International Society of Cultural and Activity Research (ISCAR), Seville, Spain, September, 2005.
Burke, K. (1969). *A grammar of motives*. Berkeley: University of California Press.
Chatman, S. (1978). *Story and discourse: Narrative structure in fiction and film*. Ithaca: Cornell University Press.
Cronon, W. (1992). A place for stories: Nature, history, narrative. *J of American History 78*(4), 1347-76.
Holt, T. (1990). *Thinking historically: Narrative, imagination and understanding*. New York: College Entrance Examination Board.
Lakoff, G. (2004). *Don't think of an elephant!*. Vermont: Chelsea Green.
Lambert, J. (2002). *Digital storytelling: Capturing lives, creating community*. Berkeley: Digital Diner.
Latour, B. (1988). Drawing things together. In M. Lynch & S. Woolgar (Eds.), *Representation in scientific practice*. Cambridge, MA: MIT Press.
Levstik, L., & Barton, K. (1997). *Doing history: Investigating with children in elementary and middle schools*. Mahwah, NJ: Lawrence Erlbaum Associates.
Lewis, E. L., and Linn, M. C. (1994). Heat energy and temperature concepts of adolescents, adults, and experts: Implications for curricular improvements. *Journal of Research in Science Teaching, 31*(6), 657-677.
Novick, P. (1988). *That noble dream: The 'objectivity question' in the American historical profession*. New York: Cambridge University Press.
Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension monitoring activities. *Cognition and Instruction, 1*, 117-175.
Propp, V. (1968). *Morphology of the folktale*. Austin: University of Texas Press (trans. Laurence Scott).
Scholes, R., and Kellogg, R. (l966) *The nature of narratives*. New York: Oxford University Press.
Suthers, D., and Hundhausen, C. (2003). An empirical study of the effects of representational guidance on collaborative learning. *Journal of the Learning Sciences, 12*(2), 183-219.
Wertsch, J. V. (1998). *Mind as action*. New York: Oxford University Press.
Wertsch, J. V. (2002). *Voices of collective remembering*. Cambridge: Cambridge University Press.
Wertsch, J.V., & Polman, J.L. (2001). The intuitive mind and knowledge about history. In B. Torff & R.J. Sternberg, (Eds.), *Understanding & teaching the intuitive mind* (57-72). Mahwah, NJ: Erlbaum.
White, B. Y. (1993). Intermediate abstractions and causal models: A microworld-based approach to science education. In *Proceedings of the world conference on artificial intelligence in education* (pp. 26-33). Charlottesville, VA: Association for the Advancement of Computing in Education.
White, B., & Frederiksen, J. (1998). Inquiry, modeling, and metacognition: Making science accessible to all students. *Cognition and Instruction, 16*(1), 3-117.
Wills, J. (1994). Popular culture, curriculum, and historical representation: The situation of Native Americans in American history and the perpetuation of stereotypes. *Journal of Narrative and Life History, 4* (4), 277-294.