What's in a Story: Interpreting the Interpretations of Story Grammars*

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In a recent review of the story understanding literature, Tom Trabasso and I (Stein & Trabasso, 1982a) described some of the strengths and weaknesses of current story grammar research, as well as the usefulness of a more general schematic approach to comprehension. In highlighting the strengths of the current story work, we illustrated how the grammars could be used as a powerful analytic technique for studying the organization and representation of story knowledge, possibly resulting in a more complex theory of story memory and comprehension.

The primary strength of the current grammatical approaches is that they include a description of the structure of story texts as well as a description of the nature and function of a story schema. By combining aspects of linguistic text analyses with broad theoretical assumptions about the nature of memory in general, a set of working hypotheses has been derived concerning the structure of story knowledge and the way in which the organization of this knowledge might affect comprehension (Johnson & Mandler, 1980; Mandler, in press; Mandler & Johnson, 1977; Rumelhart, 1975, 1977; Stein, 1979; Stein & Glenn, 1979; Stein & Trabasso, 1982a; Thorndyke, 1977; Thorndyke & Yekovitch, 1980; Trabasso, Stein, & Johnson, 1981).

A basic assumption common to all of this current work is that comprehension is an interactive process, where prior knowledge of stories influences the representation of incoming new information, just as the incoming new information influences the structure of already existing knowledge. Both Mandler and Johnson (1977) and Stein and Glenn (1979) proposed that comprehenders have very definite expectations about the types of information contained in stories and the types of logical relationships which should connect the various parts of a story. These investigators argued that when comprehenders heard or read texts which violated their expectations about what should occur in a story, more difficulty would be experienced than when comprehenders heard a text corresponding to their expectations. These difficulties would be expressed by losses in ability to represent accurately a text, as well as by increases in the amount of time necessary to process and encode the text information. Almost all empirical studies completed subse-

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quent to the initial story work have supported these working hypotheses (see Baker & Stein, 1981; Stein & Trabasso, 1982a, for a current review of the story literature).

As Trabasso and I (Stein & Trabasso, 1982a) pointed out, however, the research necessary to formulate a good theory of discourse comprehension is still in an infant stage. Some basic fundamental questions concerning the comprehension process have not been answered by recent investigations and some issues have yet to be addressed. One such issue pertains to the development of a more elaborated theory of importance which would allow us to predict, in an a priori manner, those story events that will be remembered and those that will be forgotten. Any successful theory in this domain would have to include ideas about the comprehender's notions of personal and social causation, as well as descriptions about how specific content knowledge is used and organized.

A second issue concerns the concept of a story and the psychological validity of the recent descriptions of a story schema. Although criticism has been raised concerning the inability of the grammars to describe all stories (e.g., do the grammars reject some texts that would be considered good stories, or do the grammars accept some texts that are definitely classified as non-stories?), few good studies have been completed in an attempt to answer this question. Moreover, almost no studies address the issue of how the concept of a story changes as a function of development.

The third issue concerns the acquisition of story knowledge and how this knowledge is used once it is acquired. This issue is perhaps the most important, because if we are able to generate good answers, we may be able to influence significantly the quality of instruction and the acquisition process in the classroom. Attention to classroom behavior may change the relative importance we attach to certain theoretical issues, making some less or more important than a basic theoretical approach would allow. However, few studies have directly addressed the question of learning from text.

The strength of all the articles in the present volume is that they attempt to address one or more of these issues. Omanson focuses primarily on issues regarding a general theory of importance (e.g., those dimensions necessary to predict the memorability of story events). Weaver and Dickinson speak to some of the issues involved in constructing a theory of importance; however, their main focus concerns an investigation of the usefulness of story grammars in predicting *individual differences* in listening comprehension. Bisanz and Goldman focus more on the development of specific social knowledge necessary to comprehend stories. In doing so, Bisanz and Goldman raise interesting questions about the developmental nature of story knowledge, and about how we might best describe the acquisition of story knowledge.

In commenting on the articles, I have chosen to address first those issues which correspond most closely to the goals and aims of the original story grammar studies. Then I will address those issues that concern the acquisition of specific social

knowledge. The order in which the articles are discussed is: Omanson, Weaver and Dickinson, Bisanz, and Goldman.

Theories of Importance

A major concern of all investigators in the area of story memory has been the development of a theory which would allow accurate predictions about whether or not events would be retained in memory or forgotten. The first working system describing a theory of importance was introduced by Rumelhart in 1977. In this system, Rumelhart attempted to describe how adults recalled and summarized multiple-episode stories. Two working assumptions were critical to Rumelhart in the development of this theory.

The first concerned the nature of stories. Rumelhart suggested that stories reflected human problem-solving situations, where there is a central focus on the way in which individuals formulate goals and achieve them. The comprehender is assumed to interpret the story in terms of the goals and purposes of the protagonist(s). Events occur that give rise to hypotheses concerning the goal and plan of the protagonist. After inferring the goals and plans, the comprehender can use these inferences to interpret subsequent actions and outcomes. During this process, a representation of the story is constructed that includes those events which give rise to a goal-directed sequence of events.

Rumelhart's (1977) second assumption was that a comprehender will construct a story representation by first breaking it down into three components: (1) the initial event and desire to obtain a superordinate goal; (2) a general TRY schema, containing the methods for obtaining the superordinate goal; and (3) the outcome or result of whether the goal was obtained. The TRY component contains the plan and overt attempts necessary to obtain the superordinate goal. In order to attain the superordinate goal, the TRY schema often includes several subgoals which must be attained before the successful achievement of the superordinate goal.

Rumelhart (1977) proposed that, in addition to a story being broken down into its constituents, a representation is constructed which has *different levels* of organization. In this multi-level organization, the superordinate goal, the general TRY schema, and the outcome are all at the highest levels of the hierarchy. Subgoals, along with their respective attempts and outcomes, are at the lower levels of the hierarchy. The factor regulating an event's position in the hierarchy is its relationship to the superordinate goal. Rumelhart argued for a close relationship between the level of an event in the hierarchy and the probability of its being recalled. The higher and more general or encompassing the event, the more likely it was to be recalled.

Stein (1978, 1979), and Stein and Glenn (1979) also identified several factors predictive of the recall of an individual story event: (1) the nature of the causal relationship between an event and the superordinate goal; (2) the causal relationship between an event and the outcome of the goal attainment; (3) local causal

relationships among individual story events; and (4) the predictability of an event, in relation to other events in the story sequence. Black (1977), and Lichtenstein and Brewer (1980) have worked out importance taxonomies, all of which are similar to Rumelhart's (1977) initial description, with Lichtenstein and Brewer (1980) adding a little more detail about the encoding of events which are not directly related to the superordinate goal of the protagonist.

Although these investigators make some contributions to theories of importance, substantial problems are inherent in all of their taxonomies. First, none of these approaches adequately distinguishes between memorability of an event (e.g., those events that will be encoded and represented) and the probability of the event being recalled. All current theories of importance use only recall to substantiate claims about the memorability of story events. As Trabasso and I pointed out, however, the use of recall as the only measure of memory invites several problems.

A number of studies (Nezworski, Stein, & Trabasso, 1978; Omanson, 1979; Stein & Glenn, 1979) have shown that some events identified as "central" or "important" are *not* often recalled. For example, goals and emotional reactions are often deleted in recall, whereas these events are frequently rated as very important on judgment tasks (Stein & Glenn, 1979). Furthermore, Thorndyke and Yekovitch (1980) report that while the level in the representation hierarchy may predict recall, this is *not* true for recognition. These investigators found that recognition memory was independent of an event's level of importance. They also found that recognition memory for the surface features of an event was poorer at higher levels in the representation hierarchy than memory for lower level events. Thus, initial tests of Rumelhart's ideas on importance indicate serious difficulties. A statement's level in a hierarchy does not alone account for recognition memory or for the omission of certain key events in recall.

Another difficult with Rumelhart's (1977) analysis is that he specifies no criteria for choosing *which* goal in a story sequence will be considered the superordinate goal, nor does he describe the specific criteria for determining the exact logical relationships between a superordinate goal and other story events. To illustrate why the lack of formal criteria creates problems, Trabasso and I (Stein & Trabasso, 1982a) examined Rumelhart's (1977) analysis of the story *The Countryman and the Serpent*.

In this story, a countryman's son steps on a serpent's tail. In turn, the serpent retaliates by biting the son, who dies. The father of the dead son pursues the serpent in revenge, cutting off parts of the serpent's tail. The serpent, in return, stings the countryman's cattle, causing great losses to the man. The countryman then decides that the situation has progressed far enough and that he must make peace with the serpent. The serpent, however, will not be placated by the countryman, and tells the countryman to take away his gifts.

The superordinate goal in Rumelhart's analysis was the countryman's efforts to restore peace, occurring after several other goals in the story. In our subjective

assessment, in agreement with 10 out of 12 of our students' assessments, the most important goal was the man's desire to seek revenge, which was never successful. Perhaps Rumelhart decided that peace-making was the most important goal because without this effort, the man's survival was threatened. Thus, an act of goal substitution became the focal point of the story.

Nowhere in Rumelhart's theory, however, is there an explanation for choosing one particular goal over another, as being the most important. In most story sequences, the initial goal stated or inferred is normally chosen as the most important. Clearly, according to Rumelhart's implicit theory, this is not always the case. However, when the initial goal is not used, we have no criteria to guide us in choosing the correct goal. A working theory of importance has to explain how a comprehender's knowledge of human action and motivation influences the decisions made about the importance of an event.

A third problem with current theories of importance is that the criteria used to decide the type of causal relations existing among events are quite diverse and depend upon the investigator. Although a subjective analysis is always necessary for deciding upon the logical relation connecting events, more formal criteria could be specified. This effort would entail specific definitions of a direct causal link, taking into consideration more complex ideas about causation (e.g., including notions about necessity and sufficiency criteria). If this were completed, then we could better determine each event's relationship to the superordinate goal. This relationship is critical in determining the importance of an event, but Rumelhart does not provide definite criteria for determining this relationship. Because of the absence of formal criteria for specifying how events should be related, a problem arises when an event occurs late in the sequence of the TRY schema and yet can be shown to be more important and more related to the superordinate goal than previous events in the hierarchy. Johnson and Mandler (1980) raise a similar issue in discussing Rumelhart's system.

Clearly, then, from the above discussion, there is much room for improvement in current theories of importance. The question is, does Omanson's taxonomy solve any of these problems? In considering the answer, two questions are of central importance:

1. Does Omanson really present a theory complete enough to predict the memorability of story events in particular cases?
2. Does Omanson's analysis have any dimensions or advantages not included in previous analyses?

In answer to the first question, concerning the presentation of an a priori theory of importance, Omanson does not present a processing theory of importance.

However, Omanson does describe some aspects of prior knowledge used during comprehension, but most of the time these descriptions are given to contrast or compare his approach with current viewpoints. For example, he states that sub-

jects use their knowledge about social relationships to understand stories, with the primary focus being on constructing an explanation for the occurrence of actions in a given sequence. He relies on philosophical theories of action to support his notion of centrality. What Omanson doesn't state is that these theories have little explanatory power in determining what should be considered important in a story. Furthermore, almost all current approaches also rely heavily on the assumption that knowledge of human social interaction is critical, and yet, as I illustrated previously, this is not enough to formulate a theory of importance. Philosophical theories of action don't tell us why descriptive states are unimportant or why the introduction of a protagonist or a superordinate goal is central. A necessary additional component of an importance theory is going to require a description of the organization of specific content domain knowledge and an explanation of how this knowledge influences comprehension.

The second issue is whether Omanson's taxonomy has any advantages over current theories of importance, such as Rumelhart's (1977), or the current story grammar descriptions. With respect to Omanson's event classification system (central, supportive, and distracting), these classes could easily be mapped onto Rumelhart's (1977) and Lichtenstein and Brewer's (1980) categories. Omanson's central events could be considered synonymous with those events at the highest levels in Rumelhart's and Lichtenstein and Brewer's taxonomies; those events labelled as supportive would be included at lower levels; those events labelled as distracting would be considered as non-goal directed in Lichtenstein and Brewer's (1980) system, and therefore not part of the story schema. An interesting analysis would be a comparison between Omanson's taxonomy and Rumelhart's or Lichtenstein and Brewer's goal-directed system to see whether or not similar units are being labelled as important. Omanson's system is not directly based upon the centrality of the superordinate goal and its relationships. Rather, the more central event in Omanson's taxonomy is the outcome and the explanations for its occurrence. Omanson cites Lichtenstein and Brewer's work, but does not present a comparison of his system with theirs.

As for Omanson's categories of missing events or missing causes, these types of distinctions are better handled by the current grammatical descriptions, which detail the types of information which should occur in a text and the type of expectations comprehenders have about story structures. If Omanson had included such descriptions, there would be less guesswork in deciding when events or causes were missing from texts. Because Omanson did not include such a description, it becomes difficult to assess when a story is said to contain deleted information. Like all current investigators, Omanson depends upon judgments to decide whether or not information is missing from a story. It would have been an advantage if some type of a priori system were included to guide decisions about the completeness of a text.

One reason why Omanson may not have included a description of prior knowledge concerns his beliefs about the role of schematic knowledge in encoding and

representation of story events. Omanson argues that readers don't necessarily have the type of expectations about story events described in the grammars. He uses a recent *Poetics* article by Kintsch (1980) to substantiate his argument. Kintsch supposedly argues that when stories are read for enjoyment, comprehenders often do not approach the text with preconceived expectancies such as those comprising a story schema. Rather, the comprehender allows the cognitive interest generated by the content of a story to guide the comprehension process.

Kintsch (1980) does make this statement, but the way in which Omanson states his argument pulls it out of context of Kintsch's original idea. The issue Kintsch was addressing concerned whether or not subjects actively made predictions about the events in a story sequence before each of the focal events occurred. Essentially, Kintsch was questioning the problem solving approach to comprehension which leads to the conclusion that stories are treated like real-life problems where the comprehender attempts to solve the problem much like the protagonist in the story.

Kintsch (1980) argues that this is not always the case. There are many times when not enough information is available to the comprehender in order to make an exact prediction. In these situations, the comprehender waits for the appropriate information and *then* checks it with the plausible events that could have occurred. Kintsch defines this as post-diction. Omanson uses this distinction to argue that expectations, as discussed in the story schema or social problem solving literature, are not important, because comprehenders just don't make all of the predictions that are outlined in the grammars.

Omanson's error concerns the interpretation of how schematic knowledge interacts with incoming information from a story text. In the current story grammar work, a story schema is thought to *guide* comprehension so that a coherent representation of a story can be constructed. The story grammarians do state that readers have expectations about the kinds of information which should occur in texts, but this information does not force the comprehender to make predictions about the specific *content* of the next statement in a story. What the story schema allows the comprehender to do is to make a specific prediction if enough knowledge is at hand and to make a *postdiction*, to check out the plausibility of an event, if the comprehender could not infer the specific content of the event. Additionally, the expectations generated from story schema knowledge concern the category of information occurring in a given sequence (First, something should happen to the protagonist. Then I'll see how she felt. Then I'll find out what she's going to do about it, etc.). Certainly a comprehender can have these expectations without knowing exactly what specific events will occur in a story.

Thus, most of Omanson's arguments about the distinctiveness of his system, as opposed to other existing systems, aren't yet strong enough to allot any advantages to his system versus the other current taxonomies. More importantly, Omanson has not yet addressed any of the three issues I initially outlined as being critical for an advancement in constructing a theory of importance.

Individual and Developmental Differences in Comprehension

The central issue in Weaver and Dickinson's paper focuses on the usefulness of a story grammar approach in predicting individual differences in comprehension skill. These investigators first define what a "grammar" is and then attempt to discuss how the "grammar" is used during comprehension. One of their major conclusions is that comprehenders may process and store just the "surface" form of a text, rather than representing the text in a more abstract story "grammar" form. Weaver and Dickinson advocate a more "psycholinguistic approach" to comprehension (e.g., a more bottom-up, or data driven, approach).

Before proceeding to discuss specific issues in the Weaver and Dickinson paper, a basic clarification of the terms and definitions used in the story grammar work appears necessary. A story grammar is a set of rules describing the structure of many different types of story texts, similar in spirit to Propp's (1958) morphology of Russian folktales. A story schema is an organized set of knowledge used during the encoding, representation and retrieval of information from stories. The story schema is presumed to be acquired by listening to or reading stories, as well as by participating in and developing an understanding of everyday social interaction (Johnson & Mandler, 1980; Mandler, 1980; Mandler & Johnson, 1977; Stein, 1979; Stein & Glenn, 1979; Stein & Trabasso, 1982a; Thorndyke & Yekovitch, 1980).

As readers become more exposed to stories and different social situations, their schematic knowledge of stories becomes more varied, and is thought to gradually correspond to the structural descriptions outlined in the grammars. The schematic knowledge acquired is often expressed in the form of expectations about the kinds of information occurring in texts. These expectations guide the comprehender by aiding in the retrieval of information necessary to make inferences and decisions about incoming information. By using a story schema, a comprehender is able to construct a coherent representation of the specific semantic knowledge contained in the original text.

Contrary to Weaver and Dickinson's statement, it is not necessary for a comprehender to construct a story grammar of incoming information. The grammar constitutes the text analysis. The story schema, which is in the head of the listener, is already constructed. Thus, the comprehender does not construct a grammar. Rather, the story schema is used to construct a unique representation of incoming information. Whether or not verbatim recall occurs depends upon the type and structure of prior knowledge available to the comprehender at the time of encoding.

In addition to a definitional error, Weaver and Dickinson make another error in their interpretation of the results from the Stein and Glenn (1979) study. Weaver and Dickinson state that the real difficulty in using grammatical approaches is that an investigator cannot make predictions about developmental or individual differences in comprehension. In support of their argument, Weaver and Dickinson cite the "striking absence" of developmental differences in the Stein and Glenn (1979) study.

The major problem with Weaver and Dickinson's argument is that they have chosen a very small subset of data to support a sweeping generalization about development. Weaver and Dickinson did not discuss both the similarities and differences that have been found in children's and adult's understanding of stories. Furthermore, the type of study necessary for the exploration of developmental differences in schematic knowledge was not carried out by these investigators. In order to explain my criticisms, I will discuss both the similarities and differences found in children's and adults' story comprehension. Then I will suggest a type of study that could test more strongly differences between groups in story comprehension.

In reporting the lack of developmental differences in story comprehension, Weaver and Dickinson refer primarily to the pattern of category recall found in the Stein and Glenn (1979) study. When children from the ages of 5 to 12 recall stories conforming to the canonical structure proposed in the grammars, there are few differences found in the pattern of recall. Moreover, this finding generalizes to children from other cultures (Mandler, Scribner, Cole, & DeForest, 1980) as well as deaf children (Gaines, Mandler, & Bryant, in press). It has been shown that even 4 year old children recall the same pattern of events when presented with stories organized according to the canonical structure outlined in the grammars (Day, Stein & Trabasso, 1979). Thus, as far as the pattern of recall found for canonically organized stories, there are few differences due to the age of the subject. This skill is not where we would predict developmental differences.

Developmental differences should be found in memory for stories which do *not* conform to the canonical structure described in the grammars. The results from almost all studies using poorly formed stories substantiate this claim (Buss, Yussen, & Miller, 1981; Day, Stein, & Trabasso, 1979; Mandler, 1978; Mandler & DeForest, 1979; McClure, Mason, & Barnitz, 1979; Stein, 1979; Stein & Glenn, 1982; Wimmer, 1980). Older children and adults are more able to recover the underlying structure of a poorly formed text so that recall is not as disrupted, as it is for younger children. Developmental differences have also been found when children are given only portions of a story and asked to generate the remainder of a story. Both Whaley (in press) and Glenn and Stein (1981) have found that older children's responses conform more to the structures described in the grammars than do younger children's responses.

The evidence suggests that younger children are not as proficient at using information from texts which deviate from the canonical structure. It is with this type of text that reading educators should be most concerned. Considering these data, Weaver and Dickinson could have examined comprehension of stories, as a function of the well-formedness of the text. Children could have been asked to *read* the text, with importance judgments and comprehension measures being reported, as well as recall data. If Weaver and Dickinson found no differences between good

and poor readers on these tasks, then they would have had a more substantial case for arguing for no developmental differences in story structure knowledge. As it stands now, they neither have the data nor any substantial support from studies which have investigated possible developmental differences in schematic knowledge.

An area which was overlooked by Weaver and Dickinson, and probably one most germane to any argument concerning developmental or individual differences in story knowledge, concerns the child's concept of a story. There may be significant differences in children's judgments concerning those dimensions that must be included in a text in order to label it a story. Young children may be able to tell or recall texts written according to the canonical form, but when making up a new story, they may tell stories which lack many of the components of a well-formed story. The difference in performance may be accounted for by the young child's knowledge and expectations about the minimal number of dimensions which define a story. Young children may have a concept of a story that is broader than that proposed in the story grammars. *Fewer* dimensions would have to be included in a text in order to label the sequence as a story. If young children were having difficulty generating an elaborated version of a story, they could easily substitute a simpler sequence, because their definition of a story would have been met by generating a story containing fewer features. Older children and adults should have a narrower concept of a story, so that *more* dimensions would be required in order to label the text as a story.

Results from two recent studies show preliminary support for this claim. Younger children more frequently generate "stories" that do not correspond to the structures described in the current grammars (Stein & Glenn, 1982). They also accept more texts to be stories than would have been predicted from the story grammar analyses (Stein and Policastro, *in press*). Hoover (1980) has also shown that there are wide individual differences in 5-year-old children's concept of a story, and that this knowledge is related to their reading comprehension scores. In all of these studies, there is the suggestion that specific observable changes occur in the conceptual knowledge acquired about stories, and that these changes may be predictive of individual differences in comprehension and production skills.

Concentrating on a more direct appraisal of Weaver and Dickinson's results, serious errors still remain in the interpretation of the original story memory studies (Mandler & Johnson, 1977; Stein & Glenn, 1979). Although the design of Weaver and Dickinson's study was not appropriate to fully explore developmental differences in story knowledge, some of the data could have been directly compared to the results reported by Stein and Glenn (1979). For example, Stein and Glenn (1979) and Stein (1979) found that older children not only recalled more information than younger children, but that they also included more inferences in their recall. The majority of these inferences were attempts to fill in missing category information not occurring in the original text. Although younger children did make inferences, they made significantly fewer inferences than did older children.

These results suggest that older children retain a more *elaborated* version, filling in slots in order to construct a coherent representation. Discussing only the *pattern* of recall, as Weaver and Dickinson do, misses these important differences.

A further problem is Weaver and Dickinson's comparison of the "story grammar" analysis with the "change" analysis. Weaver and Dickinson argue that the "grammatical analysis" (e.g., reporting the pattern of category recall) is not informative enough to suggest individual differences in recall. They suggest that a more informative analysis would be a "change" analysis documenting the microtype of changes that occur when verbatim recall is not given. Their "change" analysis consists of a continuum proceeding from verbatim recall to substitutions of information to plausible inferences occurring during the act of recall. These "change" analyses, Weaver and Dickinson argue, are more representative of a psycholinguistic approach, which emphasizes knowledge of the specific topic under consideration. With these types of analyses, Weaver and Dickinson find a great many individual differences in story memory.

However, almost all of these "change" analyses were included in the original story grammar studies (Mandler, 1978; Mandler & Johnson, 1977; Stein & Glenn, 1979). For example, Stein and Glenn (1979) reported the number of word substitutions (with 60% of all substitutions indicative of verb changes) as well as word deletions occurring in each single statement. Analyses were also carried out to assess the number and type of inferences made during "verbatim" recall. Mandler (1978) also reported elaborate "change" analyses, showing how verbatim recall was transformed, as a function of the text structure. Many more transformations occurred when the texts did not conform to the canonical structure than when texts matched the canonical form. Thus, the difference between Weaver and Dickinson's methods of data analysis and those carried out in the story grammar studies is one of interpretation, not a difference in the types of analyses performed.

The story grammarians argue that differences in recall are a function of how a subject *uses* the story schema during comprehension, as well as a function of how much knowledge a subject has about the specific content domain. Inferences made during the comprehension and recall process could very well be a function of what the child thinks should be in a story (e.g., the concept of a story) as well as a function of the child's knowledge of the specific content domain. Weaver and Dickinson dispute this possibility, arguing that only the specific content of the story events guides the construction of a representation. Results from recent studies, however, strongly suggest that *both* types of information (e.g., schematic and specific content knowledge) are important to comprehension, and developmental differences can be found in each type of knowledge (Bisanz, this volume; Buss, Yussen, & Miller, 1981; Glenn & Stein, 1981; Goldman, this volume; Trabasso, Stein, & Johnson, 1981; Whaley, 1981).

My final comments on the Weaver and Dickinson paper focus on their interpretations of the Stein and Glenn (1979) data concerning the probability of recalling single story events. Throughout their paper, Weaver and Dickinson refer to the

"story grammar theory" of category salience, implying that Stein and Glenn (1979) and Mandler and Johnson (1977) have proposed that an event's category membership is totally predictive of an item's frequency in recall. To show that this is not the case, Weaver and Dickinson illustrate the variability of recalling an item within a category, stating that "category salience" could not possibly account for the frequency of item recall.

However, this point had been made in the original Stein and Glenn (1979) paper (See also Nezworski, Stein, & Trabasso, 1982). In the Stein and Glenn (1979) study, a distribution of category recall was reported where category recall was divided into thirds (category items recalled with a great frequency, with a medium frequency, and with a low frequency). Stein and Glenn (1979) reported that items from all categories fell into all thirds of the distribution, with the exception of major setting and consequence statements. These results were interpreted as follows:

> "Although category membership is predictive of item salience, there was wide variation of item recall in certain categories and little in others. For example, attempt statements were scattered throughout the recall frequencies. This finding indicates that factors other than category membership influence how well an item will be recalled." (Stein and Glenn, 1979) p. 100.

In a subsequent article (Stein, 1979), four specific factors were hypothesized to influence item recall: (1) the causal relationship between each story statement and the superordinate goal (e.g., the direct antecedents and consequents of the higher order goal), (2) the causal relationship between focal events other than the goal, (3) the causal relationship between an event and the outcome of an attempt, and (4) the inferability of a statement in relationship to other story events (see also Stein & Trabasso, 1982a). In the Nezworski, Stein, and Trabasso (1982) study, we showed that an event's relationship to the goal was a more powerful predictor of an item's recall than its category membership. Thus, the "category salience" theory that Weaver and Dickinson criticize was not a theory derived by the early story grammar work.

The Acquisition of Specific Social Knowledge

The Bisanz and Goldman papers are quite different in origins from the preceding two papers, mainly because both studies speak to areas that are just not addressed in any fashion in the original story grammar work. The basic issue concerns the acquisition of specific content domain knowledge concerning the types of goals, plans, and actions of characters portrayed in various stories. In order to begin an investigation of these issues, both authors make use of a production paradigm coupled with probe techniques. Bisanz is mainly concerned with children's knowledge of persuasive acts, whereas Goldman is interested in the child's knowledge of plans to obtain a goal, reasons for goal attainment, and the obstacles that would prevent goal attainment.

In attempting to determine the nature of children's knowledge of persuasion, Bisanz reports significant developmental differences in the types of answers children gave to probe questions concerning the story characters' motivation for actions. One of her tentative conclusions is that young children may not fully understand certain types of stories, especially those containing a protagonist-antagonist structure. Although Bisanz's results are provocative, and her methods innovative, caution should be used in drawing any general conclusion about the nature of developmental differences in story comprehension.

The difficulty in Bisanz's study stems from the ambiguity about just what types of story knowledge the young child has not acquired. In discussing how the different types of story knowledge might be characterized, Bisanz suggests two major divisions: children's general knowledge of the goals and goal structures existing in stories, and their specific knowledge of the subgoals and preconditions necessary for the successful achievement of a particular goal. Bisanz states that the study of these two types of knowledge are complementary, which indeed they are. However, it is not clear from Bisanz's study exactly what types of story knowledge young children have not acquired. The difficulty exists because the domains of story knowledge have not yet been adequately described.

In our recent paper, Trabasso and I (Stein & Trabasso, 1982a) attempted to describe three possible divisions of story knowledge: (1) episodic knowledge of story structure (e.g., categories and their relationships), (2) the types of goal structures occurring in stories, and (3) the specific preconditions and motivations necessary for attainment of specific goals. The grammars provide a detailed description of the first type of knowledge, which is essentially episodic in origin. Basically, this type of knowledge indicates that stories are concerned with the formation of goals and the attempts to attain these goals. Using the structure of an episode to examine children's understanding of the level of story knowledge should be a productive technique. A problem with this level of description, however, is that it doesn't describe all of the possible variations in stories, nor does it give any indication of the different types of goal structures in stories. It becomes important, then, to characterize the type of goal structure inherent in a story.

Several attempts have been made to describe the basic goal structures in most stories (Bruce & Newman, 1978; Glenn & Stein, 1981; Stein & Trabasso, 1982a, 1982b; Wilensky, 1978). Four basic classifications have emerged. If the protagonist interacts with other characters, two types of scenarios usually occur: the first is a sequence where the protagonist's goals conflict with another character's; the second is a sequence where the protagonist's goals are congruent with a second character's, so that cooperation between the two individuals occurs.

If the protagonist is not involved with another character, the two primary goal structures which occur are goal competition, where the protagonist has more than one goal and cannot achieve both of them at the same time, or an obstruction of the goal by the environment (e.g., man against nature stories). Many stories contain a combination of these goal structures, not necessarily just one type (Stein &

Trabasso, 1982a). For example, in the Bisanz story, we see both a goal conflict and goal cooperation structure, where the protagonist's goals are in conflict with one character's goal, but are more concordant with another character's desires.

The third type of knowledge which can be acquired about stories concerns the specific knowledge that children may have acquired about the motivation for pursuing a particular goal, the types of preconditions which must be met in order to attain this goal, and the specific consequences that may occur as a function of obtaining a particular goal. This type of knowledge is best described in the Goldman study, where children's knowledge of specific motivational components and preconditions is elicited.

In the Bisanz study, it is not clear just what level of knowledge is being examined. Her probe questions and procedures were designed more to elicit knowledge about the motivation for, and the achievement of, specific goals, similar to those in the study carried out by Goldman. However, Bisanz interprets her results as being more indicative of knowledge about the general goal structures of stories.

If one were to investigate children's knowledge about specific goal structures, such as goal-conflict between characters, several basic issues would have to be addressed. For example, in a goal conflict situation, a basic issue would concern children's ability to understand that two characters have goals such that if one character attains his goal, the other character cannot attain his (e.g., the mutual exclusivity of two goals).

Bisanz does not directly examine this question. From studies conducted in our laboratory, Trabasso and I (Stein & Trabasso, 1982b) have been able to show that 5-year-old children are highly accurate at inferring the goals of two characters whose desires conflict with one another. These 5-year-olds also understand that if one character's goal is achieved, the other character's goal cannot be attained. So, in terms of the general knowledge necessary to understand protagonist-antagonist stories, even 5-year-olds exhibit this ability.

The knowledge necessary to understand the concept of deception may be a problem for these younger children, as suggested in a recent dissertation by Newman (1981). However, the specific topic of deception, the way the story is written, and the methodology used to elicit children's knowledge of deception must be chosen with care. We often obtain results showing developmental differences in comprehension, where, if we studied the situation more carefully, few developmental differences would be found. As an example, Schultz (1978) illustrated that even 5-year-olds are aware of deception in a task designed to elicit children's understanding of intentional acts. Glenn and Stein (1981) also note that many second grade children told stories with deception themes when asked to relay a tale about a "big grey fox" who lived in the woods. Most of these children who made the fox a very tricky, deceptive character had a good working knowledge of the folktale "Little Red Riding Hood."

A more direct way to assess whether or not children understand deception or "trickster" stories is to ask children to generate their own stories, giving explicit

instructions that the protagonist is a "tricky" fellow and "He's going to fool other people to get what he wants." If children experience difficulty, then we can begin an examination of just what aspects of deception are not understood. Until then, any general conclusion about children's knowledge of story themes remains uncertain. There may be certain forms of deception children readily understand, and other forms which are not as well understood.

In assessing Goldman's study, similar comments can be made about the developmental differences found in obstacle knowledge. One could easily envision developmental differences in almost all aspects of goal related knowledge. The fact that there were no differences in children's knowledge about certain goals, and yet distinct differences in knowledge about other goals, could easily be a function of the methodology used to elicit knowledge. Furthermore, children's skill at producing obstacle knowledge may be somewhat different than their skill at comprehending the nature of an obstacle. Until we incorporate a broader, theoretical framework which contains an explanation for the acquisition and organization of social knowledge, the accurate assessment of developmetnal differences remains elusive.

These comments should not, however, be taken in a negative fashion. As initial studies in the development of social knowledge, both Bisanz and Goldman's work make excellent contributions and are rich in suggestions for future research in the area of story comprehension. Furthermore, the parallels that Goldman draws between the acquisition and organization of story knowledge and word concepts is innovative and informative. The missing component, a more general theory of social understanding, is at best a difficult task to tackle. The fact that both investigators have been concerned with these issues is a contribution in itself. Clearly, however, a primary issue in future research will concern the acquisition and organization of social knowledge, as it affects comprehension and production.

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