

Narrative Research: A Comparison of Two Restorying Data Analysis Approaches

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People telling stories about their life experiences has rapidly gained legitimacy in educational research. This article presents seven elements of narrative research that represent the aspects of a narrative study and the criteria that might be used to assess the quality of a narrative project. The article focuses on one phase in narrative data analysis: "restorying" or "retelling." By highlighting restorying narrative, researchers can see how an illustrative data set, a science story told by fourth graders about their experiences in their elementary classroom, was applied to two analysis approaches. A comparison of the two narrative approaches, problem-solution and three-dimensional space, shows several common features and distinctions. As narrative researchers decide which approach to use, they might consider whether the story they wish to report is a broader wholistic sketch of the three-dimensional approach or a narrower linear structure of the problem-solution approach.

INTRODUCTION TO NARRATIVE INQUIRY

People tell stories about their life experiences. Telling stories helps people to think about, and understand, their personal or another individual's, thinking, actions, and reactions (Bruner, 1986, 1990; Polkinghorne, 1988; Ricoeur, 1991). Thus, it is not surprising that collecting stories has emerged as a popular form of interpretive or qualitative research (Gudmundsdottir, 1997). It has rapidly gained legitimacy in education and has flourished at research conferences and in professional development activities in schools (Clandinin & Connelly, 2000).

Over the past 20 years, the popularity of narrative research in the social sciences and education is evident from an increase in narrative publications having to do with narrative questions, phenomena, or methods (Lieblich, Tuval-Mashiach, & Zilber, 1998). Narrative brings researchers and educators together collaboratively to construct school experiences (Connelly & Clandinin, 1990). It provides a voice for teachers and students (Errante, 2000),

and it places emphasis on the value of stories in all aspects of life (McEwan & Egan, 1995).

NEED FOR NARRATIVE ANALYSIS COMPARISON

Despite this growing literature, some methods involved in conducting narrative analysis are still developing and/or are not well understood. In an attempt to explicitly describe analysis, Cortazzi (1993) presented models of analysis across sociological, sociolinguistic, psychology, literary, anthropology, and educational research domains. Lieblich et al. (1998) then organized narrative research into a four-classification schema and described narrative analytic approaches as holistic-content, holistic-form, categorical-content, and categorical-form. Holistic-content is a narrative approach for understanding the meaning of an individual's stories. The holistic-content procedures involved in interpretive data analysis are complex (Clandinin & Connelly, 2000), abstract, and not well understood. Furthermore, educational research discussions do not provide detailed information about procedures (Errante, 2000). Comparing two holistic-content analytic procedures is needed for experienced and novice researchers to determine a suitable analytic approach for their study.

The holistic-content analysis of field texts (e.g., transcripts, documents, and observational field notes) includes more than description and thematic development as found in many qualitative studies. It involves a complex set of analysis steps based on the central feature of "restorying" a story from the original raw data. The process of restorying includes reading the transcript, analyzing this story to understand the lived experiences (Clandinin & Connelly, 2000) and then retelling the story. Several procedures are available for engaging in restorying of the raw data (e.g., in a sequence, see Riessman, 1993). Comparison of these procedures as well as how they relate to narrative research in general can aid the inquirer who engages in this form of research.

OBJECTIVES

This article contrasts two approaches for retelling or restorying field texts. To discuss these processes, the article begins with an overview of narrative research today and commentary about data analysis. Then the article turns directly to the process of restorying, and two narrative structures for engaging in this process are discussed. The first is one used by the first author of this article, the problem-solution approach, based on narrative thought (see Yussen & Ozcan, 1997); the second is the three-dimensional space approach,

based on Dewey's experiential philosophy (Clandinin & Connelly, 2000). For each restorying process, an illustration of its application is advanced, based on a story in science education told by four fourth graders in one elementary school (Ollerenshaw, 1998). The two approaches are compared to enable narrative researchers to decide for themselves which approach is most suitable for their studies.

WHAT DO NARRATIVE RESEARCHERS DO?

We begin our discussion about narrative research with the question, "What do narrative researchers do?" Clandinin and Connelly (2000) posed this question in their book *Narrative Inquiry*. This book extends their substantive and popular discussion about narrative research summarized in an *Educational Researcher* article titled "Stories of Experience and Narrative Inquiry" (Connelly & Clandinin, 1990) and other works on the curriculum and teacher stories (e.g., Connelly & Clandinin, 1988). Through conference presentations, books, articles, and graduate students, Clandinin and Connelly have attracted a large educational research following to narrative inquiry.

Connelly and Clandinin's advocacy for this form of qualitative inquiry has deep roots in the social sciences and the humanities (Casey, 1995-1996; Cortazzi, 1993; Polanyi, 1989; Polkinghorne, 1988). Procedures for finding tellers and collecting their stories has emerged from cultural studies, oral history, folklore, anthropology, literature, sociology, and psychotherapy. Interdisciplinary efforts at narrative research have been encouraged by Sage Publications through their *Narrative Study of Lives* annual series that began in 1993 (Josselson & Lieblich, 1993).

With such diverse interdisciplinary applications, it is little wonder that a consensus does not exist as to what constitutes narrative research. Those seeking a basic understanding of "narratology" (Connelly & Clandinin, 1990) must forge their own construction of the inquiry procedure.

Despite the many forms of narrative inquiry, there are several common characteristics that fit many studies. The inquirer emphasizes the importance of learning from participants in a setting. This learning occurs through individual stories told by individuals, such as teachers or students. For Clandinin and Connelly (2000), these stories report personal experiences in narrative inquiry (what the individual experiences) as well as social experiences (the individual interacting with others). This focus on experience draws on the philosophical thoughts of John Dewey, who saw that an individual's experience was a central lens for understanding a person. One aspect of Dewey's thinking was to view experience as continuous (Clandinin & Connelly, 2000), where one experience led to another experience. The stories constitute the

data, and the researcher typically gathers it through interviews or informal conversations. These stories, called field texts (Clandinin & Connelly, 2000), provide the raw data for researchers to analyze as they retell or restory the story based on narrative elements such as the problem, characters, setting, actions, and resolution (Ollerenshaw & Creswell, 2000). Restorying is the process of gathering stories, analyzing them for key elements of the story (e.g., time, place, plot, and scene), and then rewriting the story to place it within a chronological sequence. Often when individuals tell a story, this sequence may be missing or not logically developed, and by restorying, the researcher provides a causal link among ideas. In the restorying of the participant's story and the telling of the themes, the narrative researcher includes rich detail about the setting or context of the participant's experiences. This setting in narrative research may be friends, family, workplace, home, social organization, or school—the place in which a story physically occurs.

A story in narrative research is a first-person oral telling or retelling of events related to the personal or social experiences of an individual. Often these stories have a beginning, middle, and an end. Similar to basic elements found in good novels, these aspects involve a predicament, conflict, or struggle; a protagonist or character; and a sequence with implied causality (i.e., a plot) during which the predicament is resolved in some fashion (Carter, 1993). In a more general sense, the story might include the elements typically found in novels, such as time, place, plot, and scene (Connelly & Clandinin, 1990). In this process, researchers narrate the story and often identify themes or categories that emerge from the story. Thus, the qualitative data analysis may be both descriptions of the story and themes that emerge from it. In addition, the researcher often writes into the reconstituted story a chronology of events describing the individual's past, present, and future experiences lodged within specific settings or contexts. Cortazzi (1993) suggested that it is the chronology of narrative research with an emphasis on sequence that sets narrative apart from other genres of research. Throughout this process of collecting and analyzing data, the researcher collaborates with the participant by checking the story and negotiating the meaning of the database. Within the story may also be the story of the researcher interwoven as she or he gains insight into himself or herself. Collaboration in narrative research means that the inquirer actively involves the participant in the inquiry as it unfolds. This collaboration may include many steps in the research process, from formulating the central phenomena to be examined, to the types of field texts that will yield helpful information, to the final written restoried rendition of the individual's experiences by the researcher. Collaboration involves negotiating relationships between the researcher and the participant to lessen the potential gap between the narrative told and the narrative reported. It also may include explaining the purpose of the inquiry to the participant, negotiating transitions from gathering data to writing the story, and arranging ways to intermingle with participants in a study (Clandinin & Connelly, 2000).

THE ILLUSTRATIVE DATA SET

We now turn to the process of restorying that will be described specifically within the description of each of the two analysis approaches. Each approach will be illustrated with sample data from a fourth-grade science activity. We selected an elementary science education example, though limited in scope for broad narrative audiences, because the illustrations are simple and easy to comprehend. The first author in this study collected stories from four fourth graders in one elementary school. These stories were part of a doctoral dissertation (Ollerenshaw, 1998) to determine how science concepts are incorporated into science stories told by students. These science concepts addressed the physics of sound, and the stories emerged during the language arts unit over a 3-month period of time. The procedure involved a teacher telling a story about the physics of sound, followed by students engaging in science activities to learn the concepts. Then the students formed a cooperative group (of four students each) and developed an oral story that incorporated the science concepts of sound into their story. One cooperative group orally presented a story about two baboons playing instruments so the elephants across a big river could hear them, as shown in the transcription from the videotape in Figure 1. This story will be the raw data used to illustrate the two restorying processes in this article, the problem-solution approach and the three-dimensional-space approach (Clandinin & Connelly, 2000).

THE PROBLEM-SOLUTION APPROACH

The Analytic Process

The theoretical roots of the problem-solution narrative structure are found in the theoretical perspectives of narrative thought (see Yussen & Ozcan's 1997 approach to narrative thought.) Yussen and Ozcan (1997) argued that "narrative thought involves any cognitive action (activity)—be it listening, speaking, reading, writing, imagining, or recollecting—in which the individual contemplates one or more people engaged in some activity or activities in a specific setting for a purpose." A researcher takes the raw data in the form of the transcription and analyzes the data for five elements of plot structure. The analysis involves organizing the elements into attempts or events and then sequencing the attempts or events. See Table 1 for an overview of the analysis approach.

The process involves the following:

1. Audiotape the interviews and transcribe them.
2. Read and reread through the transcript to get a sense of the data.

One day in the jungle two baboons were playing their instruments.
 "Eoooo-oooo-uuuu." [Two Baboons mime playing a sax and bass].
 Suddenly one of them had a question.
 "Hmm, how can we get the elephants across the big river to hear us?" B1 says as he scratches his head.
 [Ding sounds as a light bulb goes off over the head of B2. B2 points his finger in the air.]. "I know, we could get some coconuts and hollow them out and make phones."
 "Okay, let's go get some coconuts," responds B1.
 "Whack, whack, whack." [Baboons mime climbing trees, gathering coconuts, breaking them apart over their legs, and scooping them out while they make sound effects of breaking and scooping.]
 [Boy playing B1 nudges the narrator as he scoops out the coconut.]
 One of them went to gather vines. [B1 mimes running, climbing, gathering, running.]
 B1 says, "Let's connect them."
 B2 responds, "OK."
 [Baboons mime screwing vines into base of coconut cup-phone.]
 "Hello," says B1 as he places phone cup by his mouth and B2 places phone cup by his ear.
 "Hello," says B2 as he places phone cup by his mouth and B1 places phone cup by his ear.
 "Hello," says B1 as he places phone cup by his mouth and B2 places phone cup by his ear.
 "Hello," says B2 as he places phone cup by his mouth and B1 places phone cup by his ear.
 B1 says, "Okay, I'm going to go across the big river and jump over our bridge that we made."
 "Okay, bye," says B2 as he watches B1 leave, run, and jump.
 "Here elephant it's to talk," B1 hands the phone to Elephant. "No Elephant you have to hold it ... [Elephant holds the phone cup by her ear.]
 "Hello, says B1 as he holds the phone by his mouth as the two elephants hold the phone by their ears.
 B1 runs back across the river and crosses the vines of the 2 sets of phones.
 B1 says, "Hello," as B2 and the 2 Elephants hold the phones by their ears.
 B2 responds, "Hello," as B1 and the 2 Elephants hold the phones by their ears.
 B1 responds, "Hello," as B2 and the 2 Elephants hold the phones by their ears.
 "Okay, do you want to hear a concert now?" B1 asks the elephants through the phone.
 B1 says to B2, "OK connect it to the sax [and the bass]." [The baboons mime attaching their ends of the phone to the sax and the bass. Then they play their instruments.]
 Do-dee-doo-de-do, Do-dee-doo-de-do, Do-dee-doo-de-do.
 "That's the end [of our concert]," says B1
 "Good job," one elephant responds.

Figure 1: Final Story of One Cooperative Group About Two Baboons

3. Color-code the transcripts for the elements of plot structure (characters, setting, problem, actions, and resolution). As shown in Table 2, these elements include information about the individuals involved, the place or environment, the question to be answered, the specific cognitive actions (Yussen & Ozcan, 1997), movements or attempts through the story, and the final answer to the question. The information is organized into a table so that the coded elements of actions,

TABLE 1: Organizing the Plot Elements Into the Problem-Solution Narrative Structure

<i>Rough Transcription</i>	<i>Characters</i>	<i>Setting</i>	<i>Problem</i>	<i>Actions</i>	<i>Resolution</i>
Code plot structure elements (color-highlight or insert element notation)	Individual's archetype, personality, behaviors, style, and patterns	Context, environment, conditions, place, time, locale, year, and era	Question to be answered or phenomena to be described or explained	Movements through the story illustrating character's thinking, feelings, intentions, actions, and reactions about failed and successful attempts	Answers the question and explains what caused the turning point or the character to change

Source: Adapted from Ollerenshaw (1998).

setting, and so on are grouped together. This process could be conducted using a computer program (e.g., Nudist, NVivo) as well as hand color-coding.

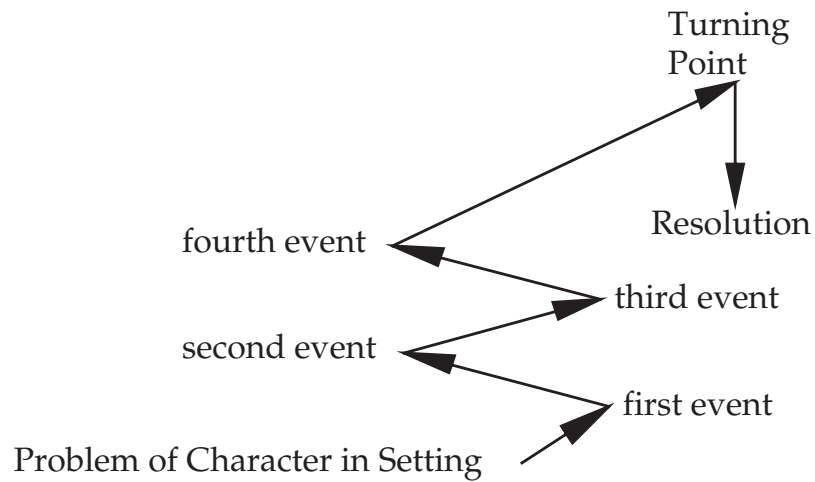
4. Graphically organize the color-coded transcripts into events or attempts, such as the setting, problem, physical actions, reactions, thinking, and intentions, and emotionally driven goals of the characters and resolution.
5. Sequence the events. The researcher reworks this sequence until it makes sense. The sequence begins with the characters, setting, and problem. At this point, the researcher reorganizes the sequence until a turning point causes a resolution to the problem. An example of this sequence is shown in Figure 2.

The Application of the Process

The specific application of these steps can be illustrated in the story of the two baboons. The researcher first reads through the story and then identifies the elements. As shown in Table 2, the segments of the story (characters, setting, problem, actions, and resolution) are inserted into a table to organize the color-coded information. Figure 3 shows the elements of setting, characters, actions, and resolution graphically organized. The event attempts visually appear (phone design attempt, design test 1 attempt, design test 2 attempt, final design attempt using the phone with the elephants). In addition, as shown in Figure 4, the events are sequenced to form an action map that begins with the question and ends with the resolution where the elephants hear the baboon's music. The story begins on the left with setting, characters, and the problem, followed by actions and resolution on the right.

TABLE 2: Application of the Two-Baboon Story Analyzed by the Five Elements of the Problem-Solution Narrative Structure Approach

<i>Characters</i>	<i>Setting</i>	<i>Problem</i>	<i>Actions</i>	<i>Resolution</i>
Two baboons playing instruments	A rainforest by a big river	How can we get the two elephants across the river to hear our music?	Get coconuts hollow them out; gather vines; make two phones; two baboons test their phone; one baboon crosses river with a phone; one baboon tests phone with two elephants; one baboon crosses vines of two phones; attaches their phone to instruments	The elephants hear the baboons' music

**Figure 2: Sequencing the Events Into the Problem-Solution Narrative Structure**

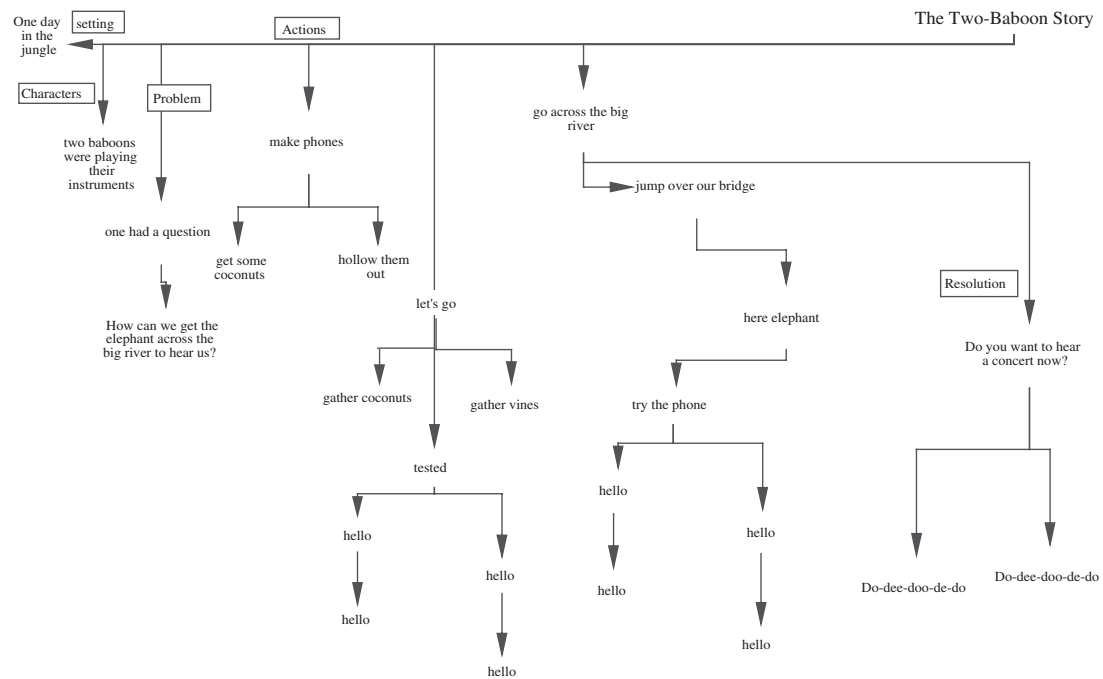


Figure 3: Application of the Two-Baboon Story to Graphically Organize the Five Elements of the Problem-Solving Approach

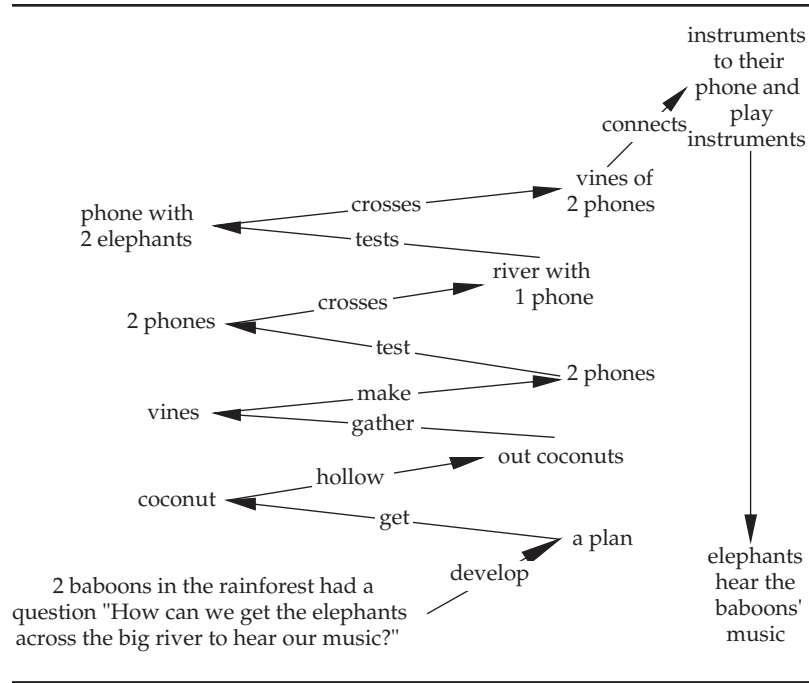


Figure 4: Application of the Two-Baboon Story to the Sequencing of the Problem-Solving Approach

In both approaches to sequencing, the events were restoried to tell a new story about the two baboons. As seen in the storytelling on the left, the turning point occurred when the baboons crossed the vines of the two phones and connected the phones to the instruments. This action caused the resolution, and the elephants across the river were able to hear the baboons playing their instruments.

The following is a story that might be told from restorying (see Figure 4) the original data:

Do-dee-doo-de-do, Do-dee-doo-de-do, Do-dee-doo-de-do [hummed to the tune of Salt Peanuts]. Jazzy sounds from the baboons' concert reverberated through the rainforest. The elephants tapped their feet, wagged their tails, and flapped their ears with the syncopated rhythms. The inventive baboons attached one end of the coconut phone collector to the sax and the bass after they crossed the vine of the elephants' phone with their phone vine. The baboons attempted many trials and tests of the phone design to perfect this telephone. But it was worth all the effort because as the last beat of the jazzy tune was played, the elephants' sung out, "Good job!"

This is a story about four children who pretended to be animals in a forest inventing two coconut/vine telephones. They directed musical vibrations across a distance to one another. Translated into science concepts, this story enabled the fourth-grade children to better demonstrate their understanding that sound is a vibration. Vibrations travel through different mediums from the source to a receiver. The problem in this scenario—for the elephants to hear the instruments of the baboons—required the students to create a device to collect the sound vibrations and direct the vibrations through a medium to a receiver at a distance.

THE THREE-DIMENSIONAL SPACE APPROACH

The Analytic Process

This structure for analysis is based on Clandinin and Connelly's (2000) approach identified in their text *Narrative Inquiry*. The basis for this approach is Dewey's philosophy of experience, which is conceptualized as both personal and social. This means that to understand people (e.g., teachers, students, and administrators), one examines their personal experiences as well as their interactions with other people. Continuity is related to learning about these experiences, and experiences grow out of other experiences and lead to new experiences. Furthermore, these interactions occur in a place or context, such as a school classroom or a teacher's lounge.

Based on these elements of experience, Clandinin and Connelly (2000) advanced a three-dimensional space approach for conceptualizing "what narrative researcher's do" (p. 48). This lens becomes a primary means for analyzing (as well as thinking about) data (field texts) gathered and transcribed in a research study. As shown in Table 3, there are three aspects of this narrative approach: interaction, continuity, and situation.

1. Interaction involves both the personal and social. The researcher analyzes a transcript or text for the personal experiences of the storyteller as well as for the interaction of the individual with other people. These other people may have different intentions, purposes, and points of view on the topic of the story.
2. Continuity or temporality is central to narrative research. The researcher analyzes the transcript or text for information about past experiences of the storyteller. In addition, it is analyzed for present experiences illustrated in actions of an event or actions to occur in the future. In this way, the analyst considers the past, present, and future.
3. Situation or place needs also to be analyzed in a transcript or text. Narrative researchers look for specific situations in the storyteller's landscape. This involves the physical places or the sequence of the storyteller's places.

TABLE 3: The Three-Dimensional Space Narrative Structure

<i>Interaction</i>		<i>Continuity</i>			<i>Situation/Place</i>
<i>Personal</i>	<i>Social</i>	<i>Past</i>	<i>Present</i>	<i>Future</i>	
Look inward to internal conditions, feelings, hopes, aesthetic reactions, moral dispositions	Look outward to existential conditions in the environment with other people and their intentions, purposes, assumptions, and points of view	Look backward to remembered experiences, feelings, and stories from earlier times	Look at current experiences, feelings, and stories relating to actions of an event	Look forward to implied and possible experiences and plot lines	Look at context, time, and place situated in a physical landscape or setting with topological and spatial boundaries with characters' intentions, purposes, and different points of view

Source: Adapted from Clandinin and Connelly (2000).

TABLE 4: Application of The Two-Baboon Story to the Three-Dimensional Space Narrative Structure Approach

<i>Interaction</i>		<i>Continuity</i>			<i>Situation/Place</i>
<i>Personal</i>	<i>Social</i>	<i>Past</i>	<i>Present</i>	<i>Future</i>	
	Two boys and two girls work together to develop and tell a science story	They apply science concepts from science activities to design a communication tool	They present a storytelling to class		Fourth-grade language arts classroom
The other baboon scratches his head in wonder	Two baboons are playing their instruments		A baboon asks a question, "How can elephants across the river hear us play our instruments?"		The rainforest
	Two baboons work together developing a technology design—a communication tool		They make and test a phone		The rainforest
	The baboons and elephants collaboratively test phone		They take the phone to elephants to try		Crosses the river
	The baboons and elephants use phone		They play concert so elephants can hear		Across the river
	An elephant responds, "Good job!"				Across the river

Note: The empty cells indicate collaborating, asking more questions, and renegotiating further information between coresearchers (participants and researcher).

In addition to this three-dimensional approach, Clandinin and Connelly (2000) described the complex analysis process as reading and rereading through the field texts, considering interaction, continuity or temporality, and situation through personal practical knowledge and the professional knowledge landscape of the individual. Connelly and Clandinin (2000; Clandinin & Connelly, 2000) described personal practical knowledge as being personally individualized and pointing inward, in terms of aesthetic, moral, and affective elements and language that are constructed as part of the experience. Professional knowledge landscape is contextual and points outward to existential conditions in the environment, in terms of other individuals' actions, reactions, intentions, purposes, and assumptions. Moving away from the actual transcript, the researcher asks "what it means" and what its "social significance" is. Furthermore, themes, tension, and patterns are also identified. The restorying process, described by Clandinin and Connelly (2000) as retelling, first involves collaborating and renegotiating information with participants and returning again and again to the field text. Finally, the researcher writes interim texts to find a narrative text that promotes an account of participants' lived experiences.

The Application of the Process

As shown in Table 4, the three-dimensional space approach is applied to the two-baboon story. As Table 4 illustrates, many of the cells of the three-dimensional approach can be filled using the short two-baboon story. To complete all of the cells, the researcher would return to the children and ask them more information about their internal feelings, reactions, thoughts during the science and storytelling interactions, past experiences, and the future possible experiences with communicating sounds at a distance. This approach is consistent with Clandinin and Connelly's (2000) idea of retelling or renegotiating the story, a collaborative process that occurs between the researcher and the participants in a study.

The following is a story that might be told from restorying (see Table 4) the original data:

"Good job!" the elephants responded after the baboons finished their concert across the other side of the river. The girls, playing the elephant roles, responded sincerely because the struggle to invent the instrument was minor compared with the struggle to learn cooperation through science storytelling. The boys playing the baboon roles [finally] took the lead role to develop the science story and characterization. The girls' response reflected their encouragement to the baboons for the invention but equally to the boys who finally resolved the science storytelling assignment.

This anthropomorphic story is about collaboration between children in a classroom and animals in a rainforest working together to develop a common

goal. As seen in the story, these four children evolved in their ability to collaborate with each other and to cooperatively identify the purpose of the science storytelling activity. Their story illustrates their answer to the question, "How can the elephants across the river hear our concert?" They decided to make two phones and attach one phone to their instruments. They gathered materials and tested the phone design. One baboon crossed the river and gave the phone to the elephants to try. He then crossed back over the river. Both baboons attached the phones to their instruments, and the elephants on the other end heard their concert. The elephants communicated the success of the technology design when they affirmed that the baboons did a good job.

A COMPARISON OF THE TWO NARRATIVE APPROACHES

Before contrasting the problem-solution and three-dimensional space approaches, their similarities should be noted because both approaches reflect restorying techniques in narrative research. In both approaches, the researcher reanalyzes the raw data to form a new story. This story is reorganized to highlight events that occurred. The use of graphic organizers helps the researcher identify important information into a table or map to code, sort, and group the data. Both approaches lead to the development of a story that can be told orally or written for readers. The story includes a rationale to explain the reason for the particular telling style. In the two approaches, the researcher proceeds through the overall steps of obtaining text data, transcribing the data from audiotapes (if this is needed), and reshaping the transcription into a story.

A close inspection of the process used in restorying the two-baboon story and transcript shows that the two approaches also differ in several ways. Table 5 summarizes these major differences. In the problem-solution approach, the restorying focuses on the attempts made to solve the problem, whereas the three-dimensional space approach highlights the experiences and interactions of the individuals. This leads to different elements chosen by the researcher to identify in the raw data. For the three-dimensional space approach, these elements are personal and contextual (e.g., interaction, situation); for the problem-solution approach, these elements follow literary theory and the classic elements of a plot structure (e.g., characters, setting, actions, and resolution). A focus on different elements leads to a broader, more wholistic lens that the researcher uses to tell the story in the three-dimensional space approach than the linear, highly sequenced approach used in the problem-solution model. This linear approach led to a logical sequence of events for the story in the problem-solution approach—a sequence that flows from characters, setting, and problem first, followed by actions or events, and, finally, a resolution. In the three-dimensional space approach,

TABLE 5: Distinctions Between the Problem-Solution and the Three-Dimensional Space Narrative Structure

<i>Problem-Solution Narrative Structure</i>	<i>Three-Dimensional Space Structure</i>
Problem oriented	Experience oriented
Linear	Wholistic
Literary theory and narrative thought	Personal and social
A logic to the sequence (characters, setting, problem → actions → resolution)	Many alternative logics to sequencing
Explaining experiences	Describing experiences
Teacher-researcher negotiate	Coresearchers with participants negotiate relationships, purposes, transitions, ways to be useful

Clandinin and Connelly (2000) did not advance an ideal reordering. In fact, in restorying, the researcher might begin with a chronology of events (i.e., continuity), then proceed to the situation, followed by the interaction details. In short, the reordering is not as structured in the three-dimensional space approach as in the problem-solution approach.

The logical sequence of the problem-solution model also provides the perspective of explaining experiences: why attempts occurred as they did. Alternatively, in the three-dimensional space approach, the emphasis is on describing individual experiences. Finally, the role between the researcher and the participants also differs between the two approaches. In the three-dimensional space approach, Clandinin and Connelly (2000) clearly indicated that the story is renegotiated between the researcher and the participants throughout the development of the restorying process. The researcher negotiates the purposes, the relationship with the participants, the transitions, and the way to be useful as the researcher tells or restories the participant's narrative. In the problem-solution approach, negotiating the meaning of the story is less present, and although the researcher negotiates access to the classroom (as was done in the elementary science classroom), the researcher makes an interpretation of the story rather than a negotiated interpretation with the children in the classroom.

DISCUSSION

Illustrated in this article are only two approaches to restorying a transcript in narrative research; others are available with a stronger linguistic base (e.g.,

see Reissman, 1993). However, in view of the current emphasis on addressing problems in education and the popularity of the writings by Clandinin and Connelly (2000), we chose to focus on two procedures in restorying: the problem-solution and the three-dimensional space approaches. Both must be set within the context of a narrative study that includes examining individual experiences as told to the researcher through stories. These stories, in turn, contain specific elements that the researcher can combine into a sequence to form a new story, complete with contextual detail and often told in collaboration with participants in a study.

Examining the two approaches shows several common features as well as distinctions. As narrative researchers decide which approach to use, they might consider whether the story they wish to report is a broader, more wholistic sketch using the three-dimensional model or a narrower, more sequenced approach of the problem-solution model. The approach chosen may also result from the purpose to be accomplished in the narrative study, the audience that will receive it, and the research problem being examined. The selection may turn, as well, on the personal preferences of the researcher: whether a more linear approach is suitable (i.e., as in some science education research) or a more nonlinear, contextual approach is more appealing. Unquestionably, the problem-solution approach is more structured and more predictable of outcomes for the story, whereas the three-dimensional space approach opens up more alternatives for reporting research.

Regardless of which approach a researcher takes, a review of these two processes highlights the complexity that exists in analyzing data in a narrative research study. This process differs significantly from other qualitative analysis strategies, such as detailed description in ethnography, open and axial coding in grounded theory research, or the within- and cross-case analysis found in multisite case studies (Creswell, 1998).

Future methodological discussions might explore these differences in greater detail than presented here. Also, additional methodological insight is needed into other phases of narrative research, such as the field dilemmas in collecting narrative stories (e.g., Who should tell the story? Are the stories accurate? Can multiple stories be combined into one story?). For those who plan to report results from their narrative studies, more discussion is needed about the alternative forms for presenting and representing stories, such as whether both individual stories and broader themes (as typically found in qualitative research) serve a useful purpose.

Unquestionably, as Errante (2000) suggested, more methodological and method discussions about narrative research need to occur. This article focuses on only one phase in narrative data analysis—restorying—a phase that may be problematic for narrative researchers because of the complex operations required and the several models from which to choose. But by highlighting this phase, narrative researchers can see how we have applied the process to children's stories in science education. It is hoped that our dis-

cussion will encourage others to debate and discuss the data analysis process in narrative research.

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