

## Oral Traditions as Collective Memories: Implications for a General Theory of Individual and Collective Memory

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This chapter is about the cultural memory and transmission of oral traditions, especially those that use poetics and music. The latter include many of the best studied and most stable forms of oral traditions, including children rhymes, ballads, songs, and epic poetry. Oral traditions are of interest because, unlike written traditions, they depend primarily on memory for their survival. Thus, by examining the products of long periods of oral transmission, we can learn something about the processes of memory used. Working in the other direction, by using our knowledge of memory, we can better understand how the products came into being and what their likely limitations are. Although they are often viewed only as art forms in current times, oral traditions did, and often still do, transmit valuable practical and moral information and in many forms, such as the epics sung in the Balkans, give insight into major conflicts (Foley, 1991; Havelock, 1978; Lord, 1960; Ong, 1982).

In large part, this chapter is drawn from my earlier work on oral traditions (e.g., Rubin, 1995), but here I intend to show how it provides a more general view of memory as used in the cultural transmission of information. My goal is to show that current theories of memory need to be expanded in principled and theoretically well-supported ways if they are going to be maximally useful in helping us understand individual and collective memory. This is hard to show in single chapter in an abstract way, so I will start with two genres of oral traditions and then, after presenting data on these, I will expand to memory in general.

### Examples from Children's Counting-Out Rhymes and Ballads

I begin with a few examples to make the topic less abstract. After all, oral traditions themselves are not abstract in content but always illustrate the

abstract through use of the concrete (Havelock, 1978). The most commonly known piece for most readers from an oral tradition is probably the following:

Eenie, meenie, miney, mo  
 Catch a tiger by the toe.  
 If he hollers, let him go.  
 Eenie, meenie, miney, mo.

This may seem like a cute little scrap of nonsense, but it has remained stable, popular, and widespread across the English-speaking world for over a century. The poetics are subtle and exhaustive. Most of the words contain a repeated sound pattern, usually word repetition, rhyme, or alliteration, and all the words not involved in the meaning are involved in one of these poetic devices.

Consider the first line. *Eenie* is part of *meenie*. *Meenie*, *miney*, and *mo* alliterate. *Eenie*, *meenie*, and *miney* rhyme, as do *mo*, *toe*, and *go*. In terms of articulation, the initial vowel in *meenie*, *miney*, *mo* (i.e., *e*, *i*, *o*) is a front-to-back progression as in *fee*, *fi*, *fo*, *fum*, *I smell the blood of an Englishman* or in *Old McDonald had a farm*, *ee eye*, *ee eye*, *oh*. Thus, *meenie*, *miney*, *mo* sounds better than *miney*, *meenie*, *mo*, and the order is unlikely to change. The remaining sound, /n/, repeats in the same location in three words. The whole line repeats as the last line, where the one single-syllable word, *mo*, coincides with the person who is chosen. This change from the two-syllable pattern (which would be *monie*) adds closure, and because the line is trochaic (i.e., it has feet consisting of a stressed syllable followed by an unstressed syllable), it emphasizes the end-rhyme scheme by putting a stress on the final, rhyming syllable. In summary, there is not a phoneme or even a distinctive feature in the first line that can change without breaking some pattern. The middle two lines offer more flexibility and so do change over time and over retellings, where that flexibility allows or where social forces require, but the changes always maintain the rhythmic, poetic, and other forms of organization of the piece and genre (Rubin, 1995).

*Eenie Meenie* is the most frequent rhyme in Abrahams and Rankin's (1980) compilation of counting-out rhymes, and we could find 82 versions of it dating back to the 1880s. In oral traditions, there is no correct version, but using the version listed earlier as a standard, the changes among the rhymes vary where they can without disrupting the basic poetic, rhythmic, imagery, and meaning organization. The first and last line varied before 1910, mostly outside the United States, including *Eena meena mina mo* and *Eena deena dina do*. Note that the whole line had to change to preserve the rhyme and

alliteration patterns. The middle two lines also changed, although rarely. These, like the changes in the first line, maintained the organization by providing completely new lines. My favorite, in which a beatnik is caught, is *If he hollers daddy-o, Play it cool and let him go*.

Other changes occurred in single words. The word *hollers* was American, not English, and in Great Britain and New Zealand, and only in these countries, it often changed to *squeals*, although now *hollers* has become worldwide. Other versions had *cries*, *chatters*, *quarrels*, *roars*, and *screams*, but these were rarer. *Hollers*, which alliterates with the *he* of *If he hollers*, remains the most common. Other single-word changes occur in words that do not have any poetic links and have synonyms with the same number of syllables. These are usually in unstressed words and include *his* for *the*, *when* for *if*, and *the* for *a*. Before the 1940s, the term for what was caught was a racial slur. This changed steadily over time until now *tiger* is the only word widely used. However, while the replacement was ongoing, a host of mostly two-syllable words was considered by the community using the rhyme, including *baby*, *beatnik*, *beggar*, *feller*, *lamb*, *lion*, *lizard*, *monkey*, *neighbor*, *pig*, *robber*, and *rooster*. *Tiger* alliterates with *toe*, and it is a two-syllable trochaic word making it arguably the best word in the language for its location in the rhyme. Thus, the forms of organization remain stable even when the individual words change. What is transmitted through those who use the genre is not the rote memorization of exact words but solutions that fit the genre. In cognitive psychology, the word used to describe such genre organization is Bartlett's (1932) term, "schema." Here the schemata are for rhythm, poetics, imagery, and meaning, not just for meaning.

Similar counting-out rhymes occur in many cultures where they determine in a relatively peaceful manner the child who will play an often unpleasant role in a game. Romanian shares the Romance-language roots of English, but it is surrounded linguistically by Hungarian, Slavic, and Turkish languages. Thus, the rhymes have similar properties that are not a product of easy borrowing from the English rhymes and so provide a test of the ideas developed on English rhymes (Rubin, Ciobanu, & Langston, 1997). The rhyme we collected most was the following:

Din Oceanul Pacific, (From the Pacific Ocean)  
 A iesit un peste mic. (A little fish came out)  
 Si pe coada lui scria (And on its tail is written)  
 Iesi afara dumneata. (Out goes you.)

We collected 63 versions of this rhyme. Of these, 49 were the variant shown. The remaining 14 versions all varied from it in the last two lines.

One was *Iu, iu, iu / Iesi afară tu* (*You, you, you / Out goes you*). Another was *A B C / Iesi afară dumneata* (*A B C / Out goes you*). The remain 12 variants came only from girls and were *Te iubesc / nu mă uita* (*I love you / don't forget me*). The rhyme seems like it could fit into the English genre (and stereotyped cultural sex roles), and in general the rhymes we collected share with the English genre many properties including having four lines with four beat per line, line internal and end rhyme, alliteration, and allowing many repeating and nonsense words.

Preliterate children may use oral traditions for memory because they cannot rely on writing. However, even adults make use of song and poetry to aid memory. I choose a recent ballad as an example because it is an event for which we have eyewitness and newspaper accounts and because the ballad was involved in a copyright dispute, which adds additional information about variants and how they changed over time. Thus, one can examine how accurately information is transmitted and what biases are caused by the genre of ballads and of newspaper reporting (see A. Cohen, 1973, for more on this issue).

On December 27, 1903, Number 97, a fast mail train, reached Monroe, Virginia, behind schedule. The engineer taking charge at Monroe tried to make up the time, but he was new to the Southern Railway and unfamiliar with the treacherous points in the route. Just north of Danville, Virginia, the tracks round a curve, descend, and cross a trestle about 90 feet above a creek (see N. Cohen 1981; Lyle, 1991; Wallace, & Rubin, 1988 for more details). Here are the two verses that carry most of the story line. It comes from the Appeals Court record of the copyright case (White, 1952, p. 513):

It's a mighty rough road from Lynchburg to Danville  
 And a line on a three mile grade.  
 It was on this grade when he lost his air-brakes  
 And you see what a jump he made.

He was going down grade making ninety miles an hour  
 When his whistle began to scream,  
 He was found in the wreck with his hand on the throttle  
 And was scalded to death by the steam.

The story was fit into a ballad tradition, in which there were many other ballads about train or shipwrecks. As part of this tradition, it included stanzas of four lines with four beats per line and with the last beat of lines two and four often being filled with a rest or held note. The last words of line two and line four rhyme. There is high imagery and action-filled meaning

structured so that each stanza is a self-contained unit of meaning and imagery. The genre is complex, well studied, and dates back to the Middle Ages, so much is known about it (for more details, see Rubin, 1995; Wallace, & Rubin, 1991).

As with the counting-out rhymes, the changes that occur over time and in singing the ballad multiple times tend not to violate the organization of the genre. There are several ways to demonstrate this using *The Wreck of the Old 97* as an example. We tested traditional ballad singers in North Carolina, that is, people who knew ballads most of which they learned from listening to another singer (Wallace & Rubin, 1988). The five who knew *The Wreck of the Old 97* sang it twice separated by a period of about six months. All of these singers played a stringed instrument, even if they did not when singing the versions we collected. The quarter notes are the notes that they would have played on that instrument. This adds both musical and motor forms of organization that can be grouped as “finger memory” to these notes of the ballad.

Each singing by each singer was unique, there was much more stability within singers than across singers, and the melody seemed more stable than the words. The variability that did occur tended to be within the regularities of the genre. End rhyme, the number of beats per line, and lines per verse remained relatively constant, as did the gist of verses, sequence of lines within a verse, and sequence of verses. Singers added or deleted verses that embellished the story. Melodic changes were also limited by the constraints of the particular type of scale used, the time signature, and the basic melodic line of the quarter notes. The words and music are integrated. Singers often need to play or hum a stanza before they can recall the words. The words have a metrical pattern, which must correspond to the rhythmic pattern, the beat structure, and the time signature of the music further limiting the kind of changes that could occur.

In addition to this more observational approach, to test our ideas, we undertook experiments with 27 undergraduates who had not heard the ballad before and were not experts in the tradition. To show that the organization made a difference, the undergraduates listened to the ballad sung 10 times, waited 10 minutes and recalled the ballad as close to verbatim as possible. We found that lines that were higher in visual imagery were recalled better ( $r = .49$ ) but not lines rated as being important to understanding the meaning of the ballad ( $r = .06$ ). However, lines that carried the meaning by being causally connected to other lines were recalled better ( $r = .44$ ), as were lines in which the music better fit the words ( $r = .44$ ).

We then tested another 27 undergraduates using the same procedure but changed 24 words so that they were no longer poetically linked. For

instance, *saying Steve* became *telling Steve* and *mighty rough road* became *mighty tough road*. This dropped the overall recall of the ballad only slightly from 60 percent to 55 percent. However, the 24 words that were poetically linked were recalled 51 percent of the time and their non-poetically linked words were recalled only 24 percent of the time. More telling was the kind of errors made. *Saying Steve* was recalled correctly by nine people, omitted by three, and changed to something else by the rest. In the version that we changed to *telling Steve*, no one recalled *telling Steve* correctly; 13 people omitted it and 2 people changed it back to the original version, which they had not heard. That is, they corrected our change to the more poetically linked original of *saying Steve*. Similarly, *mighty rough road* was recalled correctly by 13 people and omitted by 4. *Mighty tough road* was recalled correctly by no one, omitted by five people, and changed back to *mighty rough road* by one person (Wallace & Rubin, 1988).

In another experiment, we recorded the ballad either (a) spoken with normal intonation and rhythm, (b) spoken to capture the rhythm of the ballad, or (c) spoken to capture the rhythm of the ballad with the rhythm also marked by tapping. Otherwise, the procedure did not vary from what was just described. There was no significant difference among these groups on amount recalled (57%, 56%, and 64%), but there was an interaction between which lines were best recalled and the three listening conditions. To probe why some lines were remembered better in different listening condition, we asked how the percentage recall of each line correlated with our metrical agreement measure. In the rhythmical-voice condition and in the rhythmical-voice-plus-beat condition, there were significant correlations ( $r = .52$  and  $r = .57$ , respectively). However, in the normal-voice condition, metrical agreement did not significantly correlate with percentage recalled ( $r = .38$ ). Thus, when the rhythm was stressed, lines with good fit to the rhythm were better recalled (Wallace & Rubin, 1988).

In order to investigate how difficult it would be to learn such a complex and interrelated set of organizations, we had undergraduates learn ballads (Rubin, Wallace, & Houston, 1993). The learning process for each ballad consisted of hearing each ballad once, recalling it, hearing it four more times, and recalling it again. This was repeated for a different ballad each week for five weeks. The ballads were each 10 verses long and analyzed to document the various forms of organization in them, including 30 easy-to-identify properties that we could look for in the recalls. Over the course of learning five ballads, the undergraduates' ability to learn after hearing a ballad sung once increased dramatically. There was one and a half times as many words recalled, twice as many rhyming words, and three times as

much line structure in their recall of the fifth ballad than their recall of the first ballad.

After all recalls were completed, we asked the undergraduates to spend 20 minutes composing a new ballad that would fit with the ones they heard and then to list all the rules they followed. The composed ballads were about two-thirds as long as the ones heard. They had about half of the 30 characteristics that we had identified and about one quarter of the characteristics were stated as explicit rules. Moreover, there was no relationship between the rules stated and the rules followed. For instance, as is common in ballads, there was no setting in any of the five ballads learned, very few words were more than two syllables long, the nouns were concrete and easy to image rather than being abstract, and the main character always died. All 14 of our undergraduates omitted having a setting, 11 used few words longer than two syllables, 12 used mostly concrete nouns, but none of the 14 undergraduates stated any of these as an explicit rule. In contrast, 13 of the 14 undergraduates stated the rule that the main character dies, but only 11 followed it. Thus, the undergraduates began to master a complex genre in part by observing some regularities in it consciously and in part by learning to mimic the style without being able to verbalize how they did it.

Thus, our ideas were confirmed based on a textual analysis of ballads, on observations of changes in traditional singers, and with experiments in the laboratory. By mixing the various strengths of these forms of inquiry, we could become more certain of our ideas than we could by using any one alone. Like counting-out rhymes, ballads are not learned in a fixed rote manner, even by undergraduates who were not expert in the genre. We found that the forms of organization that help structure memory seem to be any forms of organization present that is appreciated, and that with expertise, the appreciation of structure in the to-be-remembered material is increased. Of course, someone not well trained in cognitive psychology might wonder if people would ever remember anything without making use of all the forms of organization that would help them, but, in fact, most psychological and psycholinguistic theories claimed that we used only the abstract meaning of a text as an aid to memory.

#### WHAT DOES STANDARD MEMORY THEORY TELL US?

Cognitive psychology tells us a great deal about how oral traditions are maintained. It makes a real contribution to the study of oral traditions by making clear the division between implicit and explicit memory, the role of organization and schemata, the idea of cuing and of matching the cues



at recall to the cues that were present at encoding, transfer, interference, spaced practice, overlearning, and numerous other heavily studied and well-understood concepts and phenomena. This contribution is easy to expand to the study of collective memory in general.

However, most of the ideas from cognitive psychology were developed in tasks more restricted than the varied conditions of transmission of oral traditions, and so there a few ideas that do not generalize well. Even these are informative to the study of oral traditions, and because they show failures or limitations of theories in psychology, they are of special interest to the study of memory in general. For instance, depth of processing fails because shallow rhyme processing is extremely powerful. Similarly, the standard rumor paradigm used in cognitive and social psychology predicts a rapid change (Allport & Postman, 1947; Bartlett, 1932) that does not occur in oral traditions, whereas models of transmission proposed by folklorists do much better (see Rubin, 1995 for details of why). More serious is the tendency in memory research to reify memories, that is, to make them single things that tend to be located in a single place and stored as a single unit as opposed to a process (Kolers & Roediger, 1984). Moving from this to a view that can account for data and observations in oral traditions and other real-world memory requires a reanalysis of how memory functions.

Consider the recall of the oral traditions just reviewed. In laboratory terms, it is classic serial recall. The words must be recalled in order. Therefore, we know a great deal about some of the mechanisms involved from laboratory research for lists of unrelated words and the verbatim learning of prose and poetry. The study of oral traditions shows the nature of that serial recall more clearly than earlier work. People cannot summarize the overall meaning of a piece from an oral tradition that uses poetics or music until they recall the whole piece with the goal of summarizing in mind. They cannot tell you what happens in the middle or how it ends in any detail without recalling from the beginning to that part. Similarly, they cannot tell you the end-rhyme scheme or visual image or spatial location used in a part of the piece until they get to it. They need a “running start.” Why is this the case? Why is it that the information is not “content addressable,” to use the computer term? Each word recalled provides cues for the next word. The cues involve all of the forms of organization that might be involved in recalling the next word. Thus, part way into a ballad the next word to be recalled is being cued by schema, or forms of organization, that involve meaning, imagery, spatial layout, rhyme, alliteration, assonance, rhythm, and motor movements accompanying the verbal output and melody.



Providing a cue in only one of these systems at a time, as in asking for the overall meaning of the piece, or a particular part of it, is just not enough. But singing through to that part activates cues in all relevant systems (see Rubin, 1995, 2006 for details). Such cuing can be extremely powerful. Please consider the following nine cues and answer them in order. Please think of a word that: (a) is a building material, (b) is a mythical being, (c) is a unit of time, (d) rhymes with eel, (e) rhymes with post, (f) rhymes with beer, (g) is a building material that rhymes with eel, (h) is a mythical being that rhymes with post, and (i) is a unit of time that rhymes with beer. I have in mind three target words. So that you will not see them when thinking of your answer, I have put these target words at the end of the next paragraph. They are the only common answers to (g), (h), and (i), and I would bet that they were your answers to these cues. However, I doubt that more than one of these three target words was your answer to any of the first six cues, and, for most people, based on our studies, none would be listed. Thus, combining the single cues leads to a much higher hit rate on my three targets than can be expected from their individual strengths (see Rubin & Wallace, 1989, for details and mathematical derivations). In terms of oral traditions, if one has sung far enough to know what the meaning and rhyme scheme of the next line has to be then the last word of the rhyme does not have to be remembered – it is known. In terms of memory, such cuing can reduce the memory load to zero, once a running start is obtained. This and the previous paragraph are a summary of a theory of serial recall in oral traditions described in more detail in Rubin (1995).

#### AN EXPANDED THEORY FOR INDIVIDUAL AND COLLECTIVE MEMORY

We want to expand from situations in which memory is for only one modality and for only one form or organization at a time to the typically more complex situations, which are normally of interest in collective memory. Therefore, a model of memory more complex than the one developed for simple situations needs to be considered but one that is not restricted to the serial recall of many oral traditions (Cabeza et al., 2004; Greenberg & Rubin, 2003; Rubin, 2005, 2006). By the way, the target words were steel, ghost, and year.

Consider a real-world situation that would become part of your autobiographical memory and life story if you were there, and that might become part of an oral tradition ballad. Imagine that you were one of the two children under the trestle who survived when the *Old 97* jumped the tracks and

crashed down just beyond the area where you were playing. It was a hot day at the end of September. A continuous loud steam whistle announces a train out of control. Then there is a crashing sound as the engine and several mail cars leave the track and crash into the creek. After a silence, the final mail car, which was hanging on the tracks, lands on top of the others. Steam and dust are followed by smoke from the fires started. A hundred or more bright yellow canaries that were being carried as freight escape and fly around the scene of destruction. Then you can hear the cries of the injured and, within a half hour, help arrives. Immediately people ask you what had happened and how you are. The next year, as part of a commemoration, a newspaper reporter collects your autobiographical memory for his story. What would you need as a memory theorist to describe that decade old memory?

I would claim that, at a minimum, you would need information stored and processed in at least the following semiautonomous systems. You would need a good spatial system to describe the layout and to place objects and actions within it. This is separate from a visual system; you would know the general layout from sound and touch even if there were so much steam, dust, and smoke that you could not see it. You would need a visual system to identify to objects, and note the steam and the flock of yellow canaries; an auditory system to decode the sounds; an olfactory system for the smells; and so forth for each sense.

Why keep the senses separate as opposed to having a single abstract memory system for the processing and storage of all kinds of sensory information? There are many reasons. First, each system has its own schemata that are unique to it, and that can be changed by experience. What one knows about the visual organization of the world does not apply easily to odors. Second, each system is functionally different. It handles different kinds of input and that input is typically used for different things. For instance, olfaction typically provides hedonistically important information in a very rapid fashion, but it does not indicate the location of the source of the odor. Third, each system is biologically different, which has implications for the mechanisms it has to offer for the memory. The need for and properties of sensory information store, working memory buffers, and long-term memory are not the same for all senses. Some of this is because of the stimuli to be handled, the primary functions of the sensory system outside of memory, and other functions of the areas of the brain used by the sense. Thus, visual stimuli can change more rapidly than tastes and smells, and tastes and smells result from chemicals entering the body that can serve as their own sensory information store.

Sensory systems with a spatial system to integrate them are not enough. There would be language heard and language used to code nonlinguistic

inputs. There would also be narrative to structure the story of the episode into understandable, causally related, individual events. Narrative is not the same as language. One can have coherent narratives in mime, in silent film, in comics, and even in a single painting or picture without having any words. Moreover, as with the individual senses, narrative and language (defined as structure at the level of the sentence or below) occupy different brain areas and suffer under different neurological insult (see Rubin & Greenberg, 2003, for a review). In addition to all of this cold cognition, emotions would be needed for any kind of an adequate description of how you felt and what you experienced at the time. Emotions have two major roles to play. The first is as a modulator of the memory, increasing the level of encoding as a function of arousal. The second is more like the role of the senses, language, and narrative. You would experience particular emotional reactions, which would depend not only on your biology and personality dispositions but also on your experiences up to that time.

Finally, to integrate the information in these various systems, you would need a system, or more likely two systems, that would provide an integrated, unitary memory. The first system is the standard medial temporal, hippocampus-based memory system usually studied in case of amnesia (Nadel & Moscovitch, 1997; Squire 1987; Squire, Stark, & Clark, 2004). It binds information stored in the other systems just mentioned in an automatic and fairly stupid way, with some modulation from the emotion system. Second is a frontal-lobe search-and-retrieval system that searches for previously stored information in a more intelligent way and is associated with inhibitive processing and a host of nonmnemonic process. Its role in assembling memories is a newer addition to memory theory and is mainly a result of neuroimaging studies.

In the spirit of this chapter, I have kept the arguments for different systems focused on the role they would have to play in an autobiographical memory, like the hypothetical one I propose for experiencing the wreck of the *Old 97* or for the ballad that resulted from it. The autobiographical memory would be richer, more subject to change, and less musical. The ballad would be more restricted and stable as a result of the added schemata of the ballad genre and the subgenre of train- and shipwreck ballads (i.e., in literary terms, to genre convergence). However, the evidence for separate systems, each with their own forms of organization, or schemata, which would affect recall, goes way beyond this form of analysis. Evidence for the separate systems comes from neuroanatomy, neuropsychology, neuroimaging, cognitive-experimental psychology, and individual differences research. Each system, except for the medial-temporal explicit-memory

system, is used for tasks other than memory and thus there is considerable knowledge about each system from its nonmnemonic functions that informs its role in memory (see Rubin, 2006 for a detailed review).

The neurological damage and early neuroimaging provide strong evidence for physical separation of these systems and neuroimaging is beginning to show their temporal separation as well, revealing the order of the processes involved. For instance, in autobiographical memory, the frontal and medial-temporal memory systems are active before the visual system (Daselaar et al. in press), and in the serial recall of oral traditions we would expect rhythmic entrainment of many of the systems outlined as the piece is sung. For instance, when the end of line 2 of a stanza of *The Wreck of the Old 97* is reached, brain regions involved in rhyme should become active in the search for the last word of line 4 of that stanza. Similarly, one would expect visual and spatial areas to become more active during the course of the singing of a stanza and to reduce their activity at the end of the stanza.

#### EXPANDED METHODS FOR COLLECTIVE MEMORY

The approach that I am going to recommend is an ethological one. It is perhaps best described in Tinbergen's (1960) *The Herring Gull's World*. One example of its application to the contents of autobiographical memory can be found in Linton (1986). Newell (1973, p. 303) provides an excellent description of a related approach from cognitive science in which he argues that one should try to have a theory of "a genuine slab of human behavior"; Brown writes about the success of such an approach in social psychology (1989); and a similar approach is favored by Neisser (1982). At a methodological level, I have written about my attempts at using an ethological approach for various areas of memory research (Rubin, 1989). The most direct contrast to it is theory-driven or hypothesis-testing research in which a strong theory about the nature of the world leads one to set up ideal conditions to falsify the theory. This approach is certainly the most elegant and useful when it can be applied but, in the area of individual and collective memory, I do not find much worthy of that kind of effort yet. Within current cognitive psychological theories, the opposition I am referring to parallels the opposition between top-down and bottom-up processing within an individual faced with understanding some stimulus.

The first step is to observe the kind of individual or collective memory that you want to understand. Describe the important features of it and if possible quantify that description. The quantification need not be a simple more or less comparisons; relations among variables can be more stable and

more important. Once you have observed and described, you can theorize. Here it is very important not to be too attached to the way that you initially described the phenomena under study and especially to your theory of it. As we know from studies of problem solving and creativity, the representation you use to describe the object of study is crucial. The description and theory will interact and change each other. The next step is to design experiments to test your hunches, ideas, or theory (depending on your level of formalism and arrogance). Here, Tinbergen's experiments of providing adult gulls with a variety of different size, color, and shapes of eggs to try to hatch, or baby chicks with different shaped bills to peck at are forceful examples. The theory may then need to be revised. If you use a more ethological approach this is great and seems to be a natural progression. Revising a theory is also optimal for theory-driven, top-down research; if you always reject the null hypothesis and thereby support your theory, you certainly are not being an efficient experimenter. There was really no need to keep testing your theory if it was so good or your tests were so easy; you should have been doing something else. However, in practice, theory-driven researchers seem unhappy about changing their theories in public.

I started this chapter with examples of two genres of oral traditions and a limited number of pieces from those traditions. The actual research started with a great deal of description. In fact, the genres we studied were selected because so much of the description had been done for us already by folklore scholars. Then we did experiments where possible. For the children's rhymes, experiments in the usual sense were more difficult because the users of the tradition are harder to question than are adults. If we were child psychologists, we might have done such experiments, or we might have changed to jump-rope rhymes, which are sung by older children and that use some of the same rhymes. Instead, we compared changes in rhymes over time and we asked if the conclusions that we drew on one corpus of rhymes would hold for a new corpus to which we did not have access when we described the first. For the ballads, we did experiments of the same kind that people had been doing for decades in psychological laboratories. The only change was in the material to be learned. In this process, we formulated the theory of serial recall with multiple cuing and suggested tests for this theory.

If, as suggested, one is starting with a phenomenon, such as explaining what is stable and what changes in oral traditions, and not a theory, two hints are in order. First, be ready to find something you cannot explain. A good description of a highly replicable finding is not a guarantee that you will know why it occurred. Second, use any help that you can get. If you do not start by setting out to test one theory, you will probably have to read

many different theories. If you are interested in a real-world phenomenon and not a laboratory task, you will need a collection of methods and, if you get far enough, a collection of laboratory tasks. At least you will not be accused of having too narrow a focus. You will have to decide for yourself whether you are a scholar or a dilettante.

#### ACKNOWLEDGEMENT

Funding while writing this chapter came from the National Institute of Aging Grant Number R01 AG023123. Correspondence can be addressed to david.rubin@duke.edu.

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