EXPERIMENTS TO DEVELOP CRITERIA FOR DETERMINING THE EXISTENCE OF WRITTEN SOURCES, AND THEIR POTENTIAL IMPLICATIONS FOR THE SYNOPTIC PROBLEM

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Considerations of oral transmission have long been a staple of Gospel studies.[1] The experimental examination of the characteristics of human memory has likewise been a significant part of the academic discipline of psychology

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[1] Johann Gottfried Herder is credited with the first serious exploration of the consequences of the fact that for some time between the life of Jesus and the writing down of the Gospels, the Gospel materials existed in oral form ("Vom Erlöser der Menschen: Nach unsern drie ersten Evangelien," in *Johann Gottfried Herders Werke* [Frankfurt am Main: Deutscher Klassiker, 1994], 9:609–724). Considerations of orality and oral transmission have received considerable attention in Gospel studies at different times. For example, Rudolf Bultmann's influential *History of the Synoptic Tradition* (Oxford: Basil Blackwell, 1963) used the methodology of *Formgeschichte* to attempt a history of the development of Christian thought during the time that the Jesus tradition existed in oral form. This methodology dominated Gospel studies for a significant period. The revival of interest in the historical Jesus in more recent times has again put considerations of this oral period of the tradition at center stage. Of several examples, one might cite John Dominic Crossan, *The Birth of Christianity* (San Francisco: HarperSanFrancisco, 1998), 49–89. Discussions of orality have also consistently surfaced in works dealing with the Synoptic Problem. From its first emergence as a significant issue in Gospel research to the present, explanations based on oral transmission have been advocated, albeit as a minority position. Perhaps the best known advocates of this position are Harald Riesenfeld, *The Gospel Tradition and its Beginnings: A Study in the Limits of 'Formgeschichte'* (London: Mowbray, 1957), and Birger Gerhardsson, *Memory and Manuscript* (Uppsala: Gleerup, 1961).

from its inception.[2] Yet, with a few notable exceptions,[3] those working in the field of Gospel studies have made little use of the insights that might derive from experimental psychology.

This article reports on three of a series of six experiments designed to explore some of the characteristics whereby materials copied from written texts may be distinguished from orally transmitted materials. The experimental design is the result of a collaboration between academics from the two diverse fields of Gospel studies and experimental psychology. The article will conclude with a consideration of some of the implications for the study of the Synoptic Problem that might derive from the results of the experiments.

Experiment 5

Although the penultimate experiment in the series, this experiment is perhaps the most instructive. Forty-three students chose to participate in this experiment as one option for a class requirement. They were randomly assigned to three groups based on their time of arrival at the designated room, and they signed a willingness-to-participate form after reading a brief explanation of the experiment.

The participants in each group were given a list of eight subjects from which they were to choose the six that they knew most about. The eight subjects were (1) the sinking of the *Titanic;* (2) the presidency of John F. Kennedy; (3) the AIDS epidemic; (4) the death of Diana, princess of Wales; (5) the "coming out" of Ellen DeGeneres; (6) the Monica Lewinski affair; (7) Cathy Freeman's sports career; and (8) the war in Kosovo. Short descriptive notes about each of these were prepared by the experimenter and made available for designated parts of the experiment. These varied in length from 217 to 336 words, with six of the eight between 240 and 290 words. Each included a number of specific facts.

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[2] The experiments of Hermann Ebbinghaus, reported in 1885 in *Über das Gedächtnis: Untersuchungen zur experimentellen Psychologie* (Leipzig: Dunker & Humblot, 1885), using nonsense syllables to investigate the characteristics of human memory, provided a significant impetus to the development of experimental psychology (see Hermann Ebbinghaus, *Memory: A Contribution to Experimental Psychology* [New York: Dover, 1964]). Since that time, tens of thousands of sophisticated experiments have investigated many different aspects of memory. A convenient summary of many of the significant findings of memory research can be found in Alan D. Baddeley, *The Psychology of Memory* (New York: Basic Books, 1976).

[3] Both W. S. Taylor ("Memory and the Gospel Tradition," *ThTo* 15 [1959]: 470–79) and Crossan (*Birth of Christianity,* 78–84) make use of the work of Frederic C. Bartlett, *Remembering* (1932; Cambridge: Cambridge University Press, 1961). Nor should the article by John Bradshaw ("Oral Transmission and Human Memory," *ExpTim* 92 [1980–81]: 303–7) be overlooked. But such examples are rare.

The instructions given to the first group were as follows:

First: Write about the first two of the events on your list without any reference to sources. Please write less than 1 page on each event. Use the two forms with the title, "No Sources" (this is vital), and identify the topic about which you are writing.

Second: Please ask for summaries of the next two events on your list. You will be allowed to read them as often as you wish. But before you write about the event, give back the written summary. Now write about the events in your own words. You can mix your own material and material from the summary in order to get a fair summary of everything you would want to say about the event. Please write less than 1 page on each event. Use your own words, and you may include things about the event that are not in the summary. Use the forms with the heading "Source used but returned" (this is vital), and identify the topic about which you are writing.

Third: Please ask for summaries of the last two of these events on your list. You can read them as often as you like. Now write about the events in your own words. You do not have to return the summaries before you write. You can mix your own material and material from the summary in order to get a fair summary of everything you would want to say about the event. Please write less than 1 page on each event. Use the forms with the heading "Source used and retained" (this is vital), and identify the topic about which you are writing.

Those in the second group were asked to do these same tasks but in a different order: the first two with the sources available as they wrote, the second two without any reference to sources, and the third two after reading and then returning the sources. The third group did them in the following order: sources used but returned; sources used and retained; no sources.

In analyzing the responses, participants' written information was typed in a column parallel to a copy of the original, and the common vocabulary and phrases were underlined for each respondent. The hypothesis under test was that there should be a discernible difference in both the amount of common vocabulary and items of fact between the group that was writing purely from their own recollection of the event and the other two groups which had been provided with a summary of the event. It was further expected that those who were able to *retain* the summary of the event and allowed to copy freely from it would differ again—both in the amount of common vocabulary and in the number of words that were in exactly the same sequence—from the group which *returned* the summary. Thus, the measures of interest were (1) common vocabulary, (2) the maximum number of words in exact sequence, and (3) the number of items of fact that were recorded.

The two topics chosen by most of the volunteers were the sinking of the

Titanic (40 responses) and the death of Diana (37). The type of differences that might be observed in the three groups may be illustrated by the materials generated by volunteers D19, D10, and D13. D19, for example, wrote the following with no prompting other than "Write about" the sinking of the *Titanic* "without any reference to sources."

[Summary provided to other participants]	[Response of D19—No Sources]
Advertised as <u>unsinkable</u>, built to be the largest ship of that time and the epitome of luxury, <u>the Titanic</u> struck <u>an iceberg</u> and <u>sank</u> on her maiden voyage. Conditions were calm in the <u>Atlantic</u> on the night of April 14, 1912. In an apparent effort to break the Trans-Atlantic record, the Titanic was travelling at a speed of 22 knots (41 km/h) when it struck the iceberg. At first passengers and crew were not aware of how serious the damage was. But the designer of the <u>ship</u> was on board, and was soon able to report to the captain that five of the watertight <u>compartments</u> had been breached, and that the ship would surely sink in the next few hours. There were insufficient <u>lifeboats</u>, and a nearby ship, the California, failed to respond to radio messages and flares. Not all of the available seats in the lifeboats were used, and about <u>1500</u> passengers and crew drowned. These included the Captain. His last known words to the escaping crew and passengers were, "Be British." He was last seen diving from the bridge into the water. In September 1985 a joint US-French scientific expedition located the remains of the Titanic at a depth of 3,962 m, about 595 Kms off the coast of Newfoundland. The ship was photographed using a deep-sea robot. The sinking of the Titanic has been made into a movie, which currently is the highest grossing movie ever produced.	The <u>Titanic</u> was a huge cruise ship built by the British White Starline Company in Ireland. This ship was said to be <u>unsinkable</u> due to it's design and it was also said to be the fastest. It was ment to be the most decidant cruize ship on the open seas and that it was but tradegy struck in the <u>Atlantic</u> sea. The <u>ship</u> hit <u>an iceburg</u> and the first four of the <u>compartments</u> of the bottom filled with water making the front top heavey and thus the ship <u>sank</u>. Because they had been so confident there were not enough <u>lifeboats</u> for everyone and ove <u>15000</u> people perished. [*Note: Original spelling retained.*]

There were 11 words in common between the original and the response (5% of the 240 words in the original, 10% of the 107 words in the response). There were two words in exactly the same order, and 6 common elements, of which 3 were in the same sequence. No two responses were the same, but this response is nearly average on the statistics that were measured. The average number of common words for those who wrote on the sinking of the Titanic without a source was 13.9, with 2.1 as the average number of words in exactly the same sequence.

It is instructive to compare the above with responses given from the other two groups:

[Original Summary]	[D10—Source used, but returned]
Advertised as unsinkable, built to be the largest ship of that time and the epitome of luxury, the Titanic struck an iceberg and sank on her maiden voyage. Conditions were calm in the Atlantic on the night of April 14, 1912. In an apparent effort to break the Trans-Atlantic record, the Titanic was travelling at a speed of 22 knots (41 km/h) when it struck the iceberg. At first passengers and crew were not aware of how serious the damage was. But the designer of the ship was on board, and was soon able to report to the captain that five of the watertight compartments had been breached, and that the ship would surely sink in the next few hours.	The titanic was the biggest ship ever to be made—it was so luxurious ahead of its time. It was on its maiden voyage on April 14 1912 when it struck an iceberg & sunk. The crew & passengers weren't aware of the extent of the damage but the designer was on board & he said that it was going to sink. The wasn't enough lifeboats for everyone. The boats weren't filled to capacity and in the end 1500 people died including the captain.
There were insufficient lifeboats, and a nearby ship, the California, failed to respond to radio messages and flares. Not all of the available seats in the lifeboats were used, and about 1500 passengers and crew drowned. These included the Captain. His last known words to the escaping crew and passengers were, "Be British." He was last seen diving from the bridge into the water.	In 1985 a french scientist discovered the titanic at at [*sic*] depth of 3,965m below sea level 595km off the coast of . . . .
In September 1985 a joint US-French scientific expedition located the remains of the Titanic at a depth of 3,962 m, about 595 Kms off the coast of Newfoundland. The ship was photographed using a deep-sea robot.	A movie was made and it is one of the biggest movies made.
The sinking of the Titanic has been made into a movie, which currently is the highest grossing movie ever produced.	

[Original Summary]	[D13—Source used and retained]
Advertised as unsinkable, built to be the largest ship of that time and the epitome of luxury, the Titanic struck an iceberg and sank on her maiden voyage. Conditions were calm in the Atlantic on the night of April 14, 1912. In an apparent effort to break the Trans-Atlantic record, the Titanic was travelling at a speed of 22 knots (41 km/h) when it struck the iceberg. At first passengers and crew were not aware of how serious the damage was. But the designer of the ship was on board, and was soon able to report to the captain that five of the watertight compartments had been breached, and that the ship would surely sink in the next few hours.	The titanic was built as the largest ship of the time. It was advertised as unsinkable. On April 14 1992, in an effort to break a record the titanic was travelling at full speed when it hit the iceberg.
	The passengers were not sure if it was serious at first. The designer of the ship soon reported however that the 5 watertight compartments had been breached, and the ship would sink within a few hours.
There were insufficient lifeboats, and a nearby ship, the California, failed to respond to radio messages and flares. Not all of the available seats in the lifeboats were used, and about 1500 passengers and crew drowned. These included the Captain. His last known words to the escaping crew and passengers were, "Be British." He was last seen diving from the bridge into the water.	There were insufficient lifeboats. Not all the available seats in the lifeboats were used and about 1500 passengers drowned.
In September 1985 a joint US-French scientific expedition located the remains of the Titanic at a depth of 3,962 m, about 595 Kms off the coast of Newfoundland. The ship was photographed using a deep-sea robot.	In 1985 a joint US-French scientific expedition located the remains of the titanic at a depth of 3962m. The ship was photographed using a deep sea robot.
The sinking of the Titanic has been made into a movie, which currently is the highest grossing movie ever produced.	Titanic has been made into a movie which is currently the highest grossing movie ever produced.

As perhaps might have been expected, the responses of D10 (Source Returned) and D13 (Source Retained) show a much greater commonality with the summary that was provided than that of D19 (no sources). This was true on all the statistics gathered: the number of common words, the percentage of common words compared to the original, the number of words in exact

sequence, the number of common factual elements, and the number of factual elements in sequence.

	No. of com-mon words	% common words (vs. original)	Words in exact sequence	Common elements	Elements in sequence
D19	11	5	2	6	3
D10	49	20	6	14	10
D13	112	47	18	18	14

In fact, the averages of all these measures showed the same kind of progression. Eighteen of the 43 volunteers completed six responses in the experiment, and most of the rest completed four of them. If all these responses are pooled, the average responses for the above statistics are as follows:

	For all data (n= 66, 69, 78, resp.)		For *Titanic* only (n = 14, 13, 13)	
	% common words (vs. original)	Words in exact sequence	Common elements	Elements in sequence
No sources	5.00	2.45	5.14	3.07
Source returned	15.3	5.43	15.4	9.77
Source retained	28.4	12.6	15.6	12.4

These results are readily amenable to statistical analysis. All the differences were found to be statistically significant, aside from the differences in common elements and the sequence of common elements between the source returned and source retained.[4]

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[4] Starting with the null hypothesis (H_0) that there was no difference between the three different conditions (no source, source returned, source retained), an ANOVA analysis of the total sample for the percentage of common words vs. original yielded a P-value of 4.51E-27. Thus, if the null hypothesis is true, the probability of achieving this experimental result was 0.000000000000000000000000000451. This is so unlikely that the null hypothesis—there is no difference between the three experimental conditions—should be rejected (it is not uncommon to reject null hypotheses at $\alpha = 0.01$). In other words, there is a (statistically) significant difference between the results obtained from the three experimental conditions. A two-tailed t-test assuming unequal variances was also done on the two conditions "source returned" and "source retained." This yielded P(T<=t) = 5.48E-09. There is also a (statistically) significant difference between the experimental results from these two conditions. The analogous statistics for the words in exactly the same order are ANOVA P-value = 1E-11; t-test P(T<=t) = 1.54E-05. For the results from the responses on sinking the *Titanic* alone, the ANOVA statistics for the three conditions for number of common elements, and number of common elements in sequence are 3.2E-09 and 2.08E-06 resp.

Experiments 1 and 2

Experiments 1 and 2 unexpectedly revealed significant information concerning the importance of genre in the oral transmission of material. In both of these experiments, after reading a brief description of the experiment and signing a willingness-to-participate form, volunteers were able to listen to something read to them as often as they wished. They then went into another room and repeated what they had heard as accurately as possible into a tape recorder. They were then asked to copy in writing a similar item provided to them as a written text. The experiment had been set up in the hope that it might produce results similar to the parallels found in the Synoptic Gospels. This was true of the first part of the experiment, which relied on oral memory. But the emphasis on verbatim accuracy given to the participants in their instructions produced near 100% accuracy in the copying from a written text, something not found in the parallels between the Synoptic Gospels. Exact word-for-word parallels are not found in any Synoptic parallel of 32 words or more. It was this observation from the results of experiments 1 and 2 that led to the development of the carefully constructed instructions in experiment 5, which did produce copying of a kind that can be found in some Synoptic parallels (see below).

What did produce significant results in experiments 1 and 2, however, is that the genre was different for the two experiments. In the first, a joke was used; in the second, four aphorisms. Financial incentives were announced for the first volunteer to repeat what had been heard word for word.[5] In the event, while most were able to reproduce the joke in a way that retained its humor, nobody came close to getting it word for word. On the other hand, several volunteers came very close to getting three of the four aphorisms word for word. It is highly instructive to compare the results obtained by the volunteers who achieved some of the results on the two tasks that came closest to reproducing the original joke or aphorisms:

The t-test for the "returned" vs. "retained" are P(T<=t) = 0.898 and P(T<=t) = 0.20 respectively (this t-test is not significant at α = 0.01). It is interesting to speculate that a larger sample might yield statistically significant results for the number of elements in sequence, but it is highly unlikely that an increased sample size would make any difference to the result of the total number of elements (without consideration of order). It was decided not to do this latter test on the total results because of the variation in the number of elements present in each of the eight sources that were provided to the volunteers.

[5] For the joke, this was $20. For the aphorisms, $10 to the first volunteer to get three aphorisms word for word, and $10 for the first volunteer to get all four word for word.

Experiment 1	
[Original]	**[Response from participant A15]**
There's this <u>desert</u> <u>prison</u>, with an <u>old prisoner</u>, <u>resigned</u> to his life, and <u>a</u> <u>young</u> one just arrived. The young one talks constantly of <u>escape</u>, and, <u>after a</u> few <u>month</u>s, he makes a break. He's gone <u>a week</u>, and then he's brought back by the guards. He's half dead. Crazy with <u>hunger and thirst</u>. He describes how awful it was to the <u>old prisoner</u>. <u>The endless stretches of sand, no oasis, no signs of life</u> anywhere. The <u>old prisoner</u> listens for a while, he says, "Yep, <u>I know</u>. <u>I tried to escape</u> myself twenty years ago." <u>The young prisoner says</u>, "You did? Why didn't you tell me, all these months <u>I was planning</u> my escape? Why didn't you let me know it was impossible?" <u>The old prisoner</u> shrugs, and says, "So who <u>publishes negative results</u>?"[6]	There was a <u>prison</u> in the <u>desert</u> and there was an old man there who was— <u>old prisoner</u> there who was <u>resigned</u> to his fate. <u>A young</u> prisoner is bought in and he's crazy about planning his <u>escape</u>, he escapes and <u>after a</u> <u>month</u> and <u>a week</u> later he's brought back mad with <u>hunger and thirst</u> . . . now I've forgotten the next bit . . . um . . . . He . . . the old prisoner . . . he tells the <u>old prisoner</u> that um about <u>the endless stretches of sand and no oasis and no signs of life</u> he . . . the <u>old prisoner</u> says, "Yeah, <u>I know</u>, <u>I tried to escape</u> when I first came in." And <u>the young prisoner says</u>, "<u>Why didn't you tell me</u> when <u>I was planning</u> all those maps of my escape?" And <u>the old prisoner</u> says, "That they never publish negative . . . nobody <u>publishes negative results.</u>"

Experiment 2	
[Original]	**[Response from participant B7]**
<u>You are more likely to be struck by lightning than to be eaten by a shark.</u> <u>You are more likely to be infected by flesh-eating bacteria than you are to be struck by lightning</u> <u>More people working</u> in <u>advertising</u> died on the job in <u>1996</u> than died while working in <u>petroleum refining</u>. <u>More people are killed annually by donkeys than die in air crashes.</u>	<u>You are more likely to be struck by lightning than to be eaten by a shark</u>. <u>You are more likely to be infected by</u> a <u>flesh-eating bacteria than you are to be struck by lightning.</u> <u>More people are killed annually by donkeys than die in air crashes</u>. Um... There were <u>more people working</u> in <u>advertising</u> in <u>1996</u> than work in <u>petroleum refining.</u>

[6] Michael Crichton (writing as Jeffrey Hudson), *A Case of Need* (Hingham, MA: Wheeler, 1994), 217, used by permission. Other materials used as stimuli were either written specifically for the experiment, or adapted from unattributed materials from the Internet.

The genres of the two samples used in the experiment were chosen with a deliberate eye on the materials attributed to Jesus in the Gospels. These include many aphorisms and a large number of parables. It was thought that jokes may share several of the characteristics of the parables of Jesus: they are independent units that require the preservation of a certain number of basic elements to make "sense," even if, like joke 1 used in experiment 1, many of those who transmitted it did not understand its import. In this way parables and jokes may well be relatively resistant to change.

As it turns out, while the basic meaning of the joke might be relatively resistant to change, it is not transmitted word for word. That this is a characteristic of oral transmission of material has been noted often enough.[7] What is curious, though, is that the situation is different for aphorisms. They tend to be remembered nearly word for word. While volunteer B7 was one of those who most nearly achieved word-for-word transmission, most of the volunteers tended to remember parts of the aphorisms exactly, and forget the rest. Volunteer B6 provided an excellent example of this:

Experiment 2	
[Original]	**[Response from participant B6]**
You are more likely to be struck by lightning than to be eaten by a shark.	You are more likely to be struck by lightning than you are to be eaten by a shark.
You are more likely to be infected by flesh-eating bacteria than you are to be struck by lightning	You are more likely to be infected by . . . oh I've forgotten . . . You are more likely to be infected by a something microbiotic . . . (laughs) . . . whatever than to be struck by lightning .
More people working in advertising died on the job in 1996 than died while working in petroleum refining.	Um . . . More people annually die by being . . . from a donkey than . . . from an air crash.
More people are killed annually by donkeys than die in air crashes.	Oh I've completely stuffed up, but that's all right, and then there was something about the um . . . advertising crew dying in 1996 than in . . . oh whatever.

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[7] For example, see summary of evidence in Ian M. L. Hunter, *Memory* (rev. ed.; Harmondsworth: Penguin, 1964), 143–83; cf. Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (1982; London/New York: Routledge, 1993), 57–68.

The same characteristic was noted with regard to poems that were used in another experiment.[8] Those parts of the poems that were remembered were usually remembered exactly, and those parts that were forgotten were forgotten entirely.

Potential Implications for the Synoptic Problem

That there are strong cultural differences between the students taking part in these experiments and the anonymous writers who produced the Synoptic Gospels is self-evident, and it is a plausible if untestable supposition that some of these differences may affect the kind of characteristics that have been measured in these experiments. The Gospels arose out of a primarily oral cultural background, while tertiary students are immersed in a culture biased strongly toward written texts, and memory plays a different role in oral cultures.[9] Yet anthropologists report that long verbatim recall exists in purely oral cultures *only* in the case of shorter poems and the words of some songs, not in the recounting of stories or jokes. What is remembered are the underlying meaning and facts, and even these have a degree of fluidity that can be disconcerting to an observer from a text-based culture.[10]

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[8] Experiment 3 used two jokes and two poems. Participants were able to read one joke and one poem, and only heard the other joke and poem. The two jokes and two poems were then reproduced from memory. The poem available for reading was transmitted better than that which was only heard, but in both cases the different lines of the poem were recalled virtually word for word or not at all. Experiment 4 used a joke that participants could read. Half were then required to return the joke, and half were able to retain it so that they could refer to it as they wrote out the joke in their own words. The results of experiment 4 parallel those reported for experiment 5 in this paper. Experiment 6 involved asking the participants of experiments 3 and 4 to recall what they could of the joke/jokes/poems after a period of a week, a month, and a year. Space considerations have precluded a fuller reporting on the results of experiments 3, 4, and 6 in this paper.

[9] The first author has had several private communications stressing this fact from friends who have worked in Papua, New Guinea, or who have worked closely with Australian Aborigines. Bartlett himself recounts a remarkable case of a Swaziland herdsman with near total recall of the exact numbers and prices of cattle sold one year earlier (*Remembering*, 249–50). It would be interesting indeed to repeat the kind of experiments reported here in a community with a living oral culture.

[10] Ong provides a useful survey of the evidence, beginning with the work of Milman Parry and Albert Lord (*Orality*, 57–69). While the narrative poets of Yugoslavia recorded by Parry and Lord claimed to reproduce long poems line for line and word for word, actual recordings show that the two renditions are never the same. Jack Goody reports that oral peoples do try for verbatim repetition of poems. Their success "is minimal by literate standards" (ibid., 62). Jeffrey Opland, for example, estimates that in Africa there is "at least sixty per cent in correlation with other versions" of the poem (ibid.)—a very good result, but not verbatim memorization. Music, though, can often produce verbatim reproduction of the lyrics (ibid., 63). Ian M. L. Hunter discusses the popular belief "that nonliterate cultures encourage feats of word-for-word remembering" ("Lengthy Verba-

The basic limitations placed on memory by the abilities of the human brain are constant between these cultures, and this may explain why lengthy verbatim recall is so rare. Of particular importance are the limitations of short-term memory. Most individuals are able to store only between four and seven items in short-term memory.[11] These items in short-term memory are continually being replaced as new input arrives at the senses and need to be particularly "memorable" if they are to move to medium or long-term memory. What appears to be stored in medium and long-term memory are not usually the exact words, but the underlying meaning of the words. There are exceptions to this general observation, particularly in respect to poetry and words set to music. Furthermore, actors are able to memorize large bodies of text word for word, but this type of memorization requires much rehearsal from an unchanging written text, something not available in an oral culture.[12] In the absence of such special conditions, what is remembered is the meaning, not the exact words. This can be illustrated from the experiments reported here. What is remembered from jokes and the historical accounts, for example, are not the exact words but the macro-meaning of the text. Some phrases are retained, but not long sequences of words. The long sequences of words were found to be transmitted only by means of copying from written texts.

Criteria for Determining
Whether Copying Has Taken Place

The experiments are able to provide a test to determine when a previously existing written text has been used as the basis of another text. That a written document underlies a certain text is not always discernible. For example, many of the volunteers who retained the written summary in experiment 5 did not produce long sequences of words. But here is the point. For the jokes and the descriptions of historical events, *only* those who retained the text and could copy from it produced long sequences of words that were exactly the same. It is instructive to examine the following three graphical representations of the statistics for the "largest number of words in exact sequence" from the total sample of experiment 5:

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tim Recall: The Role of Text," in *Progress in the Psychology of Language* [ed. Andrew W. Ellis; London: Erlbaum, 1985], 1:207–36). His conclusion is that lengthy verbatim recall does *not* take place in nonliterature cultures. Indeed, it is only possible where there are written texts against which to test the memorized version for accuracy.

[11] George A. Miller, "The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information," *Psychological Review* 63 (1956): 81–97; Donald E. Broadbent, "The Magic Number Seven after Fifteen Years," in *Studies in Long Term Memory* (ed. Alan Kennedy and Alan Wilkes; London: Wiley, 1975), 3–18.

[12] Hunter, "Lengthy Verbatim Recall," 210, 234.

Number of Words in Exact Sequence
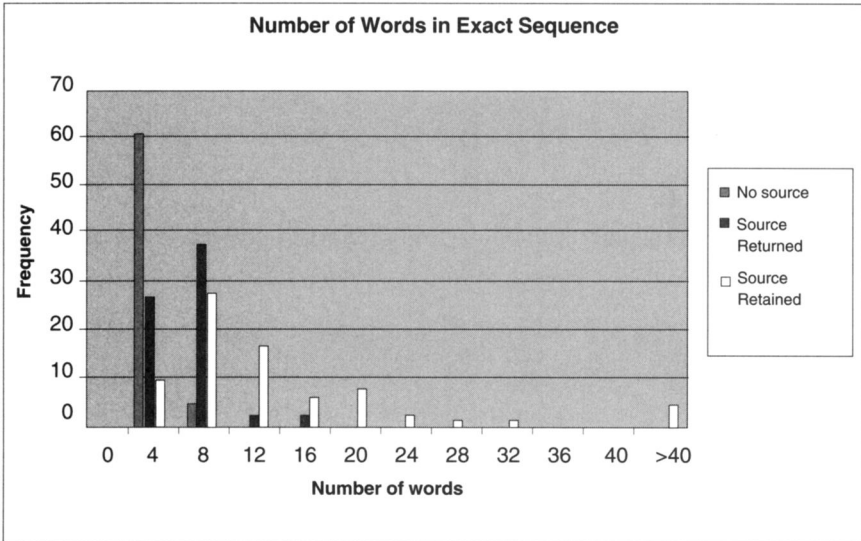
While there is overlap between the various categories, it is clear that long sequences of 16 or more words belong exclusively to the group that retained the source and could copy from it. From the perspective of the development of a test for the presence of copying, the critical group is the group that returned the source before writing. The longest sequence of words in the exact order for almost all of them was fewer than 8. None of them had a sequence of words greater than 15.[13] This result is represented graphically on the following page.

The experiments have also shown that this characteristic is accurate only for narrative material, and that it is possible that longer sequences of words from poems and shorter aphorisms might be remembered exactly.[14] Thus it is

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[13] The shape of the graph suggests that a Poisson distribution would be the most suitable approximation of the distribution. The sample average is 5.43 (n = 69). The probability that a Poisson distribution of $\lambda = 6$ returning values $x \geq 16$ is 0.00017. In other words, in fewer than 2 out of 10,000 times would such an event occur. Hence, 16 or more words in exact sequence is so unlikely to occur when copying has not taken place that it appears to be a sensible cutoff point to determine whether or not copying has occurred. Even 15 or more words in sequence has a low probability, although two volunteers achieved it. An explanation lies to hand for volunteer D37, who reproduced the saying "Ask not what your country can do for your—ask what you can do for your country," as "Don't ask what your country can do for you, ask what you can do for your country." In other words, this is further evidence of the memorability of aphorisms, especially one expressed as a chiasm.

[14] Kenneth Bailey, in two separate articles describing informal oral traditions in modern Arab villages, distinguishes proverbs and poems from other oral material because there is no flexibility in the wording of proverbs and poems. They are always said in exactly the same manner ("Informal Controlled Oral Tradition and the Synoptic Gospels," *Asia Journal of Theology* 5 [1991]: 34–54, esp. 42; idem, "Middle Eastern Oral Tradition and the Synoptic Gospels," *ExpTim* 106 [1995]:

Number of Words in Exact Sequence: Source Returned
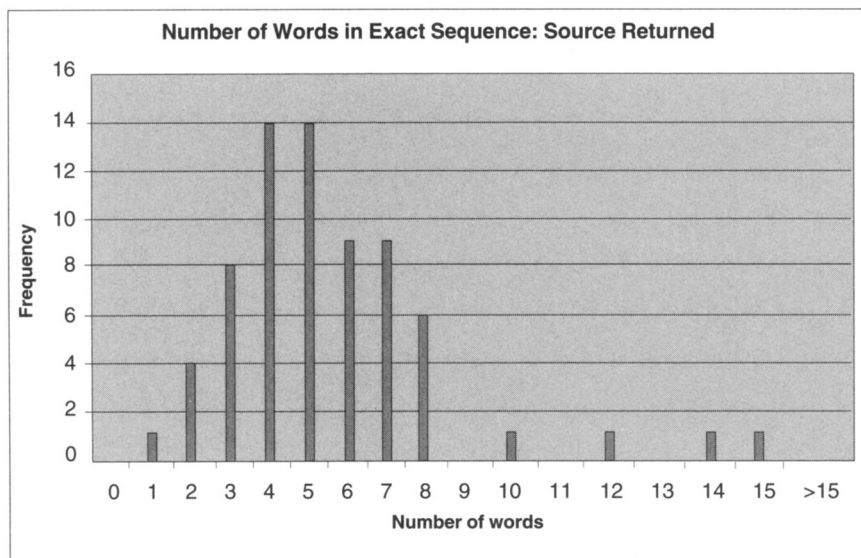
now possible to state a general test to determine the existence of written sources: *Any sequence of exactly the same 16 or more words that is not an aphorism, poetry, or words to a song is almost certain to have been copied from a written document.*

> *Conclusion 1: There are at least nine parallel passages in the Synoptic Gospels where copying has almost certainly occurred.*

The application of this test to the Synoptic Gospels would reveal those parallels passages whose relationship can only be ascribed to copying. The first stage of applying the test is to discover the parallel passages with 16 or more words that are exactly the same in form and sequence. There are 23 such passages, which are listed in the following table:

363– 67, esp. 366). In addition, Ong notes that words set to music are usually transmitted exactly (*Orality*, 63). James D. G. Dunn uses Bailey's distinction between oral material that is handed down with (a) no flexibility, (b) some flexibility, and (c) total flexibility to good effect (Dunn, "Jesus in Oral Memory: The Initial Stages of the Jesus Tradition," in *Society of Biblical Literature 2000 Seminar Papers* [Atlanta: SBL, 2000], 287–326).

No. of words in exact sequence	Reference			Huck number[15]
	Matthew	Mark	Luke	
31	10:16–25	13:3–13		58, 59, 213–15
29		10:13–16	18:15–17	188
28	11:25–30		10:21–24	67–68, 141–42
28	24:45–51		12:41–48	226, 158–59
26		1:21–28	4:31–37	12
26	6:24		16:10–13	34, 174
24	3:1–12		3:1–20	1–5
24	7:7–12		11:9–13	38–39, 148
24	8:18–22		9:57–62	49, 138
24	12:38–42		11:29–32	87, 152
23	16:21–28	8:31–9:1		122–23
23		12:38–40	20:45–47	210
23	24:15–28	13:14–23		216–18
23	26:17–25	14:12–21		234–35
22	11:1–19		7:18–35	64–65, 81–82
21	8:5–13		7:1–10	46, 79
20	15:1–20	7:1–23		115
19	22:41–46	12:35–37		209
17	8:1–4		5:12–16	45
17	20:20–28	10:35–45		192
16	15:32–39	8:1–10		118
16	16:21–28		9:21–27	122–23
16	24:29–35	13:24–31		219–21

The second stage of applying the test to determine if copying has taken place is to discard those passages that are aphorisms, distinctive sayings, or poetry, since long sequences of words of aphorisms and distinctive sayings can be transmitted orally. Thus, the following seven parallels should be set to one side:

Short aphorisms or distinctive sayings: Matt 6:24 // Luke 16:13 ("No one can serve two masters . . ."); Mark 1:24–25 // Luke 4:34–35 (the words of the demons); Matt 7:7–8 // Luke 11:9–10 ("Ask and it will be given you . . ."); Matt

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[15] Albert Huck, *A Synopsis of the First Three Gospels* (9th ed.; Tübingen: Mohr, 1935).

8:20 // Luke 9:58 ("Foxes have holes . . ."); Mark 12:38–40 // Luke 20:45–47 ("Beware of the scribes . . ."); Matt 26:24 // Mark 14:21 ("Son of Man goes as is . . ."); Matt 20:28 // Mark 10:45 ("Son of Man did not come to be served . . .").

A further seven parallels are ambiguous from the perspective of the experimental results. These saying are distinctive, and so it is conceivable that they may have been transmitted by oral means. But they are embedded in passages that have a number of long sequences of words that are exactly the same, which would incline an observer to the supposition that copying has taken place. Nevertheless, they probably should be set aside from the list of indisputable examples of copying, because of the possibility that their form is distinctive enough that it could be remembered exactly. These passages are as follows:

Longer distinctive sayings: Matt 12:41–42 // Luke 11:29–32 ("The men of Nineveh will rise up . . ."[16]); Mark 10:13–16 // Luke 18:15–17 ("Let the children come to me . . ."); Matt 16:24–26 // Mark 8:34–36 // Luke 9:23–25 ("If anyone would follow me, let them take up their cross . . ."); Matt 8:9 // Luke 7:8 (words of the centurion: "I say go, and he goes . . ."); Matt 15:8–9 // Mark 7:6–7 ("[This people] honors me with their lips . . ."); Matt 15:32 // Mark 8:2 ("I have compassion upon the crowd . . .").

This leaves the following passages, which, by the criteria developed above, *almost certainly contain copied material:*

- three parallels in the apocalyptic discourse: Matt 24:15–28 // Mark 13:14–23; Matt 24:29–35 // Mark 13:24–31; Matt 10:21–22 // Mark 13:12–13[17]

- three narrative accounts: Matt 3:1–12 // Luke 3:1–20 (preaching of John the Baptist, particularly Matt 3:7b–12 // Luke 3:7b–9, 16–17); Matt 11:1–19 // Luke 7:18–35 (messengers from John the Baptist); Matt 8:1–4 // Luke 5:12–16 (healing of a leper)

- a short discourse: Matt 11:25–30 // Luke 10:21–24 ("Father . . . you have hidden these things from the wise . . .")

- a parable: Matt 24:45–51 // Luke 12:41–48 (parable of wise and wicked servants)

- a citation from Ps 110: Matt 22:41–46 // Mark 12:35–37

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[16] In Matt 12:41–42 // Luke 11:29–32 the total passage with extended sequences of words extends over 53 words; while Matt 16:24–26 // Mark 8:34–36 // Luke 9:23–25 is in a total passage of 51 words.

[17] Mark 13:28–31 // Luke 21:29–38, also from the apocalyptic discourse, show 15 words in exact sequence, and thus fall just outside the criteria of 16 or more words.

Of the material that almost certainly contains copied material, it is possible to identify one common source with confidence: a Greek version of Ps 110, perhaps the LXX.[18] If it was decided on other grounds that it was unlikely that one evangelist copied directly from an existing Gospel, then it would be necessary to postulate a minimum of two further sources: one, the apocalyptic discourse (Mark 13 and parallels), which all three Gospels used, and one used by both Matthew and Luke but not Mark (perhaps Q?). Indeed, once one has admitted that evidence for such a document exists, it would not be improbable that several of the passages that have been temporarily set aside may have been copied from such a document.

It is instructive to compare the visual appearance of the parallels listed above as almost certainly containing copying with that given earlier in the article from volunteer D13 in experiment 5. The parable in Matt 24:45–51 // Luke 12:41–48 might serve as an example:

Matt 24:45–51 (88 words in common [81% of words in the Matthean version]; longest sequence exactly the same = 28 words)	Luke 12:41–48 (88 words in common [51% of words in the Lukan version])
45 <u>Τίς ἄρα ἐστὶν ὁ πιστὸς δοῦλος καὶ</u> <u>φρόνιμος ὃν κατέστησεν ὁ κύριος ἐπὶ</u> <u>τῆς</u> οἰκετείας <u>αὐτοῦ τοῦ δοῦναι αὐτοῖς</u> <u>τὴν τροφὴν ἐν καιρῷ</u> 46 <u>μακάριος ὁ</u> <u>δοῦλος ἐκεῖνος ὃν ἐλθὼν ὁ κύριος αὐ-</u> <u>τοῦ εὑρήσει οὕτως ποιοῦντα·</u> 47 ἀμὴν <u>λέγω ὑμῖν ὅτι ἐπὶ πᾶσιν τοῖς ὑπάρ-</u> <u>χουσιν αὐτοῦ καταστήσει αὐτόν.</u> 48 <u>ἐὰν δὲ εἴπῃ ὁ</u> κακὸς <u>δοῦλος ἐκεῖνος</u> <u>ἐν τῇ καρδίᾳ αὐτοῦ· χρονίζει μου ὁ</u> <u>κύριος,</u> 49 <u>καὶ ἄρξηται τύπτειν τοὺς</u> συνδούλους αὐτοῦ, <u>ἐσθίῃ</u> δὲ καὶ <u>πίνῃ</u> μετὰ τῶν <u>μεθυόντων,</u> 50 <u>ἥξει ὁ κύριος</u> <u>τοῦ</u> δούλου ἐκείνου ἐν ἡμέρᾳ ᾗ οὐ προσδοκᾷ καὶ ἐν ὥρᾳ ᾗ οὐ γινώσκει, 51 καὶ διχοτομήσει αὐτὸν καὶ τὸ μέρος αὐτοῦ μετὰ τῶν ὑποκριτῶν θήσει· ἐκεῖ	41 Εἶπεν δὲ ὁ Πέτρος· κύριε, πρὸς ἡμᾶς τὴν παραβολὴν ταύτην λέγεις ἢ καὶ πρὸς πάντας; 42 καὶ εἶπεν ὁ κύριος· <u>τίς ἄρα ἐστὶν ὁ πιστὸς</u> οἰκονόμος <u>ὁ φρόνιμος, ὃν</u> καταστήσει <u>ὁ</u> <u>κύριος ἐπὶ τῆς</u> θεραπείας <u>αὐτοῦ τοῦ</u> διδόναι <u>ἐν καιρῷ</u> [τὸ] σιτομέτριον; 43 <u>μακάριος ὁ δοῦλος ἐκεῖνος, ὃν</u> <u>ἐλθὼν ὁ κύριος αὐτοῦ εὑρήσει</u> <u>ποιοῦντα οὕτως.</u> 44 ἀληθῶς <u>λέγω ὑμῖν</u> <u>ὅτι ἐπὶ πᾶσιν τοῖς ὑπάρχουσιν αὐτοῦ</u> <u>καταστήσει αὐτόν.</u> 45 <u>ἐὰν δὲ εἴπῃ ὁ</u> <u>δοῦλος ἐκεῖνος ἐν τῇ καρδίᾳ αὐτοῦ·</u> <u>χρονίζει ὁ κύριός μου</u> ἔρχεσθαι, <u>καὶ</u> <u>ἄρξηται τύπτειν τοὺς</u> παῖδας καὶ τὰς παιδίσκας, <u>ἐσθίειν</u> τε καὶ <u>πίνειν</u> καὶ μεθύσκεσθαι, 46 <u>ἥξει ὁ κύριος τοῦ</u>

[18] The LXX text of Ps 110:1 from Gramcord (which uses Rahlfs's edition) is exactly the same as that found in Matt 22:44 and parallels. Note that there are a further three parallels that have 15 words in exactly the same sequence that involve parallels to Ps 110:1: Matt 22:41–46 // Luke 20:41–44; Mark 12:35–37 // Luke 20:41–44; and Mark 13:28–31 // Luke 21:29–38.

ἔσται ὁ κλαυθμὸς καὶ ὁ βρυγμὸς τῶν ὀδόντων.	<u>δούλου ἐκείνου ἐν ἡμέρᾳ ᾗ οὐ προσ-</u> <u>δοκᾷ καὶ ἐν ὥρᾳ ᾗ οὐ γινώσκει, καὶ</u> <u>διχοτομήσει αὐτὸν καὶ τὸ μέρος αὐτοῦ</u> <u>μετὰ τῶν ἀπίστων θήσει</u>. 47 Ἐκεῖνος δὲ ὁ δοῦλος ὁ γνοὺς τὸ θέλημα τοῦ κυρίου αὐτοῦ καὶ μὴ ἑτοιμάσας ἢ ποι- ήσας πρὸς τὸ θέλημα αὐτοῦ δαρήσεται πολλάς· 48 ὁ δὲ μὴ γνούς, ποιήσας δὲ ἄξια πληγῶν δαρήσεται ὀλίγας. Παντὶ δὲ ᾧ ἐδόθη πολύ, πολὺ ζητηθήσεται παρ᾽ αὐτοῦ, καὶ ᾧ παρέθεντο πολύ, περισσότερον αἰτήσουσιν αὐτόν.

This parallel contains several long sequences of words that are in exactly the same order, and has a visual appearance very like that observed in those who retained their written source in experiment 5.

Characteristics of Orally Transmitted Materials

The experimental results have yielded a test to determine whether copy-ing is present. Is it further possible to use them to derive a test to show that mechanisms of memory are present? Perhaps, although such a test has to be expressed more generally than that developed for revealing whether copying is present.

The response of volunteer A10 is a suitable place to begin a consideration of the characteristics of material in the transmission of which memory plays a significant part. This response contained one of the highest percentages of common material in the first part of experiment 1: 62% of words in common with the original, and a maximum of six words in sequence:[19]

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[19] The joke is different from that heard by volunteer A15, which is given earlier in the article. Two jokes were used in experiment 1, one that was heard orally, and one that was copied. The joke heard and the joke copied were randomly varied. Most volunteers did not understand the first joke cited, and all the highest frequencies of common vocabulary belonged to those who heard this sec-ond joke, which all the volunteers understood.

Experiment 1	
[Original]	**[Response from participant A10]**
There was an <u>Irishman</u>, <u>an English-man</u> <u>and Elle</u> sitting together in a carriage <u>on a train</u> going through <u>Tasmania</u>. Suddenly the train went <u>through a tunnel</u> and as it was an <u>old</u> style <u>train,</u> there were <u>no lights</u> in the carriages and it <u>went</u> completely <u>dark.</u> Then <u>there was</u> this <u>kissing noise</u> and the sound of a really loud <u>slap</u>. <u>When</u> the train <u>came out</u> of the tunnel, Elle and the Irishman were sitting as if nothing had happened, but the Englishman had his hand against his face as he had been slapped there. <u>The Englishman was thinking</u>: "The Irish fella <u>must have</u> <u>kissed</u> <u>Elle</u> and she <u>missed</u> him and hit <u>me</u> instead. <u>Elle was thinking</u>: "<u>The English</u> fella <u>must have tried to kiss me</u> and actually <u>kissed the Irishman</u> and got slapped for it." <u>The Irishman was thinking</u>, "This is great! The <u>next time</u> the train <u>goes</u> <u>through a tunnel</u> <u>I'll</u> make another <u>kissing</u> noise and slap that <u>English</u> idiot again."	There <u>was an</u> <u>Englishman</u>, <u>an Irish-man</u> <u>and Elle</u> <u>on a train</u> in <u>Tasmania</u> and they were going <u>through a tunnel</u> and as it was an <u>old</u> <u>train</u> and there was <u>no lights</u>, it suddenly <u>went</u> <u>dark</u>. <u>There was</u> a <u>kissing noise</u> and then a <u>slap</u> heard. And <u>when</u> they <u>came out</u> the other side of the <u>tunnel, the Englishman was</u> <u>thinking, the Irishman</u> <u>must have</u> tried to <u>kiss</u> <u>Elle, missed</u> and got <u>me</u>. <u>Elle was</u> <u>thinking, the English</u>man <u>must have</u> <u>tried to kiss me</u> but <u>kissed the Irishman</u> instead. <u>The Irishman was thinking,</u> <u>next time</u> we go <u>through a tunnel</u> <u>I'll</u> have to <u>make</u> that <u>kissing</u> sound again and <u>slap</u> that silly Irishman—the Englishman.

     The following observations might be made about the parallels that can be observed in the responses of both volunteers A15 and A10:

    1. It is possible that oral transmission might produce a high percentage of common vocabulary, but the words that are exactly in the same sequence tend to be found in short phrases of only a few words.

    2. The common phrases are scattered throughout the text.

    3. The length of the two versions need not be the same.

    4. Changes may be observed in the tenses and moods of the verb (e.g., volunteer A15 [see p. 679 above] uses the past tense, while the original was in the present tense).

5. Often synonyms are used, as well as short phrases of different words that have the same meaning (e.g., "resigned to his fate" [volunteer A15] vs. "resigned to his life" [original]).

Conclusion 2: Memory plays a significant role in the relationship between the Synoptic Gospels.

The qualities listed above as typical of transmission of material where the mechanisms of memory are present are characteristic of the majority of the parallels between the Synoptic Gospels. This appears to be true of even those few parallels that exhibit a high percentage of common vocabulary. Matthew 21:23–27 and Mark 11:27–33 serve to illustrate parallel passages that have more than 50% of words in common.

Matt 21:23–27 (83 common words [72% of the Matthean version]; 9 words in exact sequence)	Mark 11:27–33 (83 common words [66% of the Markan version])
23 Καὶ ἐλθόντος αὐτοῦ εἰς τὸ ἱερὸν προσῆλθον αὐτῷ διδάσκοντι <u>οἱ ἀρχιερεῖς καὶ οἱ πρεσβύτεροι</u> τοῦ λαοῦ <u>λέγοντες· ἐν ποίᾳ ἐξουσίᾳ ταῦτα ποιεῖς; καὶ τίς σοι ἔδωκεν τὴν ἐξου- σίαν ταύτην;</u> 24 ἀποκριθεὶς <u>δὲ ὁ Ἰησοῦς εἶπεν αὐτοῖς· ἐρωτήσω ὑμᾶς</u> κἀγὼ <u>λόγον ἕνα</u>, ὃν ἐὰν εἴπητέ μοι κἀγὼ <u>ὑμῖν ἐρῶ ἐν ποίᾳ ἐξουσίᾳ ταῦτα ποιῶ·</u> 25 <u>τὸ βάπτισμα τὸ Ἰωάννου</u> πόθεν ἦν; <u>ἐξ οὐρανοῦ ἢ ἐξ ἀνθρώπων;</u> οἱ δὲ <u>διελογίζοντο ἐν ἑαυτοῖς λέ- γοντες· ἐὰν εἴπωμεν· ἐξ οὐρανοῦ, ἐρεῖ ἡμῖν· διὰ τί οὖν οὐκ ἐπιστεύσατε αὐτῷ;</u> 26 <u>ἐὰν δὲ εἴπωμεν· ἐξ ἀνθρώπων, φοβούμεθα τὸν ὄχλον,</u> πάντες γὰρ ὡς <u>προφήτην</u> ἔχουσιν <u>τὸν Ἰωάννην.</u> 27 <u>καὶ ἀποκριθέντες τῷ Ἰησοῦ εἶπαν· οὐκ οἴδαμεν.</u> ἔφη αὐτοῖς καὶ αὐτός· <u>οὐδὲ ἐγὼ λέγω ὑμῖν ἐν ποίᾳ ἐξουσίᾳ ταῦτα ποιῶ.</u>	27 Καὶ ἔρχονται πάλιν εἰς Ἱεροσό- λυμα. Καὶ ἐν τῷ <u>ἱερῷ</u> περιπατοῦντος αὐτοῦ ἔρχονται πρὸς αὐτὸν <u>οἱ ἀρχιερεῖς</u> καὶ οἱ γραμματεῖς <u>καὶ οἱ πρεσβύτεροι</u> 28 καὶ ἔλεγον αὐτῷ· <u>ἐν ποίᾳ ἐξουσίᾳ ταῦτα ποιεῖς;</u> ἢ <u>τίς σοι ἔδωκεν τὴν ἐξουσίαν ταύτην</u> ἵνα ταῦτα ποιῆς; 29 <u>ὁ δὲ Ἰησοῦς εἶπεν αὐτοῖς·</u> <u>ἐπερωτήσω ὑμᾶς ἕνα λόγον,</u> καὶ ἀποκρίθητέ μοι <u>καὶ ἐρῶ ὑμῖν ἐν ποίᾳ ἐξουσίᾳ ταῦτα ποιῶ·</u> 30 <u>τὸ βάπτισμα τὸ Ἰωάννου ἐξ οὐρανοῦ</u> ἦν <u>ἢ ἐξ ἀνθρώ- πων;</u> ἀποκρίθητέ μοι. 31 καὶ <u>διελογί- ζοντο</u> πρὸς <u>ἑαυτοὺς λέγοντες· ἐὰν εἴπωμεν· ἐξ οὐρανοῦ, ἐρεῖ· διὰ τί</u> [οὖν] <u>οὐκ ἐπιστεύσατε αὐτῷ;</u> 32 ἀλλὰ <u>εἴπωμεν· ἐξ ἀνθρώπων;</u> — ἐφοβοῦντο <u>τὸν ὄχλον·</u> ἅπαντες γὰρ εἶχον <u>τὸν Ἰωάννην</u> ὄντως ὅτι <u>προφήτης</u> ἦν. 33 <u>καὶ ἀποκριθέντες τῷ Ἰησοῦ λέγουσιν· οὐκ οἴδαμεν.</u> καὶ ὁ Ἰησοῦς λέγει αὐτοῖς· <u>οὐδὲ ἐγὼ λέγω ὑμῖν ἐν ποίᾳ ἐξουσίᾳ ταῦτα ποιῶ.</u>

These passages show all the characteristics listed for orally transmitted material: while it has a very high common vocabulary, the words that are exactly the same in form and sequence are found only in short phrases. There are mood and tense changes (e.g., λέγοντες vs. ἔλεγον in Matt 21:23 and Mark 11:28). The common vocabulary is scattered throughout the passage, and the two passages have a slightly different length.

Furthermore, these passages of high common vocabulary are relatively rare in the parallels between the Synoptic Gospels. Of the 348 passages of over 60 words in the UBS Greek New Testament that have a separate subheading, only 36 have more than 50% common words. The probability that two parallels depend on some facility of memory, such as memorization of oral tradition, becomes greater for the parallel passages with much smaller percentages of common vocabulary that do not have long sequences of words in common. These types of parallels are in the vast majority in the Synoptic Gospels. It is therefore not unlikely that memory and mechanisms of oral transmission of tradition may have played a greater role in the formation of the Synoptic Gospels than has usually been thought.

Summing Up

The experiments reported in this article reveal that the characteristics of human memory mean that what is remembered from jokes and historical accounts is the macro-meaning, not the exact words. On the other hand, some genres, such as aphorisms and poetry, tend to be remembered word for word or not at all. This means that it is possible to transmit longer sequences of words accurately using aphorisms, poetry, and words set to music. These observations led to the formulation of a criterion to establish the presence of copying: unless found in poetry, words set to music, or aphorisms, 16 or more words that are exactly the same in two or more documents indicate that a process of copying has taken place. Applying this criterion to the parallels in the three Synoptic Gospels reveals that there are at least nine passages where it is almost certain that a process of copying has occurred. The presence of these nine passages makes it likely that there are other passages that are also the result of copying. Nevertheless, overall, the majority of the parallels in the Synoptic Gospels have characteristics that are more typical of a process of transmission that involves memory rather than straight copying: the common vocabulary is found in short sequences of words; there are changes of mood, tense, and grammatical construction; synonyms are common; and the passages are of different length. In other words, as with the jokes and historical accounts transmitted in the experiments by means that involved memory, the macro-meaning is often the same but the words are not identical.