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Wordprint Analysis and Joseph Smith's Role as Editor of the *Times and Seasons*

One of the issues that swirls around discussions of Book of Mormon geography is the rightful place the editorials in the 1842 *Times and Seasons* must take. The story of the editorials begins with Joseph's receipt of John Lloyd Stephens and Frederick Catherwood's *Incidents of Travel in Central America, Chaipas, and Yucatan*, published in 1841. In early 1842, the *Times and Seasons* published several enthusiastic articles that drew attention to the discoveries of Stephens and Catherwood in Central America and compared them favorably with the Book of Mormon. Two of these articles were signed by the editor,[1] while three other articles were unsigned.[2] Historical sources indicate that the Prophet Joseph Smith served as editor of the paper for all of the issues published between March 1 through the October 15, 1842. During this time, however, apostles John Taylor and Wilford Woodruff assisted the Prophet in his work in the printing office.[3] Since these articles were not specifically signed by Joseph Smith, some have questioned whether the Prophet wrote them himself, or if someone else wrote them, with or without his approval.

The task, then, is to determine who wrote the unsigned articles. One way to approach authorship attribution is through wordprint analysis. Authorship attribution attempts to identify the author of a text based on the style of the writing used in the text. The use of quantitative measures to describe an author's writing style is known formally as *stylometry* but is also commonly referred to as *wordprint analysis*. The basic assertion in these studies is that an author has a unique style of writing and that by determining the characteristics of an author's style, his or her written work can be identified if his or her stylistic "fingerprint" is displayed in a document. In authorship attribution, noncontextual words are the features used to describe writing style. Noncontextual words do not convey the author's message, but they are the function words an author uses to construct his or her message. Examples of noncontextual words are *and*, *but*, *however*, *on*, *the*, *upon*, etc. Interestingly, the frequency with which an author uses such words distinctively characterizes his or her writing style and can reveal the author's identity in comparison to other authors.

Discriminant Analysis

One mathematical tool used in a stylometric investigation is *discriminant analysis*. This technique creates a formula to find combinations of distinctive features that will "discriminate" or identify specific characteristics of an individual author's writings.

In order to investigate the probable authorship of the unsigned Book of Mormon editorials, all three articles, excluding wording taken from the Stephens and Catherwood book and the Book of Mormon, were combined by researchers into one 1,000-word block so that there was sufficient data to measure the word frequencies. This text was designated the "Zarahemla Text." Next, other texts appearing in the *Times and Seasons* during the time period April through October 1842, some signed in Joseph Smith's name, some signed "editor," and some which were unsigned, were segmented into thirty-six 1,000-words blocks to correspond in size with the Zarahemla Text.

Writing samples from the same time frame were also taken from John Taylor and Wilford Woodruff, the only other likely contributors to the editorials. Texts selected were those which were as close to the editorial genre as were available. For example, the writing style of the Wilford Woodruff diaries differs from the style he used in more public exposition. Therefore his diaries were not used to compose the 1000-word blocks characteristic of his public writing. Thirty 1,000-word blocks were compiled for Taylor while twenty-four 1,000-word blocks were compiled for Woodruff.

Thus a total of ninety texts were used to build a formula to test the probable authorship of the Zarahemla Text. Seventy non-contextual words were

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identified that best distinguished the writing styles of Smith, Taylor, and Woodruff. Using these words, researchers developed a formula that would classify each writing sample into a group corresponding with the correct author 100 percent of the time.

Results showed that the writing styles of Joseph Smith, John Taylor, and Wilford Woodruff were clearly distinguishable. Writings by Smith, "Editor," and "Unsigned" were not distinctively different, suggesting that all of these were likely written by Joseph Smith. The Zarahemla Text was found to be closest to the Smith-Editor-Unsigned grouping, providing evidence that Joseph Smith was the most likely author of the unsigned Fall 1842 Book of Mormon articles as well.

Cluster Analysis

Cluster analysis is another tool that is useful in authorship attribution. Using only literary features, cluster analysis groups items into pairs that are similar to each other. This analysis provided additional evidence that the "Zarahemla" block of editorials fits best with the writing styles found in the "Editor" and "Unsigned" groups. It also suggested that the work in the editorial office in 1842 could have been highly collaborative since the writing samples of the three likely authors were spread throughout the clusters. Although the writing style of Joseph Smith is clear, the styles of John Taylor and Wilford Woodruff also seem to be found in some of the "Editor" and "Unsigned" texts.

These findings will be discussed in a future article in the *Journal of the Book of Mormon and Other Restoration Scripture*. They lend no support for the claim that these articles were ghostwritten by others, or done without the Prophet's knowledge or approval. They suggest that Joseph Smith in 1842 was not an editor in name only, but shared the excitement and interest of fellow Latter-day Saints concerning Stephens and Catherwood's Central American discoveries and was very much involved in the oversight, writing, and preparation of these articles on the Book of Mormon. ◆

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Notes

1. Editor, "Traits of the Mosaic History," *Times and Seasons* 3/16 (June 15, 1842): 818–20, http://contentdm.lib.byu.edu/u?/BOMP,3432; Editor, "American Antiquities," *Times and Seasons* 3/18 (15 July 1842): 858–60, http://contentdm.lib.byu.edu/u?/BOMP,3417.

2. "Extract from Stephens' 'Incidents of Travel in Central America,'" *Times and Seasons* 3/22 (September 15, 1842): 911–15, http://contentdm.lib.byu.edu/u?/BOMP,3504; "'Facts Are Stubborn Things,'" *Times and Seasons* 3/22 (September 15, 1842): 921–22, http://contentdm.lib.byu.edu/u?/BOMP,3500; "Zarahemla," *Times and Seasons* 3/23 (October 1, 1842): 927–28, http://contentdm.lib.byu.edu/u?/BOMP,3472.

3. On February 19, 1842, Wilford Woodruff recorded, "Joseph the Seer is now Editor of that paper & Elder Taylor assists him in writing while it has fallen to my lot to take charge of the Business part of the esstablishment [*sic*]." Wilford Woodruff journal, February 19, 1842.

From Elder Neal A. Maxwell

Petitioning in prayer has taught me that the vault of heaven, with all its blessings, is to be opened only by a combination lock: one tumbler falls when there is faith, a second when there is personal righteousness, and the third and final tumbler falls only when what is sought is (in God's judgment, not ours) "right" for us. Sometimes we pound on the vault door for something we want very much, in faith, in reasonable righteousness, and wonder why the door does not open. We would be very spoiled children if that vault door opened any more easily than it does now. I can tell, looking back, that God truly loves me by the petitions that, in his perfect wisdom and love, he has refused to grant me. Our rejected petitions tell us not only much about ourselves, but also much about our flawless Father.
—"Insights from My Life," in *1976 Devotional Speeches of the Year* (Provo, UT: BYU, 1977), 200, as quoted in *The Neal A. Maxwell Quote Book*, ed. Cory H. Maxwell (Salt Lake City: Bookcraft, 1997), 261–62

Number Manipulation for Profit, or Just for Fun?

When the writer of the Gospel of Matthew listed the genealogy of Christ, he divided it into three sections, each containing 14 generations, to wit, Abraham to David, David to the Exile, and the Exile to Christ (Matthew 1:17; also 1–17). In order to do this he had to manipulate the names by leaving out several ancestors mentioned in the Old Testament.[1] The reason Matthew thought it necessary to create this mathematical/genealogical fiction has never been explained adequately.[2]

Today the significance of such numbers is rarely understood. What is known is that in manipulating the numbers, Matthew was only following an ancient Near Eastern tradition. For example, the Sumerian King List was produced about four thousand years ago and forgotten. It was unearthed in Mesopotamia a little over a hundred years ago and was published in various European language versions between 1906 and 1923. It records the years that early Mesopotamian kings reigned. (As an aside, the Sumerian King List assigns much longer reigns to the kings who served before the flood than those who served after the flood. In one case an antediluvian king was listed as reigning for 36,000 years,[3] which makes the numbers in Genesis for the antediluvians seem extremely conservative.) The number of years each king reigned, as Dwight Young has pointed out, is often a square number or the sum of squares. For example, reigns of 900 years (30^2); 324 (18^2); 136 ($10^2 + 6^2$); and 116 ($10^2 + 4^2$) are recorded.[4]

This ancient tradition of manipulating numbers can also be found in the ages the Old Testament assigns to the patriarchs. At first glance, the numbers may seem a bit large but otherwise unremarkable. Abraham is reported to have lived, according to the Hebrew Bible (Leningrad Codex), to the ripe old age of 175. His son, Isaac, lived to be 180. Abraham's grandson, Jacob, lived only to the age of 147. And Joseph, Jacob's son, lived the shortest life of all—110. Not too much extraordinary about 175, 180, 147, and 110, at least on the surface.[5]

However, like the reigns of some of the kings in the Sumerian King List, the ages of the patriarchs are products of a multiplier and a square and in one case the sum of squares. What is even more remarkable, there is an elegant mathematical progression in the ages of the patriarchs. Before reading on, you might want to try your hand at enciphering the mathematical progression between 175, 180, 147, and 110.

After a lot of dead ends, you might have been successful at figuring out that Abraham's age is $7x5^2$, Isaac's age $5x6^2$, and Jacob's age $3x7^2$. Based on this progression, Joseph would have lived to be $1x8^2$. But 64 does not equal 110. The mathematical progression has to be altered slightly to arrive at Joseph's age. He actually lived to be $1x(5^2+6^2+7^2)$, which equals 110. Neatly stated:

Abraham	$175 = 7x5^2$
Isaac	$180 = 5x6^2$
Jacob/Israel	$147 = 3x7^2$
Joseph	$110 = 1x(5^2+6^2+7^2)$

It seems to me that this striking mathematical progression can hardly have been produced by chance. Not only does it employ squares, similar to some of the numbers in the Sumerian King List, but the mathematical progression is too perfect to have happened by accident. It is obvious that someone has manipulated the numbers to produce the symmetry, either God or a mortal author or a subsequent redactor. The question of who manipulated the text is beyond the scope of this short note. But regardless of who produced the progression, perhaps we can speculate about what it may signify. And, I must emphasize, speculation is all that I can offer.

The first thing that stands out is that the sequence links Abraham to Joseph. The biblical view is that the rightful biological succession of the chosen people passes from Abraham to Isaac to Jacob and finally to Joseph, even though Isaac, Jacob, and Joseph were not the eldest sons. Whoever manipulated the numbers in order to reinforce the biological chain may have been trying to covertly reinforce the overt succession line.

If the Hebrew Bible denies that Abraham's firstborn son, Ishmael, became his legitimate heir, then it is also possible that the age the Bible assigns to Ishmael might reflect this view. In fact, Ishmael lived to be 137 (Genesis 25:17). But 137 is a prime number and not the product of a multiplier and a square.[6] Even the age of his circumcision at thirteen (Genesis 17:25) represents a prime number.[7] I need to point out, however, that the Qur'an

does not record a similar number game with the ages of Abraham and Ishmael.

It is also possible that the manipulation of the number sequences in the age of the patriarchs may point to a tendentious view that Joseph represents the sum of the patriarchs. As tempting to Latter-day Saints as this view may be, namely, that Joseph and not some other son of Jacob should be considered the sum of the patriarchs, I must doubt that God imparts important doctrine through mathematical games or arcane manipulations. I must question the presence of any authentic secret information encoded in holy writ.

Nevertheless, someone must have enjoyed manipulating the numbers. We too, as the recipients of such manipulations, can have fun discovering the formulas, as long as we don't take them too seriously. The warning of President Harold B. Lee is always appropriate, that some ideas "are not handicapped by having any authentic information" in them.[8] ◆

By Paul Y. Hoskisson

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Notes

Most of the concepts in this article have been mentioned previously in a wide range of scholarly journals and commentaries.

1. For example, between Ozias and Joatham in verses 8 and 9, Matthew left out Joash, Amaziah, and Azariah (Joash was the son of Ozias [Ahaziah in 2 Kings 11:2] and the father of Amaziah, grandfather of Azariah and great grandfather of Joatham [Jotham in 2 Kings 15:7]). Luke more realistically has 56 ancestors from Abraham to Christ.

2. Some people have suggested that the gematria of King David's name may have something to do with Matthew's choice of the number "fourteen." The Hebrew letters in David's name, דוד, given their numerical value, add up to the number fourteen.

3. See Thorkild Jacobsen, *The Sumerian King List* (Chicago: University of Chicago Press, 1939), 70–71, for the 36,000-year reign of á-làl-gar.

4. Dwight Young, "A Mathematical Approach to Certain Dynastic Spans in the Sumerian King List," *Journal of Near Eastern Studies* 47/2 (1988): 123–24. See the entire article, 123–29, for a convenient summary of some of the mathematical manipulations of the numbers in the Sumerian King List.

5. The age of 110 seems to be an ideal in ancient Egypt. See Rosalind M. and Jac. J. Janssen, *Growing Up and Getting Old in Ancient Egypt* (London: Golden House Publications, 2007), 197, 201–2.

6. It is however the sum of $9^2 + (8x7)$.

7. It is though the sum of $2^2 + 3^2$.

8. Harold B. Lee, in Conference Report, October 1972, 128. I have placed his words in a different context than he spoke them, but have remained true to the point he made.

New Book Explores Faith and Philosophy

The Maxwell Institute and Brigham Young University are pleased to announce the publication of a new volume by BYU philosophy professor James E. Faulconer.

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