USING TECHNOLOGICAL TOOLS TO ANALYZE BIBLICAL TEXTS METAPHORICAL REPETITION IN THE BOOK OF MATTHEW

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Abstract

Technological tools are often used for electronic text analysis. For example, corpus researchers use computer tools to analyze texts such as repetition commonly occurring in the biblical text. However, few studies have explored the repetition in the Book of Matthew using computer-aided tools. The aim of this research is to investigate how a technological tool is used to analyze repetition in the biblical text. A framework integrated three language layers to analyze lexical, syntactical, and textual elements, using a corpus-based approach. The results confirm the metaphorical repetition proposed by Lakoff and Johnson (2003) involving four aspects: "repetition makes a noun become a plural or collective"; "repetition is used to make a verb indicate continuation or completion"; "repetition is applied to reinforce an adjective for intensification or increase"; and "repetition turns something small into diminutive". *An addition-deletion principle* is also found as repetition makes something larger, turns something small into diminutive, and even vanishes as indicated in Mathew 25.29.

Keywords: technological tools, repetition, old-to-new information, chains, metaphor

1. Introduction

Technologies play an active role to bridge the gap between human beings and reality. Technological wisdom, "a deeper theoretical and practical involvement with technology" [1], may help people make wiser decisions. Arnăutu [1] referred back to Aristotle [2] who proposed five ways of knowing, including Science, intuitive reason, theoretical wisdom, practical wisdom, and art or technological wisdom. This study applied the technological wisdom and analyzed electronic data to better understand the biblical texts. For example, it is well known that repetition is frequently used in the Bible. Bullinger [3] elaborated various types of repetition such as addition, deletion and the like.

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Brown [4] and Wang [5] suggested a threefold repetition in the Book of John, e.g. 'bear fruit', 'bear more fruit', and 'bear much fruit'. Coombes [6] also argued the three-fold structure surrounding the repetition of *en tō skotei*/*en tō phōti*/*en tō phōti* ("in the dark/in the light/in the light") used in 1 John.

As Carter [7] and Tannen [8] argued, repetition occurs in our everyday life. Repetition is typically used in academic writing to create a smooth flow of ideas. Swales and Feak [9] argued how writers follow a progression from old to new information, establish a content connection, and provide a content link to construct an old-to-new pattern in the context. For example, they repeat the keyword 'caffeine' by connecting the possessive determiner 'its effectiveness' and different grammatical categories such as 'caffeinated beverages' in context. In other words, the old-to-new pattern for cohesion in texts can be established by repeating the previous information in terms of the exact repetition, synonyms, antonyms, different parts of speech and some specific keywords.

Keywords play a significant role in a text. They are words occurring "statistically significantly more frequently in a text or corpus than in a comparable, larger reference text or corpus" [10]. It has long been a tradition to identify keywords in linguistic analysis to help researchers answer different kinds of questions. For instance, Scott and Tribble [11] explored the keywords in *Romeo and Juliet*, using all of the Shakespeare's plays as the reference corpus. Fisher-Starcke [10] elaborated on Jane Austen and her contemporaries by way of corpus linguistics. However, little attention has been paid to the repetition of keywords in the Bible [12] and how to decide keywords objectively. This study enhances the understanding of language use, the repetition of keywords and their lexical chains in a biblical text. According to Hoey [13], lexical chains have long been used for a variety of purposes such as text analysis. Likewise, Ercan and Cicekli [14] used lexical chains for keyword extraction. Figure 1 demonstrates the examples of keywords and lexical chains in Matthew 25.

The old information connects the new information to establish this old-to-new pattern by repeating certain keywords or information from previous sentences.

As lexical chains are established, an *addition-deletion principle* ignored in [15] is found in the Book of Matthew, i.e., those who have more will be given more, but those who have little will have even that taken away.

Figure 1. Text 1 - Examples of keywords and lexical chains in Matthew 25.

2. Research aim

This research proposes an addition-deletion principle to investigate the repetition of keywords linked as lexical chains in the old-to-new information. Three degrees of transparency and four types of metaphorical repetition were analyzed, aiming to examine how keywords, their repetition, lexical chains and metaphors interact in texts and how they are applied in biblical texts.

3. Literature review

3.1. Repetition

Repetition has long been explored in spoken and written texts, where it is used as a means of lexical cohesion [16]. Halliday and Matthiessen [17] highlight that "the most direct form of lexical cohesion is the repetition of a lexical item". Tannen [18] argues that repetition is at the heart of "how a particular discourse is created" and "how discourse itself is created". Repetition basically includes exact repetition, reiteration, and re-lexicalization which are commonly used in discourse [19]. These devices recast the same meanings using different words, equivalents (synonyms) or super-ordinates, which also indicate 'how the patterns of lexical cohesion can be related to important functions in speech' [19]. These fundamental categories are helpful in analyzing general texts, seeking lexical chains more quickly, and linking reference chains to understand better the textual meanings.

3.2. Cohesion and lexical chains

Cohesion refers to 'relations of meaning that exist within the text, and that define it as a text' [20]. Cohesion links a string of sentences to form a text, providing a system to analyze cohesive relationships within a text whose organization is made up of cohesive ties. One of these cohesive ties is lexical cohesion, which can help readers construct meaning in a text, with two common attributes, reiteration and collocation. Reiteration involves the repetition of a lexical item and the use of the same word, synonym or a general term. Indeed, reiteration chains create lexical chains in texts. Each of these chains is constructed on a semantic principle, creating unity among its own members. That is, chain interaction is the crucial factor in coherence [13], including simple lexical repetition, complex lexical repetition, complex paraphrasing, and the link triangle. Second, repetition is used as links, and explains how the lexical links function. This can operate as a useful tool for combining networks which reflect text organization.

3.3. Repetition and metaphor: types, degree and principle

Metaphor is considered as "a way of talking about one thing in terms of another" [19]. Deignan [21] defined that a metaphor is a word or expression that is referred to as *non-core use* to express "a perceived relationship with *the core meaning* of the word". According to Moon [22], metaphor also refers to three levels of *transparency*:

a. Transparent metaphors are institutionalized, but readers can decode them successfully by way of their real-world knowledge.
b. Semi-transparent metaphors need some specialist knowledge to be decoded successfully.
c. Opaque metaphors are possibly decoded 'with knowledge of the historical origins of the expression'.

Additionally, Lakoff and Johnson [23] proposed that metaphor is all-pervasive in everyday speech. They shed new light on metaphor, with the most representative devices, highlighting repetition or reduplication in terms of the following four types of metaphorical repetition, i.e. noun, verb, adjective, and diminutive adjective (see examples in Table 3):

- Repetition/reduplication makes a noun become a plural or collective;
- Repetition/reduplication is used to make a verb indicate continuation or completion;
- Repetition/reduplication is applied to reinforce an adjective for intensification or increase;
- Repetition/reduplication turns something small into diminutive.

3.4. Repetition framework

The application of repetition in the old-to-new information leads to *an addition-deletion principle*, i.e. 'repetition turns something large into more or something small into diminutive'.

Figure 2 provides the concise framework to better understand the texts, involving repetition for cohesion in texts, i.e. (1) repeated *keywords* linked as (2) lexical *chains* that can become (3) *a flow of old-to-new information*, suggesting (4) different levels or types of *metaphor* as elaborated above and in the following diagram.

3.5. The study

The present study mainly seeks to integrate keywords, chains, old to new information, and metaphor into text analysis, and explores the repetitions in Chapter 25 of the Book of Matthew. The following questions guide the current research:

Q1: What are the repeated keywords in Matthew 25?
Q2: How is the old-to-new information constructed to support the addition-deletion principle?

Q3: How do the keywords reoccur as a lexical chain, indicating different degrees of metaphors in the text?

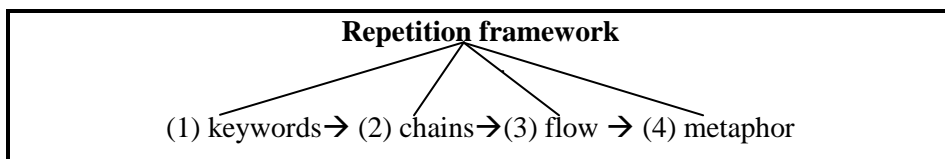Q4: What are the four types of metaphorical repetition found in Matthew 25?

Figure 2. The repetition framework.

4. Methodology

4.1. Data collection and analytical tools

The online *Bible Hub* [http://biblehub.com] provides 21 different versions of translation with cross references. The data collection for the current research is based on the New Testament (187,580 running words) of which the Book of Matthew (24,801 running words) [24] is used as the reference corpus in the current research [25]. Chapter 25 of the book of Matthew (1,078 words) is chosen as the study corpus because this chapter is full of the same repetition (Matthew 25.29) which appears seven times across the New Testament. Its special discourse therefore deserves more attention.

The general wordlists were created with the frequency of each token calculated using the software, WordSmith Tools 5.0 [25]. The keyword function was then applied to investigate the most salient keywords in Matthew 25.

4.2. Procedure

Figure 3 shows the procedure. The first stage (I) was to collect the data from the Bible. The text was downloaded from an online free Bible, and converted into plain text files. The second stage (II) (quantitative analysis) involved the analysis of the electronic data for keywords list and frequency list. A keyword list is used to focus on the significance or salience of some specific words, providing with the information of keyness and two types of frequency, i.e., frequency of study corpus and frequency of research corpus. The keyness is automatically calculated in terms of the WordSmith Tools 5.0, based on the study corpus (Matthew 25) and the research corpus (the Book of Matthew). A frequency list is a wordlist used to provide frequency-based list and/or alphabetical list in a text or a corpus. The quantitative results provide evidence to reinforce the qualitative analysis in the third stage (III).
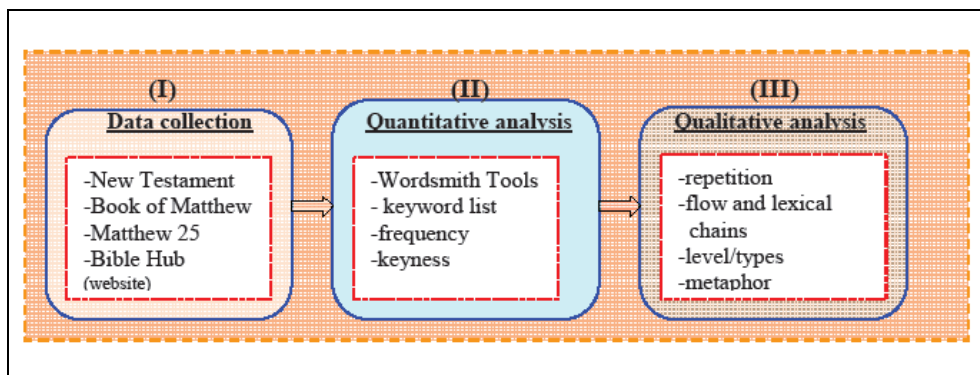
Figure 3. The analytical flowchart for two studies.

5. Results and discussion

5.1. Quantitative results (Q1)

Table 1 shows the most frequently used 30 words in Matthew 25. It is evident that the lexical item 'talents' (Top 20) is the most frequently used content word in this chapter. The next word, 'five', is significant in this chapter since it is collocated with the keyword 'talent' as 'five talents'.

Table 1. The most frequently used 30 words in Matthew 25.

No.	Word	Freq.	%	No.	Word	Freq.	%
1	AND	72	6.7	16	FOR	12	1.1
2	THE	59	5.5	17	HIM	12	1.1
3	YOU	47	4.4	18	HIS	12	1.1
4	TO	37	3.4	19	WAS	11	1.0
5	I	23	2.1	20	TALENTS	10	0.9
6	HAVE	18	1.7	21	FIVE	9	0.8
7	OF	17	1.6	22	MASTER	9	0.8
8	HE	16	1.5	23	ANOTHER	8	0.7
9	ME	16	1.5	24	BUT	8	0.7
10	NOT	16	1.5	25	CAME	8	0.7
11	WHO	15	1.4	26	ONE	8	0.7
12	WILL	15	1.4	27	OR	8	0.7
13	A	13	1.2	28	THEM	8	0.7
14	IN	13	1.2	29	WITH	8	0.7
15	DID	12	1.1	30	FROM	7	0.6

The function of 'Keyword' in WordSmith Tools is applied to calculate the value of keyness in Matthew 25 with the reference corpus, the Book of Matthew. The size of the study corpus and the reference corpus is small; therefore, only two keywords were found. Figure 4 shows that 'talents' (keyness = 35.52;

***p < 0.001) and 'five' (keyness = 27.67; ***p < 0.001) appear in the keyword list. They are also the most salient words in Matthew 25

Furthermore, Figure 5 presents the concordance of 'five/ten/two talents' (frequency = 10) in this chapter.

Figure 4. The most salient keywords in Matthew 25.

Figure 5. The concordance of 'talents'.

5.2. Old-to-new information (Qs2 &3)

5.2.1. Repetition in Matthew 25

The repetition framework is used in the text analysis. Matthew 25.15-30 presents a typical example of the old-to-new pattern in terms of exact repetition, synonyms, re-lexicalization, and different grammatical categories linked as a lexical chain as shown in the text from Figure 1. As confirmed above, the keywords, 'talent' and 'five', are the most salient lexical items for calculating keyness. Text 2 (Figure 6) further demonstrates how they play a role in the text analysis.

15 To one he **gave five talents**, and to another **two**, and to another **one**, to each according to his own **ability**. And he went abroad.
16 Immediately he who had **received** the five talents went and traded with them and **gained** another five.
17 Similarly, he who had **received** the two **gained** another two.
18 But he who had **received** the one went off and dug in the earth and hid his master's money.
19 Now after a long time the master of those slaves came and settled accounts with them.
20 And he who had **received** the five talents came and **brought** another five talents, saying, Master, you **delivered** to me five talents; behold, I have **gained** another five talents.
21 His master said to him, Well done, good and faithful slave. You were faithful over a few things; I will set you over many things. Enter into the joy of your master.
22 And he who had **received** the two talents also came and said, Master, you **delivered** to me two talents; behold, I have **gained** another two talents.
23 His master said to him, Well done, good and faithful slave. You were faithful over a few things; I will set you over many things. Enter into the joy of your master.
24 Then he who had **received** the one talent also came and said, Master, I knew about you, that you are a hard man, **reaping** where you did not **sow**, and **gathering** where you did not winnow.
25 And I was afraid and went off and hid your talent in the earth; behold, you have what is yours.
26 And his master answered and said to him, Evil and slothful slave, you knew that I **reap** where I did not sow and **gather** where I did not winnow.
27 Therefore you should have deposited my money with the money changers; and when I came, I would have recovered what is mine with interest.
28 **Take away** therefore **the talent** from him and **give it** to him who has the **ten talents**.
29 For to every one **who has**, more shall be **given**, and he shall abound; but from him **who does not have**, even that which he has shall be **taken away** from him.

Figure 6. Text 2 - lexical chain of 'talent(s)'.

The text analysis explains research questions (Q2 and Q3) in terms of three aspects, i.e. (A) lexical chain of 'talents', (B) lexical chain of 'give-and-take', and (C) repetition in the text.

(A) The lexical chain of 'talent(s)' is constructed as 'five talents …two (talents) …one (talent) …ability $\rightarrow$ five talents … another five (talents) $\rightarrow$ the two (talents) … another two (talents) $\rightarrow$ the one (talent) … money'.

The results of linking talents and relevant tokens into a lexical chain indicate that the metaphorical repetition can be used to support the repetition principle of old-to-new information in terms of the addition or deletion features:

- addition (becoming more): five talents … another five talents …five talents … **another** five talents
- addition (becoming more): two talents … two talents …**another** two talents
- deletion (becoming deleted): one talent $\rightarrow$ your talent … yours (= one talent = money) $\rightarrow$ my money … the money changers…mine (= my money) with interest $\rightarrow$ the talent …it (= one talent)…the ten talents $\rightarrow$ ø

According to Moon [22], metaphor includes three levels of transparency. The results also lead to different degrees of transparency for the keyword 'talent(s)' as is shown in Figure 5 extracted from Matthew 25.

Originally 'talent' is used as the largest unit of weight (= 6000 denarii; [24]). Talents are also used as money in texts such as in 'hid his master's money'. In the opaque metaphor of Matthew 25.15-29, talents signify spiritual gifts in 'five talents, two talents and one talent', but it also signifies one's natural ability in 'his own ability'.

Table 2. Three levels of metaphor for talent(s) (Q3).

transparent	semi-transparent	opaque
● talent(s): the largest unit of weight = 6000 denarii	● talent(s) = money 18: But he who had received **the one** went off and dug in the earth and hid his master's **money**. ● the one [talent] = his master's money	● talents = spiritual gifts 15: To one he **gave five talents**, and to another **two**, and to another **one**, to each according to his own **ability**. ● own ability = natural ability

(B) The lexical chain of 'give-and-take' can be constructed by linking 'give', 'take', and relevant words into the line as 'he gave → received-gained → received-gained → received → received-brought-delivered-gained → received-delivered-gained'.

The results also demonstrate that those who have had more gain more as presented in (1), 'gaining more' and from 'a few things' to 'many things'. But, those who have had less receive little or even nothing as shown in (2), 'receiving nothing', and 'taking away'. The pronoun him_1 received nothing, but the pronoun him_2 received ten talents plus one more talent.

(1) Addition (gaining more):
- Receiving 'another two or five talents'.
- 'You were faithful over a few things; I will set you over many things'.
- 'Enter into the joy of your master'.

(2) Deletion (receiving nothing):
- Taking away the talent from him_1.
- Giving the talent to him_2 who has the ten talents.

(C) Matthew 25 is full of repetition in texts at or beyond the sentential level such as 'he who had', 'reaping where…gathering where', and 'who has … who does not have'.

Table 3. Summary of the four types of metaphorical repetition in Matthew 25.

No.	Feature description of repetition	Examples
1.	Making a *noun* become a plural/collective	● <u>five talents</u> ● <u>another five talents</u> ● give the talent to him who has the <u>ten talents</u> (sum = 11 talents)
2.	Making a *verb* continuation/ completion	●'he gave → received-gained →...→ received-brought-delivered-gained→ received-delivered-gained'. ● every one who has, more shall be given, and he shall abound
3.	Reinforcing an *adjective*	● Receiving '<u>another</u> <u>two</u> or <u>five</u> talents' ● You were faithful over <u>a few</u> things; I will set you over <u>many</u> things.
4.	Turning something *small* into something *smaller*	● one talent → your talent … yours (= one talent = money) → my money … the money changers…mine (= my money) with interest → the talent …it (= one talent)…the ten talents → ø ● who does not have, even that which he has shall be taken away from him

Table 4. Summary of answers to the four research questions.

Research questions	Summary
Q1: the keywords of repetition in Matthew 25	● talents ● five
Q2: the old-to-new information constructed to support the addition-deletion principle?	● Repetition turns something large into more or something small into diminutive. ● For to every one **who has**, more shall be **given**, and he shall abound; but from him **who does not have**, even that which he has shall be **taken away** from him. (1) Addition: 'who has → more → abound' (2) Deletion: who does not have → which he has → taken away
Q3: different degrees of metaphors in texts?	● transparent → the largest unit of weight = 6000 denarii ● semi-transparent → money ● opaque metaphor → spiritual gifts or natural ability
Q4: Four types of metaphorical repetition in Matthew 25	● See Table 3

Finally, the results highlight that everyone 'who has' will be given more and abound. However, he who does not have, including what he has had, will be taken away. Verse 29 also appears 6 times elsewhere in the New Testament.

● he who had → he who had → he who had → he who had → he who had → he who had

- **reaping** where you did not **sow**, and **gathering** where you did not winnow
  → **reap** where I did not sow and **gather** where I did not winnow
- Conclusion: every one **who has**, more shall be **given**, and he shall abound; but from him **who does not have**, even that which he has shall be **taken away** from him.

Additionally, there are four types of metaphorical repetition found in Matthew 25 as summarized below in response to Q4 (see Table 3).

Table 4 summarizes the answer, the evidence or examples that have been presented in reply to Q1 where two keywords ('talents' and 'five') were identified by using WordSmith Tools. Q2 refers to how the old-to-new information is constructed to support the addition-deletion principle. The answer to Q3 demonstrates three different degrees of metaphor in the text. Q4 elaborates on the four types of metaphorical repetition as presented in Matthew 25.

6. Conclusions

Indeed, human wisdom is somewhat limited, compared with technological wisdom and tools. However, we can use computer-aided instruments to better understand the biblical texts. For instance, the current study demonstrates how WordSmith Tools helps us analyze the text.

The repetition framework has been employed to better understand the texts, involving repeated *keywords* linked as lexical *chains* that can become *a flow of old-to-new information,* implying different degrees of *metaphor*. The quantitative and qualitative approaches were integrated and applied to explain how repetition and the addition-deletion principle were used in a biblical text. Frequency, keywords and keyness are useful in the analytical process to reinforce lexical cohesion, to keep texts cohesive, and to help readers understand better the meaning of texts.

This research reveals the benefits of a corpus approach applied to the analysis of biblical texts. Future research in relevant areas may draw more attention to keywords, e.g., keyness, pronouns, metaphor, and the repetition patterns in various types of discourse. Language teachers may apply these skills or approaches to explain the classic texts, short essays, and the biblical allusions in the short stories as explored by Panasenko and Šestáková [26] and Wang [27] to help students better understand the texts they are studying.

Acknowledgement

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