

Analysis of Participants' Agent Role in the Two Major Divisions of Leviticus

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1. Purpose of this study

This paper is aimed at explaining that Leviticus is demarcated into two major divisions (1:1-24:23, 25:1-27:34) and two sub-divisions in the first major division (1:1-15:33, and 16:1-24:23) according to the Elaborate Divine Speech Formula [**basic divine speech formula + locative phrase**], and at confirming the validity of the demarcation and elaborating the effect of the demarcations.¹⁾ At first sight this approach leads to an uneven division of the book, at least as far as the two major divisions are concerned, and it does not coincide with well-known traditional approaches that take, for example, the Holiness Code as the second part of the book. Therefore, in the second part of this article we will compare our division of the text based on formal and syntactic criteria with other scholarly

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1) For the book of Numbers I found that the Elaborate Divine Speech Formula is a structuring element that divides the book into its major divisions, because both Num 1:1 and 9:1 start with the most elaborate EDSF. In the present article I will investigate whether my conclusions are also valid for Lev. G. Jin, "Investigating the Text-hierarchical Structures and Composition of Numbers", Ph.D. Dissertation (Vrije Universiteit Amsterdam, 2021), 49-65. <https://research.vu.nl/en/publications/investigating-the-text-hierarchical-structures-and-composition-of6>

suggestions for the division of Leviticus. This paper raises the following hypothesis: if the demarcations are valid, each division would show strong separability and weak connectivity from its adjacent sections. The analysis of participants' roles will help us to see the validity of the demarcations.

This paper displays the types and frequencies of agent roles of participants who occur in two adjacent divisions. I define the terminologies of agent roles, shared agent roles, and unique agent roles. Agent roles occur in a transitive verb, shared agent roles occur in both divisions, while unique agent roles occur only in one division relative to its adjacent divisions. The shared agent roles indicate the connectivity between divisions, while the change of their percentage between divisions would indicate the separability of each division from its adjacent divisions and would indicate the development of the discourse function. The unique agent roles of participants which occur only in a division relative to its adjacent division will sharpen the separability of a division from its adjacent division, validate the demarcations, and explain the discourse function of each division.

To see the validity of the demarcations, this paper will compare mainly 1:1-24:23 with 25:1-27:34. To study the validity of the first major division, 1:1-24:23, this paper will compare it with its preceding division, Exodus 12:1-40:38. To see the validity of the second major division, 25:1-27:34, this paper will compare it with its following division, Numbers 1:1-3:13, and this paper also will compare the two sub-divisions, 1:1-15:33 and 16:1-24:23. I assume that 16:1 is the basis of the two subdivisions because 16:1 has a Divine Speech formula + Time phrase. We study Numbers as part of its larger context of the Pentateuch.

The analysis of participants' roles will result in the discourse functions between the two major divisions and the two sub-divisions in the first major division.

Lastly, the paper compares the discourse functions based on the syntactic divisions in Leviticus with the scholars' discourse functions based on their thematic demarcations, and explain what are the unique effects of our demarcations. Lastly, this paper will summarize this study and its contribution.

2. Demarcation markers in Leviticus

The BDSF (Basic Divine Speech Formula), in which YHWH spoke to Moses without any locative or time phrase, occurs 160 times in total in the Pentateuch, except for Genesis, and opens a small paragraph.²⁾ Its clause type *Wayyiqtol* + X (explicit subject) demarcates a text into a paragraph unit.³⁾ The EDSFs (Elaborate Divine Speech Formula), in which a BDSF is combined with a locative or time phrase, occur 13 times in total in the four books of the Pentateuch (except Genesis).⁴⁾ An EDSF, in which a BDSF is combined with a locative, occurs mainly by keeping quite a distance from the preceding EDSF and its following EDSF. The outcome raised a conjecture that each EDSF opens a larger textual unit at a higher textual level than each BDSF does.⁵⁾ The clause type *Wayyiqtol* + X of each EDSF opens a textual unit, the explicit subject of an EDSF signals a new start, and the added locative phrase strengthens the start, and supports the hypothesis.⁶⁾

2) Gysang Jin, "YHWH basic speaking formula in the Pentateuch in the HB", <https://shebanq.ancient-data.org/hebrew/text?iid=3801&page=1&mr=r&qw=q> (2023. 04. 19.).

3) The clause type, W-X-Qatal, also could demarcate a paragraph or a textual unit as the clause type *Wayyiqtol* + X does at the same textual level, depending on the relationship between clauses that are adjacent to it. Its occurrence is less frequent in the Pentateuch than the clause type *Wayyiqtol* + X. It indicates generally the opening of a paragraph or gives background information to progress a story in the paragraph. E. Talstra, "Clause Types and Textual Structure An Experiment in Narrative Syntax", E. Talstra, ed., *Narrative and Comment: Contributions to Discourse Grammar and Biblical Hebrew Presented to Wolfgang Schneider* (Amsterdam: Societas Hebraica Amstelodamensis, 1995), 166-174.

4) Gysang Jin, "Pattern1 (locative)", <https://shebanq.ancient-data.org/hebrew/text?iid=2862&page=1&mr=r&qw=q> (2023. 04. 19.). Four types of EDSFs occur in the Hebrew Bible. I presented them in my dissertation: G. Jin, "Investigating the Text-hierarchical Structures and Composition of Numbers", 53-58.

5) I elaborated on how the syntactic-hierarchical structure of Lev was discovered in my thesis, but here I focus on elaborating the analysis of the roles of participants in the demarcations in Lev. G. Jin, "Investigating the Text-hierarchical Structures and Composition of Numbers", 59-60.

6) The EDSF in Num 1:1 is comprised of BDSF, double locative phrases, one time phrase, and its subordinate clause that specifies the time phrase in its main clause. The added extensive adjunct phrases and subordinate clause make the EDSF in Num 1:1 the strongest new start among all the EDSFs. In my study, I embed Num 1:1 under Gen 1:1, that is, the strongest new start in the Pentateuch, and see how Num 1:1 opens the second stage in the Pentateuch. I elaborated on them in my thesis: G. Jin, "Investigating the Text-hierarchical Structures and Composition of Numbers", 49-56. In this paper, I focus mainly on the function of the EDSFs [**basic divine speech formula + locative phrase**] that occur in Lev. G. Jin, "Investigating the Text-hierarchical Structures and Composition of Numbers", 49-65.

In this paper, the EDSF [**Basic Divine Speech Formula + Locative phrase**] demarcates Leviticus into two major divisions, Leviticus 1:1-24:23, and 25:1-27:34, and the EDSF [**Basic Divine Speech Formula + Time phrase**] demarcates the first major division into 1:1-15:33 and 16:1-24:23.⁷⁾

3. Elaboration on the effect of the demarcations by the agent roles of participants

This paper elaborates through the analysis of the agent roles of participants, on the validity of the demarcations in the two major divisions of Leviticus and the two sub-divisions of the first major division and their effects.⁸⁾ The analysis of the agent roles of participants explains which participants behave and affect directly the other participants and events in a division, while the analysis of participants shows which participants occur in a division.⁹⁾ “Participants” includes some participants who just occur in substantives, suffixes, and personal pronouns but do not behave in any way, while the agent roles clarify which

7) The EDSF [**Basic Divine Speech Formula + Time phrase**] occurs less frequent than the EDSF [**Basic Divine Speech Formula + Locative phrase**], occurs intermittently in between the latter EDSFs, which compose of the main structural frame in the Pentateuch, while the former EDSF demarcates a smaller textual unit.

8) In another paper, I explained the validity of the demarcations in the first major division of Numbers and their effect through the analysis of participants. See G. Jin, “Analysis of Participants in the First Major Division of Numbers”, 8-50. Available from: doi:10.22782/eots.2022.22..001.

9) L. de Regt and S. E. Runge investigated the references of participants in some chapters of Num or Gen. They were interested in judging whether a reference is marked, that is otherwise un-marked. L. de Regt, *Linguistic Coherence in Biblical Hebrew Texts: Arrangement of Information, Participant Reference Devices, Verb Forms, and Their Contribution to Textual Segmentation and Coherence* (Piscataway, NJ: Gorgias, 2019), 5-22. S. E. Runge, “A Discourse-Functional Description of Participant Reference in Biblical Hebrew Narrative”, Ph.D. Dissertation (Stellenbosch University, 2007), 90-175. S. Bar-Efrat, R. Alter, A. Berlin, M. Sternberg, and D. M. Gunn studied participants using literary analysis and judged intuitively their role. S. Bar-Efrat, “Some Observations on the Analysis of Structure in Biblical Narrative”, *VT* 30 (1980), 154-173. R. Alter, *The Art of Biblical Narrative* (New York: Basic Books, 1978), 143-162. A. Berlin, *Poetics and Interpretation of Biblical Narrative* (Sheffield: Almond Press, 1983), 23-42. M. Sternberg, *The Poetics of Biblical Narrative: Ideological Literature and the Drama of Reading. Indiana Studies in Biblical Literature* (Bloomington: Indiana University Press, 1985), 342-364. D. M. Gunn, *Narrative Art in the Hebrew Bible, Oxford Bible Series* (Oxford: Oxford University Press, 1993), 63-74. I am indebted to them because I became acquainted with the research topic of participants and seeing their studies I got inspired to have the research idea of agent roles based on a thorough linguistic investigation to the whole text of Lev.

participants occur at a transitive verb and really work and govern the events that happen within a division. I annotated the role of participants as an agent, who occur in a transitive verb, and work with the other participants who occur in a direct object as a patient in the same clause.¹⁰⁾

The analysis of agent roles explains effectively how the discourse function or the plot of a story develops from the preceding division to its following division.

4. Research Process

4.1. Confirmation of the validity of the demarcations

I will check whether the outcome of the analysis of the agent roles of the participants meets the hypothesis in which each of the divisions demarcated by the EDSF [**basic divine speech formula** + **locative phrase**] shows strong separability and weak connectivity.

4.1.1. Validation by frequency of agent roles

I will display the relative frequency of shared agent roles that occur commonly in two adjacent divisions, and that of unique agent roles that occur only in one of the divisions. If the relative frequency of unique agent roles in each division is much larger than that of the shared agent roles, the outcome would advocate the hypothesis and the validity of the demarcations.¹¹⁾

4.1.2. Validation by Jaccard distance

In a case in which the percentage of shared agent roles is a little bigger in both divisions or only in the former or only in the latter division than that of unique agent roles, the data requires more clarification to judge the validity of the

10) I extracted all the lexemes and the linguistic parameters of them from ETCBC database and annotated agent roles of participants in all the transitive verbs, patient roles of participants in all the direct objects that occur in the four divisions, Exo 1:1-40:38, Lev 1:1-24:23, 25:1-27:34, and Num 1:1-3:13. To see linguistic parameters, Eep Talstra Centre for Bible and Computer, VU University Amsterdam, "0 home", https://etcbc.github.io/bhsa/features/0_home/ (2023. 04. 19.).

11) I compare the percentage, the relative frequency, of shared agent roles or unique agent roles that occur in adjacent divisions instead of using their frequency. The size of each adjacent division is different from each other. Therefore comparing their percentage makes it fair.

demarcations. Here I bring the Jaccard distance between the compared divisions.¹²⁾

(1) Definition of Jaccard distance

The Jaccard distance is a mathematical formula which aims to measure the separability between divisions in terms of participants' agent roles. I can count how many times participants' agent roles occur in Leviticus, then, depending on their total occurrence, calculate the percentage of their frequency in a specific division, and then depending on the percentage of identical and different agent roles, measure how much divisions are similar or dissimilar. For example, the participants' agent roles could give a slight impression of whether the divisions of Leviticus are similar or dissimilar.

(2) One example of results with the Jaccard distance

This section introduces a simple example in which the Jaccard distance was helpful. In the table below, column A enumerates four agent roles in Leviticus 1:1-24:23 and 25:1-27:34. Column B and C give their frequencies in each division. The cells B6 (301) and C6 (94) give the overall sums of all agent roles. Column E and F enumerate the relative frequency of each agent role in A and B. Each agent role in column B was divided by B6, each in column C by C6. Column G gives the lowest of the two relative frequencies in columns E and F (e.g. MIN (E2, F2) = G2). Then, G6 combines all minimums (G2 + G3 + G4 + G5), that is G6 is “m” which is applied to Jaccard formula $[2+2/(m-2)]$. Then, B8 $[2+2/(G6-2)]$ shows how G6 was applied to the formula. C8 is the result of the application, the Jaccard distance between Lev 1:1-4:23 and 25:1-27:34.

Figure 1. One example of how to calculate a Jaccard distance

| | A | B | C | D | E | F | G |
|---|---------------------------------|--------------|---------------|-----------------------------------|----------------------------------|-----------------------------------|-------------|
| 1 | The agent roles of participants | Lev1.1_24_23 | Lev25.1_27.34 | MIN (Lev1.1_24_23, Lev25.1_27.34) | Lev1.1_24_23_ relative frequency | Lev25.1_27.34_ relative frequency | MIN(E,F) |
| 2 | YHWH | 20 | 35 | 20 | 0.02 | 0.25 | 0.02 |
| 3 | Israel | 165 | 50 | 50 | 0.03 | 0.17 | 0.03 |
| 4 | The land of Canaan | 3 | 2 | 2 | 0.03 | 0.06 | 0.06 |
| 5 | priest | 113 | 7 | 7 | 0.12 | 0.05 | 0.12 |
| 6 | Total | 301 | 94 | | | | 0.23 |
| 7 | | | | | | | |
| 8 | Jaccard distnace | $2+2/(G6-2)$ | | 0.87 | | | |

12) I elaborated on Jaccard distance in my thesis: G. Jin, “Investigating the Text-hierarchical Structures and Composition of Numbers”, 43-47.

(3) Interpretation of the Jaccard distance

If the Jaccard distance is close to 1, the separability between the adjacent divisions is very strong and the connectivity is very weak. The outcome advocates the hypothesis. If the Jaccard distance is the exact 1, the adjacent divisions are completely different. By contrast, if the Jaccard distance is close to 0, the separability between the adjacent divisions is very weak, and the connectivity is very strong. If the Jaccard distance is 0, the adjacent divisions are exactly identical. The Jaccard distance between Leviticus 1:1-24:23 and 25:1-27:34 is 0.87, which indicates that both divisions have very strong dissimilarity, and very weak similarity.

4.2. Separability with agent roles

4.2.1. Separability in the change of percentage of shared agent roles

Shared agent roles that occur commonly in the adjacent two divisions indicate the connectivity between the divisions. However, the change in the percentage of the shared agent roles from the preceding division to its following division indicates the separability of each division relative to its adjacent division in terms of discourse function. Even if the shared agent roles occur commonly in the two divisions, the different strength of their activity indicates a change in the relationship between an agent and its patient or an event. Even if shared agent roles occur, their patients or relevant events could change. Those changes would indicate the separability between the divisions and advocate the validity of the demarcations.

4.2.2. Separability by the percentage of unique agent roles

Unique agent roles that occur only in one of two adjacent divisions relative to its adjacent division indicate how they affect the other participants and events in a division. They sharpen the separability of each division and explain well the discourse function or the development of plot from the preceding division to its following division.

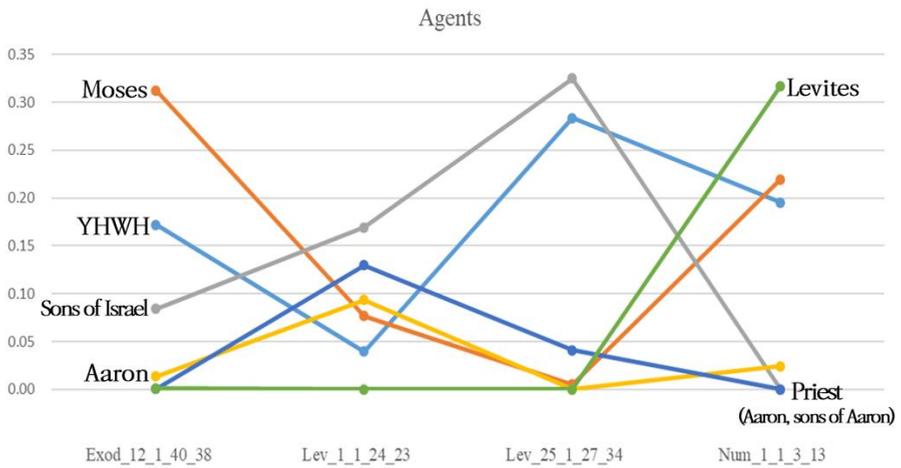
5. Description of the analysis

5.1. Complete view

Figure 2. The change in the percentage of the shared agent roles in four divisions

| agents | Exod_12_1_40_38 | Lev_1_1_24_23 | Lev_25_1_27_34 | Num_1_1_3_13 |
|-------------------------------|-----------------|---------------|----------------|--------------|
| YHWH | 304 | 48 | 55 | 8 |
| Moses | 553 | 93 | 1 | 9 |
| sons of Israel | 149 | 205 | 63 | 0 |
| Aaron | 24 | 113 | 0 | 1 |
| priest (Aaron, sons of Aaron) | 1 | 157 | 8 | 0 |
| Levites | 2 | 0 | 0 | 13 |
| Total | 1769 | 1211 | 194 | 41 |

| agents | Exod_12_1_40_38 | Lev_1_1_24_23 | Lev_25_1_27_34 | Num_1_1_3_13 |
|-------------------------------|-----------------|---------------|----------------|--------------|
| YHWH | 0.17 | 0.04 | 0.28 | 0.20 |
| Moses | 0.31 | 0.08 | 0.01 | 0.22 |
| sons of Israel | 0.08 | 0.17 | 0.32 | 0.00 |
| Aaron | 0.01 | 0.09 | 0.00 | 0.02 |
| priest (Aaron, sons of Aaron) | 0.00 | 0.13 | 0.04 | 0.00 |
| Levites | 0.00 | 0.00 | 0.00 | 0.32 |



I display the whole picture, which shows how the relative frequency of each shared agent role changes between the four divisions.¹³⁾ In division Exodus 12:1-40:36, the two main agents whose percentage is high are YHWH and Moses; in division Leviticus 1:1-24:23, the two main agents are a priest and the sons of Israel, while in division Leviticus 25:1-27:34 they are YHWH and the sons of Israel, and in division Numbers 1:1-3:13, Moses and the Levites. The different combinations of main agents and the change in their percentage between divisions demonstrate connectivity and separability between divisions.

5.2. Comparison between two divisions

Leviticus is divided into Leviticus 1:1-24:23 and 25:1-27:34, the former being the first major division, the latter being the second major division. To define the function of the first major division, I will compare it with its preceding division, Exodus 12:1-40:36 in terms of agent roles, and to define the function of the second major division, I will compare it with its following division, Numbers 1:1-3:13.¹⁴⁾ Next, I will compare the two major divisions, and then the two sub-divisions, Leviticus 1:1-15:33, 16:1-24:23.

13) The four columns in the upper level include the frequency of each of the four agent roles: the agent role of YHWH, that of Moses, that of Aaron, that of a priest, and that of the Levites. Each of the four cells in the row of the total includes the sum of the frequencies of all the agent roles that occur in each division. There are more types of agent roles in play. The list that includes all types of agent roles which occur in each of the four divisions is too lengthy. To explain how the change in the percentage of shared agent roles indicates separability, I selected only four types of shared agent roles. I omitted the names of the other types of agent roles in the list of each division. In fact, 156 types of agent roles occur in Exo 12:1-40:36, 162 types of agent roles in Lev 1:1-24:23, 41 types of agent roles in Lev 25:1-27:34, and 10 types of agent roles in Num 1:1-3:13. The four columns in the lower level include the relative frequency of each of the four types of agent roles. For example, I divided the frequency 304 of the agent role of YHWH in Exo 12:1-40:36 by the total frequency of all types of agent roles (1,769). The outcome is the relative frequency 0.17 of the agent role of YHWH in Exo 12:1-40:36. The same way resulted in the other relative frequencies in the four columns in the lower level.

14) As the EDSF [**basic divine speech formula + locative phrase**] demarcates the two major divisions in Lev, the same EDSF demarcates the three major divisions of Exo 1:1-4:18, 4:19-11:10, and 12:1-40:38; also, it demarcates the first major division of Num into two sub-divisions, Num 1:1-3:13, 3:14-8:26. Therefore, I compare Exo 12:1-40:38 with Lev 1:1-24:23, and Lev 25:1-27:34 with Num 1:1-3:13. If the comparison results in consistent outcome in which strong separability and weak connectivity happen, the outcome will strengthen the validity of the demarcations by the EDSF. G. Jin, "Investigating Text-hierarchical Structures and Composition of Numbers", 55-60.

5.3. Exodus 12:1-40:38 and Leviticus 1:1-24:23

5.3.1. Types of agent roles and their frequency

Figure 3. The number of types of agent roles and their frequency and percentage

| agent.role.type | Ex.12.1_40.38 | Lv.1.1_24:23 | Ex.12.1_40.38 | Lv.1.1_24:23 |
|----------------------|---------------|--------------|---------------|--------------|
| shared | 8 | 8 | 0.05 | 0.08 |
| unique | 148 | 94 | 0.95 | 0.92 |
| total | 156 | 102 | | |
| agent.role.frequency | Ex.12.1_40.38 | Lv.1.1_24:23 | Ex.12.1_40.38 | Lv.1.1_24:23 |
| shared | 1061 | 393 | 0.60 | 0.52 |
| unique | 708 | 370 | 0.40 | 0.48 |
| total | 1769 | 763 | | |

Here we compare Exodus 12:1-40:38 with Leviticus 1:1-24:23. The two left columns in the upper level include the number of types of shared agent roles that occur in both divisions and those of unique agent roles that occur only in one division. The two right columns in the upper level include their percentage in each division. The two left columns in the lower level include all the frequencies of shared agent roles that occur in both divisions and those of unique agent roles that occur only in one division. The two right columns in the lower level include their percentage.¹⁵⁾

While the two right columns in the upper level indicate a very strong separability and weak connectivity, those in the lower level indicate a stronger connectivity and a weaker separability. The two judgments are contradictory. While each of the two judgments considers the number of shared types or that of unique types and their relative frequencies, plus the frequencies of all the shared agent roles or those of unique agent roles and their relative frequencies, the Jaccard distance considers synthetically the number of shared types or that of unique types, their relative frequencies and the frequencies of all the shared agent roles or those of unique agent roles and their relative frequencies at once,

15) I will omit the description of what the frequencies and percentages in the cells of the upper level and lower level in the table indicate in the following comparisons between other two divisions.

which results in the synthetic judgment. To clarify whether both divisions still show strong separability and weak connectivity, I bring the Jaccard distance between both divisions in the next section 5.3.2.

5.3.2. Jaccard distance

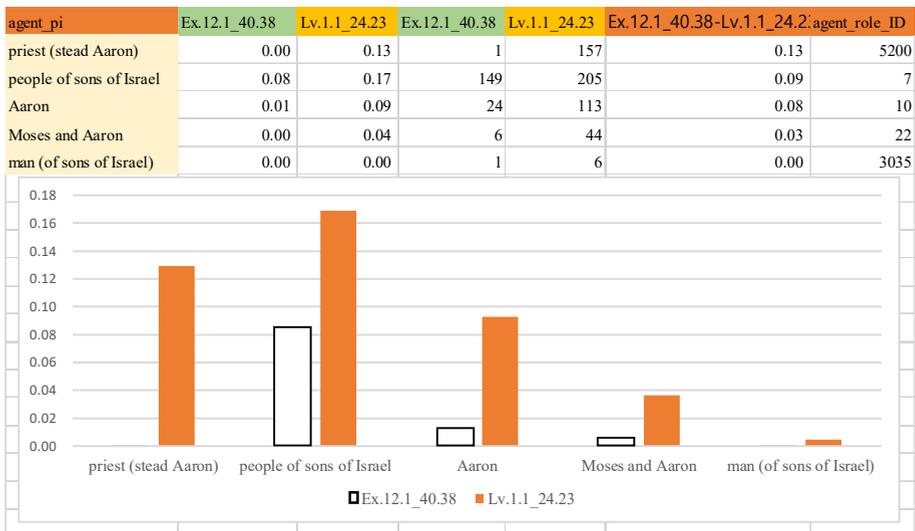
Figure 4. The Jaccard distance between two divisions

| | | |
|---------------|---------------|--------------|
| Jaccard agent | Ex.12.1_40.38 | Lv.1.1_24.23 |
| Lv.1.1_24.23 | 0.87 | 0.00 |

The Jaccard distance between both divisions is 0.87, which indicates a very strong separability between both divisions. The connectivity between them is 0.13 (1-0.87), which indicates very weak connectivity.¹⁶⁾ As a result, the Jaccard distance advocates strong separability and weak connectivity.

5.3.3. Change in the percentage of shared agent roles

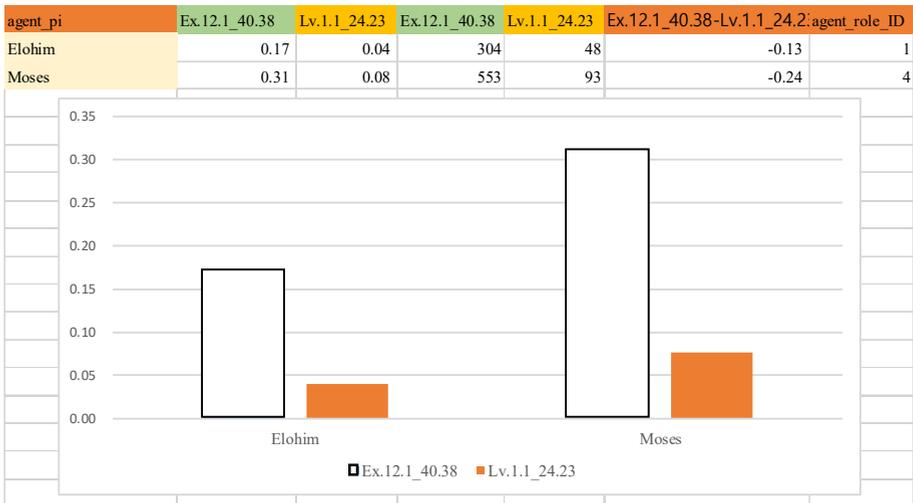
Figure 5. The shared agent roles whose percentage increases



16) The separability in Jaccard distance also indicates the dissimilarity between two divisions in terms of agent roles, while the connectivity in Jaccard distance indicates their similarity.

The table above includes 5 of the 12 shared agent roles whose percentage increases in the latter division. Shared agent roles' activity in the latter division is busier than that in the former division. They are a priest, people of sons of Israel, Aaron, Moses and Aaron, and a man of Israel. While the former shared roles describe mainly making the Tabernacle and the articles of clothing of a priest, the latter shared roles describe what a priest is to execute in the Tabernacle. It indicates the separability of discourse function between both divisions.

Figure 6. The shared agent roles whose percentage decreases



The table above displays the shared agent roles whose percentage decreases in the latter division. Shared agent roles' activity in the latter division is less busy than that in the former division. They are Elohim and Moses. In the former division Elohim fought against pharaoh and his army and commanded making the Tabernacle and its items, while in the latter division Elohim commands the sacrifices that priests are to offer and a portion they are to take, and the laws preventing sexual customs of the Canaanites. While Elohim in the former division plays a dynamic role to redeem Israel and uses them as a tabernacle maker, Elohim in the latter division is static and gives the ritual laws and practical laws to keep purity.

5.3.4. Unique agent roles and their percentage

Figure 7. The unique agent roles that occur only in the former division

| agent_pi | agent_role_ID | Ex.12.1_40.38 | Lv.1.1_24.23 |
|--|---------------|---------------|--------------|
| Bezalel | 35 | 132 | 0 |
| Moses and people of sons of Israel | 19 | 105 | 0 |
| Bezalel, Oholiab and whole men with wise heart | 48 | 95 | 0 |
| whole the wise people | 42 | 72 | 0 |
| whole wise heart | 410 | 17 | 0 |
| men (fight and hit a pregnant woman) | 2893 | 9 | 0 |
| chiefs of the people of Israel | 5241 | 8 | 0 |
| chiefs (of group of thousands and hundreds) | 5244 | 8 | 0 |
| man (strikes the eye of his servant or handmaid) | 3012 | 7 | 0 |
| Jethro | 3175 | 7 | 0 |

The table above displays 10 of the 144 unique agent roles that occur only in the former division relative to the latter division.¹⁷⁾ They are Bezalel, Moses, Israel, Oholiab, whole wise men, chiefs of Israel, Jethro, fat, and all the wise women. They offered their material and made a tabernacle and its items.

Figure 8. The unique agent roles that occur only in the latter division

| agent_pi | agent_role_ID | Ex.12.1_40.38 | Lv.1.1_24.23 |
|---|---------------|---------------|--------------|
| priest (sons of Aaron, high) | 1553 | 0 | 57 |
| person (of sacrifice of peace offering) | 2459 | 0 | 29 |
| diseased person | 4752 | 0 | 19 |
| sons of Aaron (the priest) | 13 | 0 | 17 |
| combination of man and sojourner of Israel | 5099 | 0 | 16 |
| someone (presents an offering to YHWH) | 1847 | 0 | 15 |
| whoever (owns the house of land property of land of Canaan) | 654 | 0 | 14 |
| person (who swears an oath) | 2397 | 0 | 13 |
| one person (ordinary, one, sin, unintentional) | 2588 | 0 | 12 |
| man (who sent the goat away to Azazel) | 2960 | 0 | 12 |

The table above displays 10 of the 150 unique agent roles that occur only in

17) The full list of the unique agent roles in the former division is too lengthy so I display only 10 of all the unique agent roles. I do the same way in the following tables of unique agent roles.

the latter division relative to the former division. They are a priest, a person, the sons of Aaron, a diseased person, a sojourner, who present mainly sacrifices before YHWH.

The unique agent roles in the former division describe the preparation of a tabernacle and its items, while those in the latter division describe the execution of the sacrifices by priests and Israel. The different discourse functions indicate strong separability between both divisions.

5.4. Leviticus 1:1-24:23 and 25:1-27:34

5.4.1. Types of agent roles and their frequency

Figure 9. The number of types of agent roles and their frequency and percentage

| agent.role.type | Lv.1.1_24:23 | Lv.25.1_27.34 | Lv.1.1_24:23 | Lv.25.1_27.34 |
|----------------------|--------------|---------------|--------------|---------------|
| shared | 5 | 5 | 0.03 | 0.12 |
| unique | 157 | 36 | 0.97 | 0.88 |
| total | 162 | 41 | | |
| | | | | |
| agent.role.frequency | Lv.1.1_24:23 | Lv.25.1_27.34 | Lv.1.1_24:23 | Lv.25.1_27.34 |
| shared | 508 | 133 | 0.42 | 0.69 |
| unique | 703 | 61 | 0.58 | 0.31 |
| total | 1211 | 194 | | |

Here we compare Leviticus 1:1-24:23 with 25:1-27:34. The two right columns in the upper level of the table above indicate very strong separability and weak connectivity. On the other hand, the separability and connectivity in each of the two right columns in the lower level contradict each other. The higher relative frequency of unique agent roles in the former division compared to the latter division indicates stronger separability and weaker connectivity; however, in the latter division it goes the other way around. To see whether a synthetic judgment by the Jaccard distance would support strong separability and weak connectivity between both divisions, I bring the Jaccard distance between both divisions in the next section.

5.4.2. Jaccard distance

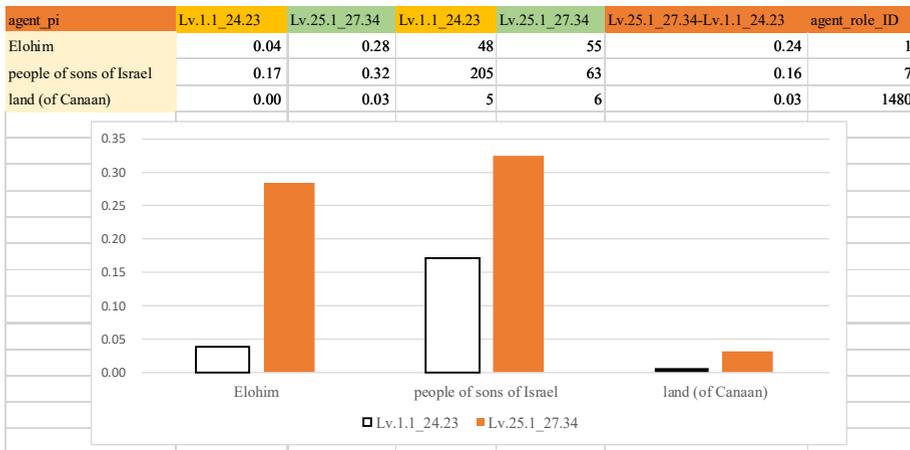
Figure 10. The Jaccard distance between two divisions

| Jaccard_agent | Lv.1.1_24.23 | Lv.25.1_27.34 |
|---------------|--------------|---------------|
| Lv.1.1_24.23 | 0.00 | 0.85 |

The Jaccard distance between both divisions is 0.85, which indicates the very strong separability between both divisions. The connectivity between them is 0.15 (1-0.85), which indicates very weak connectivity. Therefore, the Jaccard distance supports a strong separability and a weak connectivity.

5.4.3. Change in percentage of shared agent roles

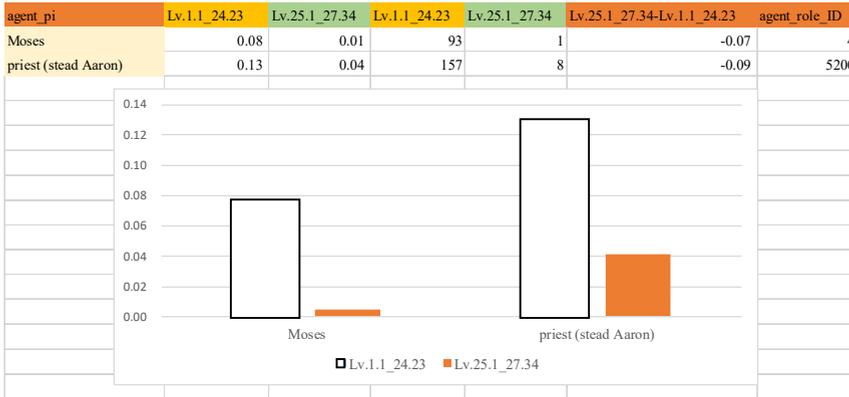
Figure 11. The shared agent roles whose percentage increases



The table above includes the shared agent roles whose percentage increases in the latter division. Their activity is busier in the latter division than in the former division. They are Elohim, sons of Israel, and the land of Canaan. While Elohim in the narrative domain of the former division commands through Moses various commandments relevant to the laws of sacrifices, the laws preventing the sexual customs in the land of Canaan, Elohim in the latter division commands also through Moses the laws of Sabbath, Jubilee, the laws to keep for them to settle in the land of Canaan, and votive offering, occurs in the first person where Elohim works and commands the sons of Israel in the direct speech domain.

While the former describes mainly a static Elohim who gives the ritual laws, the latter describes an active Elohim who works and commands Israel giving feasts and practical laws. The different activities of Elohim and the discourse functions indicate the separability between both divisions.

Figure 12. The shared agent roles whose percentage decreases



The table above displays the shared agent role of a priest whose percentage decreases in the latter division. The activity of Moses and a priest becomes less busy in the latter division. While Moses works to process the ordination of priests in the former division, he delivers just the word of YHWH in the latter division. While a priest helps actively to serve the offerings of the people of Israel in various sacrifices in the former division, his activity is static and judges conversion values and the valuation of land property in the latter division. The different discourse functions and the activity of Moses and a priest between both divisions indicate separability.

5.4.4. Unique agent roles and their percentage

Figure 13. The unique agent roles that occur only in the former division

| agent_pi | agent_role_ID | Lv.1.1_24.23 | Lv.25.1_27.34 |
|---|---------------|--------------|---------------|
| Aaron | 10 | 113 | 0 |
| priest (sons of Aaron, high) | 1553 | 57 | 0 |
| Moses and Aaron | 22 | 44 | 0 |
| person (of sacrifice of peace offering) | 2459 | 29 | 0 |

| agent_pi | agent_role_ID | Lv.1.1_24.23 | Lv.25.1_27.34 |
|---|---------------|--------------|---------------|
| diseased person | 4752 | 19 | 0 |
| Aaron and his sons | 30 | 18 | 0 |
| sons of Aaron (the priest) | 13 | 17 | 0 |
| man and sojourner of Israel | 5099 | 16 | 0 |
| someone (presents an offering to YHWH) | 1847 | 15 | 0 |
| whoever (owns the house of land of land property) | 654 | 14 | 0 |

The table above displays 10 of the 157 unique agent roles that occur only in the former division relative to the latter division. They are Aaron, Moses, high priest, a person, sons of Aaron, a diseased person, and sojourner. They are relevant to the laws of a leprous patient, various sacrifices, and anointment.

Figure 14. The unique agent roles that occur only in the latter division

| agent_pi | agent_role_ID | Lv.1.1_24.23 | Lv.25.1_27.34 |
|---|---------------|--------------|---------------|
| man (consecrates land property to YHWH) | 3088 | 0 | 7 |
| people (who remain among Israel) | 2487 | 0 | 4 |
| man (consecrates his house to YHWH) | 3091 | 0 | 4 |
| wild animal (of open field) | 380 | 0 | 3 |
| enemies (of sons of Israel) | 4625 | 0 | 2 |
| ten (women) | 1635 | 0 | 2 |
| sound (of leaf) | 1780 | 0 | 2 |
| soul (of YHWH) | 1788 | 0 | 2 |
| person (who made the vow) | 2408 | 0 | 2 |
| owner (of herd or flock pass under the rod) | 2550 | 0 | 2 |

The table above displays 10 of the 36 unique agent roles that occur only in the latter division relative to the former division. They are a man, a person, an owner, horror, consumption, fever, and wild animal.

While the unique agent roles in the former division describe mainly the works of Moses, Aaron, the sons of Aaron, and the high priest, those in the latter division occur mainly in the exemplifications of various laws. The different discourse functions indicate strong separability between both divisions.

5.5. Leviticus 1:1-15:33 and 16:1-24:23

5.5.1. Types of agent roles and their frequency

Figure 15. The number of types of agent roles and their frequency and percentage

| agent.role.type | Lv.1.1_15:33 | Lv.16.1_24:23 | Lv.1.1_15:33 | 16.1_24:23 |
|----------------------|--------------|---------------|--------------|------------|
| shared | 9 | 9 | 0.09 | 0.13 |
| unique | 93 | 60 | 0.91 | 0.87 |
| total | 102 | 69 | | |
| agent.role.frequency | Lv.1.1_15:33 | Lv.16.1_24:23 | Lv.1.1_15:33 | 16.1_24:23 |
| shared | 399 | 308 | 0.52 | 0.69 |
| unique | 364 | 140 | 0.48 | 0.31 |
| total | 763 | 448 | | |

Here we compare Leviticus 1:1-15:33 with 16:1-24:23, both of which are demarcated. As for the table above, the two right columns in the upper level indicate very strong separability and weak connectivity. On the other hand, the two right columns in the lower level of the table above indicate very strong connectivity and weak separability. The relationship between separability and connectivity in each of the two right columns in the upper level and lower level is contradictory. To have the synthetic judgment and to clarify whether both divisions show separability and weak connectivity, I calculate the Jaccard distance between both divisions.

5.5.2. Jaccard distance

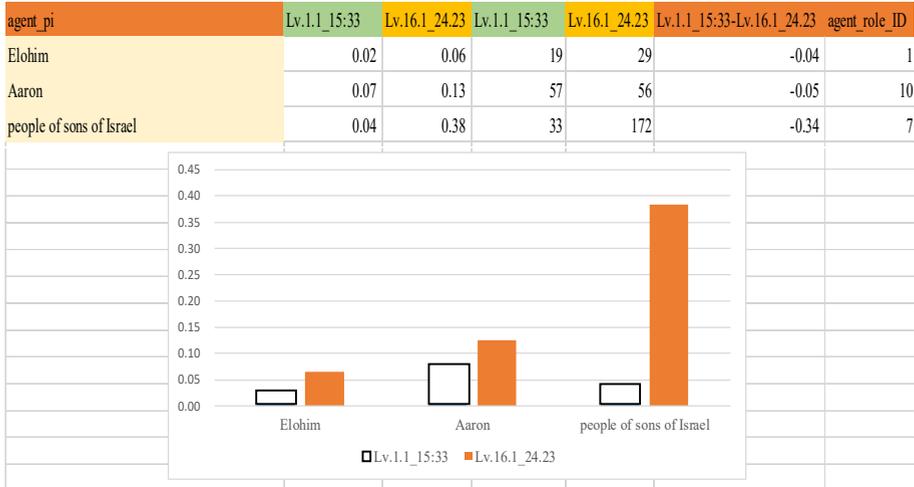
Figure 16. The Jaccard distance between two divisions

| Jaccard_agent | Lv.1.1_15:33 | Lv.16.1_24:23 |
|---------------|--------------|---------------|
| Lv.1.1_15:33 | 0.00 | 0.85 |

The Jaccard distance between both divisions is 0.85, which indicates a very strong separability between both divisions. The connectivity between them is 0.15 (1-0.85), which indicates a very weak connectivity. Therefore, the Jaccard distance supports strong separability and weak connectivity.

5.5.3. Change in percentage of shared agent roles

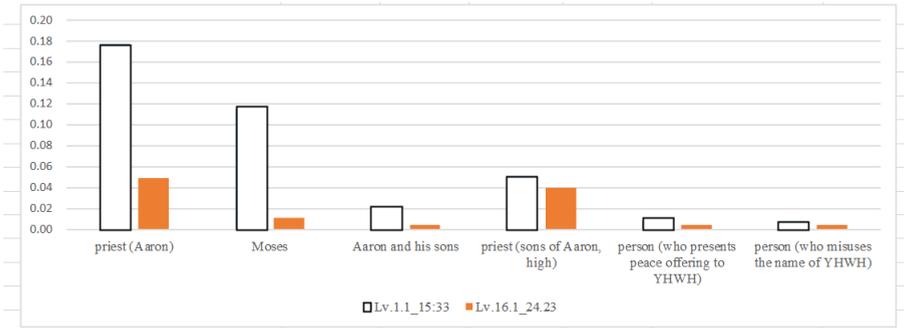
Figure 17. The shared agent roles whose percentage increases



The table above displays 3 shared agent roles whose percentage increases in the latter division. Their activity becomes dynamic in the latter division. They are Elohim, Aaron, and the sons of Israel. While Aaron gets the commandment to execute sacrifices and gets ordained, his activity is static in the former division, he is busy offering burnt offerings and sin offering to send Azazel into the desert in the latter division. Israel offers their offerings before YHWH in the former division, while they become busy, get the warning not to follow the sexual customs in the land of Canaan, get the commandment to execute the feasts, and offer votive offerings before YHWH in the latter division.

Figure 18. The shared agent roles whose percentage decreases

| agent_pi | Lv.1.1_15:33 | Lv.16.1_24:23 | Lv.1.1_15:33 | Lv.16.1_24:23 | Lv.1.1_15:33-Lv.16.1_24:23 | agent_role_ID |
|--|--------------|---------------|--------------|---------------|----------------------------|---------------|
| priest (Aaron) | 0.18 | 0.05 | 135 | 22 | 0.13 | 5200 |
| Moses | 0.12 | 0.01 | 88 | 5 | 0.10 | 4 |
| Aaron and his sons | 0.02 | 0.00 | 16 | 2 | 0.02 | 30 |
| priest (sons of Aaron, high) | 0.05 | 0.04 | 39 | 18 | 0.01 | 1553 |
| person (who presents peace offering to YHWH) | 0.01 | 0.00 | 6 | 2 | 0.00 | 2405 |
| person (who misuses the name of YHWH) | 0.01 | 0.00 | 6 | 2 | 0.00 | 2406 |



The table above displays the shared agent roles whose percentage decreases in the latter division. Their activity becomes less busy in the latter division. They are the high priest, Aaron and his sons, Moses, a priest, and a person. The activity of priests becomes less busy, while the activity of Israel becomes busier than in the former division. While the former division describes mainly the works of Aaron, the latter division emphasized the duty of Israel not to follow the evil customs in the land of Canaan. Moses is busy executing the ordination of Aaron and his sons in the former division, while he is static and delivers the laws of YHWH to Israel. The different activities of priests, Moses, and different discourse functions indicate the separability between both divisions.

5.5.4. Unique agent roles and their percentage

Figure 19. The unique agent roles that occur only in the former division

| agent_pi | Lv.1.1_15:33 | Lv.16.1_24:23 | agent_role_ID |
|---|--------------|---------------|---------------|
| Moses and Aaron | 44 | 0 | 22 |
| person (of sacrifice of peace offering) | 29 | 0 | 2459 |
| diseased person | 19 | 0 | 4752 |
| sons of Aaron (the priest) | 17 | 0 | 13 |
| someone (presents an offering to YHWH) | 15 | 0 | 1847 |
| whoever (owns the house of land of land property) | 14 | 0 | 654 |
| person (who swears an oath) | 13 | 0 | 2397 |
| one person (ordinary, one, sin, unintentional) | 12 | 0 | 2588 |
| man (head of him is bare) | 9 | 0 | 3072 |
| woman (with menstruation) | 8 | 0 | 332 |

The table above displays 10 of the 93 unique agent roles that occur only in the

latter division relative to the former division. They are Moses and Aaron, a person, the sons of Aaron, a diseased person, someone, a man, and a woman. They offer sacrifices, and are relevant to the laws of purification.

Figure 20. The unique agent roles that occur only in the latter division

| agent_pi | Lv.1.1_15:33 | Lv.16.1_24.23 | agent_role_ID |
|---|--------------|---------------|---------------|
| man and sojourner of Israel | 0 | 16 | 5099 |
| man (who sent the goat away to Azazel) | 0 | 12 | 2960 |
| man (has sexual intercourse with his sister) | 0 | 6 | 3074 |
| descendants (of Aaron) | 0 | 6 | 4781 |
| man (of sons of Israle) | 0 | 6 | 3035 |
| whole soul (who eats corpse died naturally, torn by beasts) | 0 | 5 | 425 |
| man (who curses his father and mother) | 0 | 5 | 2998 |
| man (of house of Israel) or sojourner | 0 | 5 | 3055 |
| land (of Canaan) | 0 | 5 | 1480 |
| sojourner (Israel) | 0 | 3 | 1866 |

The table above displays 10 of the 60 unique agent roles that occur only in the latter division relative to the former division. They are a man, a sojourner, and the descendants of Aaron, who are relevant to the laws preventing sexual customs in the land of Canaan.

While the unique agent roles in the former division are relevant to various sacrifices, and to the laws of purification, those in the latter division are relevant to atonement, holy offering, feasts, and the laws preventing sexual customs in the land of Canaan. The different discourse functions between both divisions indicate strong separability.

5.6. Leviticus 25:1-27:34 and Numbers 1:1-3:13

5.6.1. Types of agent roles and their frequency

Here we compare Leviticus 25:1-27:34 with Numbers 1:1-3:13. The two right columns in both the upper level and lower level of the table below indicate a very strong separability and a weak connectivity between the divisions. We check the Jaccard distance between both divisions to see whether it also supports the hypothesis.

Figure 21. The number of types of agent roles and their frequency and percentage

| agent.role.type | Lv.25.1_27.34 | Nu.1.1_3.13 | Lv.25.1_27.34 | Nu.1.1_3.13 |
|-----------------|---------------|-------------|---------------|-------------|
| shared | 2 | 2 | 0.05 | 0.20 |
| unique | 39 | 8 | 0.95 | 0.80 |
| total | 41 | 10 | | |

| agent.role.frequency | Lv.25.1_27.34 | Nu.1.1_3.13 | Lv.25.1_27.34 | Nu.1.1_3.13 |
|----------------------|---------------|-------------|---------------|-------------|
| shared | 35 | 2 | 0.20 | 0.08 |
| unique | 138 | 24 | 0.80 | 0.92 |
| total | 173 | 26 | | |

5.6.2. Jaccard distance

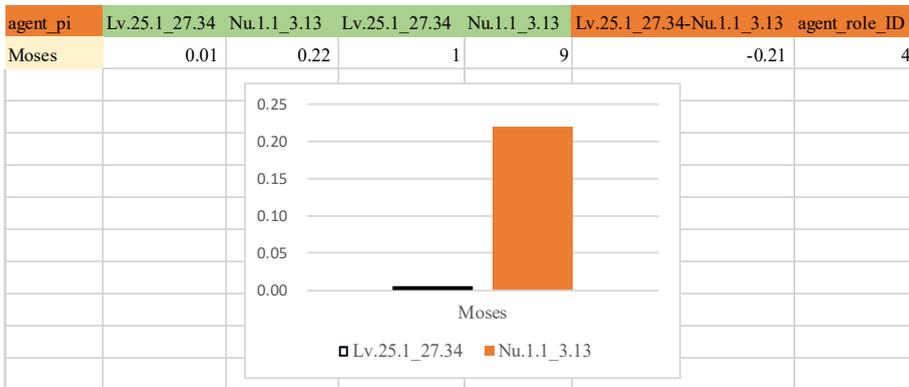
Figure 22. The Jaccard distance between two divisions

| Jaccard_agent | Lv.25.1_27.34 | Nu.1.1_3.13 |
|---------------|---------------|-------------|
| Lv.25.1_27.34 | 0.00 | 0.89 |

The Jaccard distance between both divisions is 0.89, which indicates a very strong separability and a very weak connectivity between both divisions. Likewise, the Jaccard distance advocates strong separability and weak connectivity.

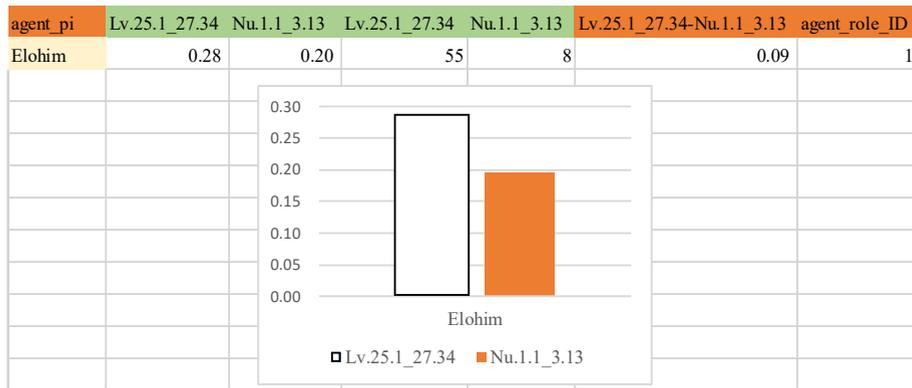
5.6.3. Change in percentage of shared agent roles

Figure 23. The shared agent roles whose percentage increases



The table above displays 1 shared agent role whose percentage increases in the latter division. While Moses stands a poor person in a direct speech domain, Moses in the latter division executes a census, presents the Levites to Aaron and his sons, and becomes active in a narrative domain. The different activities of Moses and the discourse functions between both divisions indicate separability.

Figure 24. The shared agent roles whose percentage decreases



The table above displays 1 shared agent role whose percentage decreases in the latter division. While Elohim commands many commandments to settle in the land of Canaan and works actively as an agent in the first person in the former division, Elohim in the latter division is static and commands the census to Moses in a narrative domain. The different activities of YHWH and the discourse functions between both divisions indicate separability.

5.6.4. Unique agent roles and their percentage

Figure 25. The unique agent roles that occur only in the former division

| agent_pi | Lv.25.1_27.34 | Nu.1.1_3.13 | agent_role_ID |
|---|---------------|-------------|---------------|
| people of sons of Israel | 63 | 0 | 7 |
| priest (stead Aaron) | 8 | 0 | 5200 |
| man (consecrates land property to YHWH) | 7 | 0 | 3088 |
| land (of Canaan) | 6 | 0 | 1480 |
| people (who remain among Israel) | 4 | 0 | 2487 |

| agent_pi | Lv.25.1_27.34 | Nu.1.1_3.13 | agent_role_ID |
|-------------------------------------|---------------|-------------|---------------|
| man (consecrates his house to YHWH) | 4 | 0 | 3091 |
| wild animal (of open field) | 3 | 0 | 380 |
| enemies (of sons of Israel) | 2 | 0 | 4625 |
| ten (women) | 2 | 0 | 1635 |
| sound (of leaf) | 2 | 0 | 1780 |

The table above displays 10 of the 39 unique agent roles that occur only in the former division relative to the latter division. They are the sons of Israel, a priest, a man, the land of Canaan, the people who remain, and wild animal, who occur in the exemplifications explaining the laws to settle in the land of Canaan.

Figure 26. The unique agent roles that occur only in the latter division

| agent_pi | Lv.25.1_27.34 | Nu.1.1_3.13 | agent_role_ID |
|--------------------------------------|---------------|-------------|---------------|
| whole sons of Levi | 0 | 13 | 51 |
| Moses and Aaron | 0 | 4 | 22 |
| Moses, Aaron and chiefs of gathering | 0 | 2 | 5069 |
| Aaron | 0 | 1 | 10 |
| Aaron and his sons | 0 | 1 | 30 |
| Nadab and Abihu | 0 | 1 | 5048 |
| men (going out war) | 0 | 1 | 2892 |
| male (going out war) | 0 | 1 | 3110 |

The table above displays 8 unique agent roles that occur only in the latter division relative to the former division. They are all sons of Levi, Moses, and Aaron, the heads of tribes of Israel, and men going out to war, who are relevant to a census.

While the unique agent roles in the former division describe the laws not to be expelled from the land of Canaan, those in the latter division describe the census to prepare a war and marching. The different discourse functions indicate strong separability between both divisions.

In section 5 so far, I compared the last division of Exodus with the first division of Leviticus, the two major divisions in Leviticus, and the last division of Leviticus and the first division in Numbers, and two sub-divisions in the first

division of Leviticus. In all the comparisons, Jaccard distances supported that both divisions showed strong separability and weak connectivity in terms of agent roles. The outcome validates the demarcations by the EDSF [**divine speech formula + locative phrase or time phrase**].

6. Discussion with the demarcations of scholars

Here I introduce the demarcations of scholars who proposed their outlines of Exodus, Leviticus, and Numbers, compare them with my demarcations in Exodus 12:1, Leviticus 1:1, 16:1, and 25:1, and explain the possible disadvantages, although I acknowledged the value of their demarcations.¹⁸⁾

6.1. Exodus 12:1-40:38

6.1.1. Exodus 12:1 as a beginning of a division

Samuel R. Driver considers Exodus 12:1-18:27 as the second division in Exodus.¹⁹⁾ He demarcates Exodus into 3 divisions, “Events leading to the deliverance of the Israelites from Egypt” (1:1-11:10), “The departure of the Israelites from Egypt, and their journey as far as Rephidim” (12:1-13:22), and “Israel at Sinai” (19:1-40:38). I agree with his demarcation in 12:1 but I do not agree when he reckons Exodus 4:19 as a part of the first division 1:1-11:10. Rather I argue that 4:19 opens the second major division. He reckons that 19:1 opens the third major division, while I argue that it opens an embedded division under 12:1.

Cornelis Houtman considers Exodus 12:1-13:16 as the ninth division, “Pharaoh gives in the people leave”, in Exodus.²⁰⁾ In my view, giving more focus to the work of YHWH who allows Israel to go out of Egypt would be better rather than giving more focus to the work of pharaoh.

Brevard S. Childs also considers Exodus 12:1-13:16 as one textual unit, the

18) I described the discussion on Num 3:14 in the paper. See G. Jin, “Analysis of Participants in the First Major Division of Numbers”, 42-44.

19) S. R. Driver, *The Book of Exodus* (New York: Cambridge University Press, 1911), 9.

20) C. Houtman, *Historical Commentary on the Old Testament, Exodus* (Kampen: Kok Publishing house, 1993), 137. He demarcates Exo into 19 divisions.

eighth division, “Passover and Exodus”, in Exodus.²¹⁾ He did not use a macro-structure in Exodus, rather enumerated linearly 24 divisions. Ronald E. Clements considers that Exodus 12:1-36 as the 22th division, “The institution of the Passover”, among the enumerated 69 divisions.²²⁾ Joseph T. Lienhard considers Exodus 12:1-20 as the 28th division, “The Passover ritual prescribed”, among the enumerated 94 divisions.²³⁾ George A. Ghadwick and P. J. Clyde Randall use for Exodus 12:1-51 as one textual unit.²⁴⁾ They simply followed the divisions by chapter. In response to them, I argue for 12:1 as the start of the third major division.

6.1.2. Exodus 12:1 in the middle of a division

Umberto Cassuto considers Exodus 1:1-17:16 as the first part, “Bondage and Liberation”, in Exodus.²⁵⁾ Carol Meyers considers Exodus 1:1-15:21 as the first major division, “Israel in Egypt”, in Exodus. I agree generally with their thematic demarcations, but I propose demarcation by the EDSF.

There are also thematic demarcations which I cannot agree with. First, James G. Murphy considers Exodus 11:1-12:51 as the fourth section, “The Moral Law, The Civil Law”, in Exodus.²⁶⁾ I do not think Exodus 11:1-10 describes a moral law, rather it describes the preparation of Israel before going out of Egypt. Exodus 12:1-51 describes the Passover, rather than a civil law.

Richard G. Moulton considers Exodus 8:1-19:25 as the fourth division, “Ordinance: The Passover and the First-born”, in Exodus.²⁷⁾ However, his

21) B. S. Childs, *The Book of Exodus* (Philadelphia: The Westminster Press, 1976), 178. He demarcates Exo into 24 divisions.

22) R. E. Clements, *Exodus* (New York: Cambridge University Press, 1972), 66-73.

23) J. T. Lienhard, ed., *Ancient Christian Commentary on Scripture III, Exodus, Leviticus, Numbers, Deuteronomy* (Illinois: InterVarsity Press, 2001), 79.

24) G. A. Chadwick, *The Book of Exodus* (New York: A. C. Armstrong and Son, 1899); P. J. C. Randall, *The Exodus* (Pittsburgh: Peoples Printing Company, 1919).

25) U. Cassuto, *A Commentary on the Book of Exodus* (Jerusalem: The Hebrew University Magnes Press, 1997), 7, 136, 211, 319. He demarcates Exo into three parts, “Bondage and Liberation” (1:1-17:16), “The torah and its precepts” (18:1-24:18), “The tabernacle and its service” (25:1-40:38).

26) J. G. Murphy, *A Critical and Exegetical Commentary* (New York: I.K.Funk&Co., Publishers, 1881), 13. He demarcates Exo into five sections, “Bondage in Egypt” (1:1-4:31), “The Ten Plagues” (5:1-8:32), “The Exodus” (9:1-10:29), “The Lawgiving” (11:1-12:51), and “The Tabernacle” (13:1-40:38).

27) R. G. Moulton, *The Exodus* (London: Macmillan, 1896), 307. He splits Exo into 9 divisions,

thematic definition is too general to cover the contents in the section, which includes the attacks of YHWH against pharaoh, the Passover, going out of Egypt, the story of manna, the marching in the desert of Sinai and reaching the mount of Sinai.

John Peter Lange considers Exodus 1:1-18:27 as the first division, "Moses and Pharaoh", in Exodus.²⁸⁾ His thematic demarcations seem reasonable, but they emphasize the participants Moses and Pharaoh more than YHWH. Rather I argue that 12:1 opens the third major division and gives more focus to the Passover which emphasizes that YHWH brings Israel out of Egypt Himself by His sacrifice and power, not by Israel's power. I think the demarcations by the EDSF lead readers to concentrate on the authority, power, and love of YHWH to His people.

6.2. Leviticus 1:1-24:23 (Lev 1:1-15:33 and 16:1-24:23)

6.2.1. The beginning of the second major division before Leviticus 25:1

Gary A. Rendsburg considers Leviticus 1:1-17:16 as the first major division "The outer court".²⁹⁾ He demarcates the divisions in Leviticus depending on the change of places. However, his distinguishment seems too general to cover the contents in the division. The impurified food in Leviticus 11 and the laws relevant to leprous disease in 13-14 do not fit his definition. I also think demarcating 1:1-15:33 and 16:1-24:23 as two sub-divisions of the first major division helps to see the transition from the sacrifices by priests to the atonement by Aaron, the holiness of Israel.

John H. Walton considers the first major division as "Divine Equilibrium"

"Census: The sons of Israel that came into Egypt" (1:1-4:31), "Genealogy" (5:1-6:30), "Ordinance of the Passover" (7:1-25), "Ordinance: The Passover and the First-born" (8:1-19:25), "Law of the Ten Commandments from Sinai" (20:1-26), "The Book of the Covenant"(21:1-24:18), "Specification of the Tabernacle and its Service" (25:1-31:18), "Covenant of the Second Table" (32:1-34:35), "Specification of the Building of the Tabernacle" (35:1-40:38).

28) J. P. Lange, *The Second Book of Moses* (New York: Scribner, Armstrong & Co, 1876), 1, 67, 129, 148. He uses the divisions in Exo as "Moses and Pharaoh" (1:1-18:28), "Moses and Sinai" (19:1-31:18), "The legislation" (32:1-34:35), and "The building of the tabernacle"(35:1-40:38).

29) G. A. Rensburg, "The Inclusion in Leviticus XI", *Vetus Testamentum* 43 (1993): 418-421. He demarcates Lev into three major divisions, "The outer court" (1:1-17:16), "Sanctuary" (18:1-24:23), "The Holy of holies" (25:1-27:34).

(1:1-23:44), the second major division as “Human Equilibrium” (24:1-27:34).³⁰ He splits the first major division into three sub-divisions, “Equilibrium of Sacred Space” (1:1-17:16), “Equilibrium of Sacred Statues” (18:1-22:33), and “Equilibrium of Sacred Times” (23:1-44). I agree generally with his thematic demarcation, however, I argue to demarcate two major divisions by the EDSF.

Gordon J. Wenham defends the first three major divisions, “Laws on Sacrifice” (1:1-7:38), “Institution of the Priesthood” (8:1-10:20), and “Uncleanness and its Treatment” (11:1-16:34).³¹ I agree generally with his thematic demarcations. On the other hand, seeing Leviticus 1:1-24:23, 25:1-27:34 as two major divisions helps a reader to see the transition from the laws that priests must keep from now on to the laws that Israel must keep in the

30) J. H. Walton, “Equilibrium and the Sacred Compass: The Structure of Leviticus”, *BBR* 11:2 (2001), 293-304.

31) G. J. Wenham, *The Book of Leviticus* (Grand Rapids: Eerdmans, 1979), 4. He demarcates Lev into four major divisions, “Laws on Sacrifice” (1:1-7:38), “Institution of the Priesthood” (8:1-10:20), “Uncleanness and its Treatment” (11:1-16:34), and “Prescriptions for Practical Holiness” (17:1-27:34). A. T. Chapman, *The Book of Leviticus* (Cambridge: The University Press, 1914), 10. A. T. Chapman uses the first three major divisions, “The Laws of sacrifice” (1:1-7:38), “The inauguration of the worship” (8:1-10:20), and “Rules of purification” (11:1-16:34). N. Micklem, *Leviticus*, *The Interpreter’s Bible* (Nashville: Abingdon Press, 1953), 3. N. Micklem demarcates Lev into five divisions, 1-7, 8-10, 11-15, 16, 17-26. R. G. Moulton, *The Literary Study of the Bible* (Charleston: Nabu Press, 2011), 309. R. G. Moulton uses the first three major divisions, “Laws and Ritual of Oblations” (1:1-7:38), “Law of the Consecration of Priests” (8:1-10:20), “Law of Purification and Atonement” (11:1-16:34). G. Bush, *Notes, Critical and Practical, on the Book of Leviticus* (New York: Ivson & Phinney, 1857), 4-5. G. Bush uses the first five divisions, “Laws concerning sacrifices” (1:1-7:38), “Institution of the Priesthood” (8:1-10:20), “Distinction of clean and unclean animals” (11:1-47), “Laws concerning purification” (12:1-15:33), and “Various regulations” (16:1-22:33). J. E. Hartley, *Leviticus*, *WBC* (Texas: Word Books, Publisher, 1992), 29-30. He demarcates the first five divisions, “Regulations for sacrifices” (1:1-7:38), “Ordination of Aaron as high priest and his sons as priests” (8:1-10:20), “Laws on ritual purity” (11:1-15:33), and “Regulations and calendar for the day of atonement” (16:1-34). C. C. Roach, “XII. The Book of Leviticus”, *Interpretation: A Journal of Bible and Theology* (1950), 458-466. He demarcates the first five divisions, “The Laws of Sacrifice” (1:1-7:38), “The consecration of Aaron and his sons” (8:1-10:20), “Laws of clean and unclean” (11:1-15:33), and “The day of atonement” (16:1-34). M. F. Rooker, *Leviticus*, *The New American Commentary* (Nashville: Broadman & Holman Publishers, 2000), 27. He demarcates the first five divisions, “Laws concerning offerings and sacrifices” (1:1-7:38), “The institution of the priesthood” (8:1-10:20), “Laws of purity” (11:1-15:33), and “Day of atonement” (16:1-34). J. Milgrom, *The Anchor Bible, Leviticus 17-22* (New York: Doubleday, 2000), 1267-1295. He demarcates the first three divisions, “The Sacrificial System” (1:1-7:38), “The inauguration of the Cult” (8:1-10:20), “The Impurity System” (11:1-16:34).

land of Canaan.

Peter R. Schlicht demarcates the first six divisions, “Juridical with embedded Procedural” (1:1-7:38), “Narrative” (8:1-10:20), “Juridical with embedded Procedural” (11:1-15:33), “Narrative / Procedural” (16:1-34), “Juridical (Generally)” (17:1-24:9), and “Narrative with embedded Juridical” (24:10-23).³²⁾ It is interesting to see he demarcates the textual units based on the two genres. On the other hand, I propose considering the linguistic system in Leviticus first, and give the second weight to the difference of genres.

Moshe Kline demarcates the first seven divisions: “The sacrificial system – all periscope rows triads” (1:1-7:38), “all pericope rows dyads” (9:1-12:8), “Impurities and purification” (13:1-15:33), “all pericope rows triads” (16:1-18:30), “Focal Unit: Holiness” (19:1-37), “all pericope rows triads” (20:1-22:25), and “all pericope rows dyads” (22:26-24:23).³³⁾ He considers that mechanically a group of three chapters composes a division. However, the three chapters in a division do not seem to have a thematic relevance, nor gives he a title to cover the contents of the three chapters.

Lienhard considers Leviticus 23:26-24:23 as the 42nd section, “The day of atonement, the feast of booths, the sanctuary light and the showbread: punishment of blasphemy”, among 47 enumerated sections.³⁴⁾ He does not seem to find the development of discourse functions between the sections; apparently he tried only to define a theme in each section, and thinks each section is enumerated.

Mary Douglas considers Leviticus 10:1-20, “the Holy Place defiled”, corresponds to 24:1-23, “the Name defiled”.³⁵⁾ Her general composition of

32) P. R. Schlicht, *The Cambridge Bible Commentary on the New English Bible Leviticus* (New York: Cambridge University Press, 1976), 167.

33) M. Kline, “The Literary Structure of Leviticus”, *The Biblical Historian* 2:1 (2006), 11-28.

34) J. T. Lienhard, ed., *Ancient Christian Commentary on Scripture III, Exodus, Leviticus, Numbers, Deuteronomy*, 209.

35) M. Douglas, “The Forbidden Animals in Leviticus”, *JSOT* 59 (1993), 3-23. She proposes a ring composition of Lev, in which two divisions correspond to each other as follows: Lev 1:1-9:24 “things and persons consecrated to the Lord” with 25:1-55 “things and persons belonging to the Lord”, 11:1-15:33 “blemish, leprosy” with 21:1-22:25 “blemish, leprosy”, 16:1-34 “atonement for Tabernacle” with 23:1-44 “holy times, Day of Atonement”, 18:1-30 “regulation of sex; Molech” with 20:1-27 “regulation of sex; Molech”, 19:1-37 “mid-turn: equity between the people” with 26:1-46 “ending: equity between God and people”. Two divisions do not have a match: 17:1-16 “bridge: summary”, 27:1-34 “latch: redeeming things and persons consecrated or belonging to the Lord”.

Leviticus is creative but she does not match Leviticus 17:1-16 or 27:1-34 with a textual unit. These weaken the validity of her ring structure.

Wilfried Warning considers Leviticus 1:1-3:17 as the first unit in Leviticus.³⁶⁾ He studied the possibility of a Hebrew word that can demarcate a textual unit. He proposes interesting structures in Leviticus but they do not integrate one macro-structure, rather each of them exists as a fragmented proposal.

6.3. Leviticus 25:1-27:34

6.3.1. Leviticus 25:1 as a beginning of a division

Rendsburg considers Leviticus 25:1-27:34 as the third major division “The Holy of Holies”.³⁷⁾ His demarcation in the third division corresponds to my division. On the other hand, his thematic definition does not cover the contents of the feasts, the Sabbath, and the practical laws relevant to settle in the land of Canaan in the division.

Schlicht demarcates the last division, “Juridical Generally” (25:1-27:34).³⁸⁾ I agree with his thematic definition, while I do not agree as he demarcates the textual units in Leviticus according to two different genres.

Kline demarcates the last division, “Redemption” (25:1-27:34).³⁹⁾ I do not agree with his thematic definition in the division, because the laws of vow, practical laws to settle in the land of Canaan, and the laws of assessment do not fit the definition.

Lienhard considers Leviticus 25:1-7 as the 43rd section, “The sabbatical year”, 25:8-24 as the 44th section, “The jubilee year”, among 47 enumerated sections.⁴⁰⁾ I propose to find the development of discourse functions between the 47 sections.

Douglas considers that Leviticus 1:1-9:24, “things and persons consecrated to the Lord”, corresponds to 25:1-55, “things and persons belonging to the

36) W. Warning, “The Contribution of Terminological Patterns to the Literary Structure of Leviticus”, Ph.D. Dissertation (Andrews University, 1997), 230. He demarcates the textual units based on the number seven as 1:1-3:17, 8:1-10:7, 14:1-57, 27:1-34, 6:1-7:38, 8:1-10:7, 10:8-20, 14:1-57, 13:1-14:57, 19:1-37, 20:1-27, 22:1-33, and 23:1-44.

37) G. A. Rendsburg, “The Inclusion in Leviticus XI”, 418-421.

38) P. R. Schlicht, *The Cambridge Bible Commentary on the New English Bible Leviticus*, 167.

39) M. Kline, “The Literary Structure of Leviticus”, 11-28.

40) J. T. Lienhard, *Ancient Christian Commentary on Scripture III, Exodus, Leviticus, Numbers, Deuteronomy*, 185-219.

Lord".⁴¹⁾ Her thematic definition between two sections apparently more or less correspond but it does not include the laws that priest would take parts of the sacrifices that a person of Israel would offer before YHWH in Leviticus 7:10, 14, 34-36.

Samuel H. Kellogg and Ibn Ezra demarcate Leviticus by a chapter's division. I propose to detect a linguistic sign that indicates a demarcation rather than following chapter's division first.

Warning considers Leviticus 25:1-26:46 as the tenth unit in Leviticus.⁴²⁾ He considers a macrostructure of Leviticus in which many textual units are omitted. It is hard to follow the incomplete form of his structure.

6.3.2. Leviticus 25:1 as a part of a preceding division

Wenham considers Leviticus 17:1-27:34 as the fourth major division "Prescriptions for Practical Holiness".⁴³⁾ I think his thematic definition is too general to cover the contents in the division, in which the laws of the feasts and the Sabbath do not fit.

Arthur Thomas Chapman considers the last two major divisions, "The Laws of Holiness" (17:1-26:46), "A supplementary chapter dealing with vows and their redemption" (27:1-34).⁴⁴⁾ I think his thematic definition is too general to cover "the laws of vows" in 22:1-33, "the feasts" in 23:1-44, "The lamp and the breads of the sanctuary" in 24:1-23, "Sabbath" in 25:1-55, "blessing and warning" in 26:1-46. I also do not think Leviticus 27:1-34 is a supplementary

41) M. Douglas, "The Forbidden Animals in Leviticus", 3-23.

42) W. Warning, "The Contribution of Terminological Patterns to the Literary Structure of Leviticus", 231-232. He demarcates the textual units as a chiasmic structure as well: 4:1-5:19, 6:1-7:38, 14:1-57, 16:1-34, 23:1-44, 24:1-23, 27:1-34, 25:1-26:46, and 26:1-46.

43) G. J. Wenham, *The Book of Leviticus*, 4.

44) A. T. Chapman, *The Book of Leviticus*, 10. C. R. Smith, "The Literary Structure of Leviticus", *JSOT* 70 (1996), 17-32. C. R. Smith uses Lev 17:1-26:46 as one textual unit "Holiness code". R. G. Moulton, *The Literary Study of the Bible*, 309. R. G. Moulton uses the last two major divisions, "The Covenant of Holiness" (17:1-26:46), "Law of Vows and Tithes" (27:1-34). J. E. Hartley, *Leviticus*, 29-30. He demarcates the last two divisions in Lev into "Laws on holy living" (17:1-26:46), "Laws on Tithes and offerings" (27:1-34). C. C. Roach, "XII. The Book of Leviticus", 458-466. He demarcates the last two divisions, "Holiness legislation" (17:1-26:46), "Appendix" (27:1-34). M. F. Rooker, *The New American Commentary, Leviticus, Volume 3A*, 27. He demarcates the last two divisions, "Laws of Holiness" (17:1-26:46), "Vows and Tithes" (27:1-34). J. Milgrom, *The Anchor Bible, Leviticus 17-22*, 1295. He uses 17:1-27:34 as "The Holiness Source".

chapter. Rather, it also describes the laws that Israel must keep in the land of Canaan to settle there. I recommend to see the participants the sons of Israel as main players in Leviticus 25:1-27:34, while the participant Aaron is the main player in 16:1-24:23.

George Bush considers as the last division, “Laws concerning the festivals, vows, and tithes” (23:1-27:34).⁴⁵⁾ He thinks the three laws are enumerated but I argue the laws in 16:1-24:23 describe the laws that Israel must keep not to be expelled from the land of Canaan, while the laws in 25:1-27:34 describe the laws that Israel must keep to settle in the land of Canaan.

Walton considers the second major division as “Human Equilibrium” (24:1-27:34).⁴⁶⁾ He demarcates Leviticus 24:1-27:34 into five sub-divisions, “Human Equilibrium in sacred space” (the first half of chapter 24), “Human Equilibrium in status in the camp” (the second half of chapter 24), “Human Equilibrium in setting times outside the camp” (25:1-55), “Establishing or disrupting equilibrium across the zones” (26:1-46), and “Sacred objects vowed to the Lord (movement through zones)” (27:1-34). I think his definitions of the five sections are reasonable. On the other hand, I argue to separate Leviticus 24:1-23 from 25:1-27:34.

6.3.3. Leviticus 25:1 as the end of a preceding division

Leigh M. Trevaskis considers Leviticus 23:1-25:55 as one textual unit.⁴⁷⁾ He considers the symbolic dimension in 24:1-9, the cultic ideal of holiness to the Israelite community which dwells within the camp in 24:10-23 are the clues to tie 24:1-23 with its adjacent 23:1-44 and 25:1-55.⁴⁸⁾ I think his argument is reasonable. On the other hand, I recommend seeing the function of Leviticus 24:1-23 not only in its adjacent sections but also in the whole outline of Leviticus.

As seen so far, most scholars demarcated the textual units based on thematic differences or development. The demarcations of the scholars are unique and provide diverse opinions explaining how the thematic flow develops from the preceding section to its following section. However, some of their thematic

45) G. Bush, *Notes, Critical and Practical, on the Book of Leviticus*, 4-5.

46) J. H. Walton, “Equilibrium and the Sacred Compass: The Structure of Leviticus”, 304.

47) L. M. Trevaskis, “The Purpose of Leviticus 24 within its Literary Context”, *Vetus Testamentum* 59 (2009), 295-312.

48) L. M. Trevaskis, “The Purpose of Leviticus 24 within its Literary Context”, 300, 311.

definitions are too broad to cover a division, inaccurate, and contradict the linguistic clues of participants' roles. On the other hand, this paper demarcates first textual divisions by syntax and the EDSF, avoids subjective demarcations by relying only on a thematic criterion, and explains second how discourse function develops between sections.

7. Conclusion

I summarize my work in this paper and how the work contributes to understanding the book of Leviticus.

In sections 1 and 2, I explained how I demarcated the text of Leviticus into two major divisions and two sub-divisions in the first major division. Even if I omitted the detail of the process of how I discovered the syntactic-hierarchical structure of Leviticus, I explained how the EDSF [**Elaborate Divine Speech Formula + locative phrase**] demarcates the divisions. This structure prepared the foundation on which I would examine the relationship between the divisions and begin the analysis of participants' roles.

In section 3, I elaborated on the analysis of the participants' roles and used it to support the demarcations, explain their effects, and define their discourse functions. I focused on the agent roles of participants who occur at a transitive verb and affect the other participants who occur in a direct object and the events that occur in a division.

In section 4, I explained how I will develop the analysis of participants' roles and use it to prove the hypothesis in which each division would indicate strong separability and weak connectivity to its adjacent division. I calculated the Jaccard distance between the two compared divisions. The Jaccard distances between them was always close to 1, so it validated the strong separability of each division to its neighboring division.

In section 5, I compared the two major divisions and the two sub-divisions in the first major division in Leviticus using the relative frequencies of shared agent roles and those of unique agent roles. I visualized the change of percentage of shared agent roles between divisions and defined the discourse functions of the divisions. I also displayed the unique agent roles and their frequencies and

explained how they strengthen the separability of each division and defined the discourse function of each division.

In section 6, I listed the demarcations of scholars and compared them with my demarcations. I agreed with some opinions if they fit the linguistic clues that I listed, otherwise I explained why I disagreed and proposed my demarcations and discourse functions.

I argue for five contributions of this study as follows.

First, the analysis of agent roles advocates the validity of the demarcations by the EDSF [**basic divine speech formula + locative phrase**].

Second, the analysis of agent roles explains well the theme of each division, and how the discourse function of each section develops from the preceding section to the following section.

Third, the analysis clarifies the main players who work strong and affect the other participants and events that occur in a division, and how the relationship between players changes and the events develop between divisions. It also shows which new agent roles appear, and which new events begin and develop.

Fourth, the analysis finds participants and their agent roles based on accurate quantitative research rather than based on subjective intuition without quantitative research; thus, it leads to a sound judgment on the agent roles of participants and on the discourse function of the divisions.

Fifth, Leviticus 1:1-24:23 describes the agent roles of priests, Aaron, and his sons, while 25:1-27:34 describes the practical laws that Israel is to obey to enter the land of Canaan, and not to be expelled from there.

Conclusively, I argue that demarcating Leviticus in two major divisions, 1:1-24:23 and 25:1-27:34, and demarcating two sub-divisions for the first major division, 1:1-15:33 and 16:1-24:23, propose a valid textual structure.

<Keywords>

syntactic hierarchical structure, computational query, text-linguistics, discourse analysis, the analysis of participants roles, the book of Leviticus.

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<Abstract>

Analysis of Participants' Agent Role in the Two Major Divisions of Leviticus

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This paper progresses the research on Leviticus, giving the first priority to syntax and results in a text-hierarchical structure, and the second priority to the analysis of participants' roles and results in the discourse functions between the syntactic divisions. This study considers the ETCBC linguistic inventory that includes the annotated linguistic database of the Hebrew Bible at all linguistic levels such as grapheme, morpheme, phrase, and clause,⁴⁹⁾ together with the text-hierarchical structure constructed on the basis of the annotation of all clause relationships that occur in a text, using the text-linguistics of Eep Talstra. This methodology stems from the linguistics of Wolfgang Schneider, who adopted the linguistic model of Weinrich who had defined syntax as a means of communication.⁵⁰⁾ Schneider viewed that syntax is a description of the linguistic forms that conduct the process of communication, and that word order is a form that has its own function.⁵¹⁾ In the same line, Talstra observes the verb form and its placement in the clause as well as the adjunct phrases in the clause, and describes the function of the word order. I call this an Elaborate Divine Speech Formula [**divine speech formula + locative or time phrase**].⁵²⁾ In my conjecture, the EDSFs in the four books of the Pentateuch except Genesis demarcate the major divisions as follows: Exod 1:1-4:18, 4:19-11:10, 12:1-40:38; Lev 1:1-24:23 (subdivided into 1:1-15:33 and 16:1-24:23), 25:1-27:23; Num 1:1-8:26 (subdivided into 1:1-3:13 and 3:14-8:26), 9:1-36:13 (subdivided into 9:1-20:22, 20:23-33:49, 33:50-34:29 and 35:1-36:13); Deut 1:1-32:46 and

49) W. van Peursen, "A Computational Approach to Syntactic Diversity in the Hebrew Bible", *JBTR* 44 (2019): 237-238.

50) H. Weinrich, *Tempus, Besprochene und erzählte Welt* (Stuttgart: Kohlhammer, 1964), 29.

51) W. Schneider, *Grammatik des Biblischen Hebräisch*, 5th ed. (Munich: Claudius Verlag, 1982). E. Talstra, "Text grammar and Hebrew Bible I: Elements of a Theory", *BO XXXV* (1978), 169.

52) <https://shebanq.ancient-data.org/hebrew/text?iid=2862&page=1&mr=r&qw=q>
<https://shebanq.ancient-data.org/hebrew/text?iid=2832&page=1&mr=r&qw=q>

32:47-34:12.

This paper focuses on the demarcations in Leviticus, which might be different from the demarcations of scholars who made thematic divisions. For example, most scholars propose Lev 17:1-26:46 as one literary unit with a holiness code. This paper does not seek to present syntactic division in competition with semantic divisions, but rather as an alternative way of looking at the text that puts Leviticus in the context of the Pentateuch in a different light and of the discourse functions between the syntactic divisions.