

Patterns of Equidistant Letters Sequence Pairs in Genesis

The Linguistic Protocol and Data used for the Communities Experiment

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This document contains a description of the linguistic protocol (LP) and the data produced by the linguistic protocol and used for the “communities experiment” described in the paper “Patterns of Equidistant Letter Sequence Pairs in Genesis” by the authors. The LP was first developed over 15 years ago by Zvi Inbal and has not been changed since that time. To facilitate checking the data for accuracy and uniform application of the LP, we define several alphanumeric “trace words” associated with each personality and with each community name / spelling which indicate precisely how each data word is obtained using the LP. The personality names and appellations are taken without modification from WRR lists 1 and 2. Note that for simplicity and brevity, community names are given regardless of their length, and before the prefixes “קהל” and “קהלת” are added. To obtain the list used for the experiment, simply add these prefixes to each name given here to produce two new names, and delete all names whose length, d , is out of the range $5 \leq d \leq 8$. In addition, delete all personality names / appellations that begin with “רבני” (“Rabbi”).

1. The Linguistic Protocol

The objective of the linguistic protocol (LP) is to derive, for each personality in lists 1 and 2, locations of birth and death, the Jewish community names, and their spellings in an algorithmic way to the exclusion of linguistic or historical expert consultants. The LP is designed to produce accurate locations, place names, and spellings using the ME as a primary and default source of data and the EH as an “expert” instead of a consultant. Spelling rules are in conformity with those described in WRR and its preprints.

(I) The first step in the LP determines the geographic location of birth and death. The determination can be either explicit or implicitly implied by the information given in the ME or EH. There are 5 possibilities:

- (a) Information not given in ME. Use EH.
- (b) ME and EH agree. Take the information from ME.
- (c) ME and EH conflict. Take the information from EH.
- (d) Information not in EH. Use ME.
- (e) Information not given, or in doubt, or unknown in both ME and EH. The location is then determined to be unknown.

Note: ME is the primary source of the data, as in WRR. EH is used as an expert to supply data not provided by ME or to resolve a conflict. Concerning implicitly derived data, note that in no case is there a conflict involving implicitly derived places.

(II) Step two determines the Jewish name(s) of the community obtained in (I). We proceed as follows:

- (a) If the EH article whose subject is the place obtained in (I) lists the Jewish name(s) explicitly, then the name(s) are taken from that list. If several such names are listed, we take them all. If the place is a Jewish city (i.e., in Israel), the Jewish name is taken from the EH index.
- (b) We check the EH for a Jewish family name that is the same as the Jewish community name. If any are found, we take them as the Jewish community name(s).
- (c) If neither (a) nor (b) above yields a Jewish name, then we take whatever names are obtained from step 1.

Note: Jewish names are used in conformity with WRR where Jewish dates, not secular dates, are used. Jewish family names were sometimes taken from the communities where they lived, thus (b). If (a) and (b) fail, we assume that the Jewish name was identical to the secular name.

(III) Step 3 determines the spellings of the name(s) obtained in (II).

- (a) If the name is obtained from (II) (c) then

- (i) Use any spelling for that name that is found in the EH index.
 - (ii) If the name is not found in the EH index, then obtain the spelling from the EH article on the personality.
 - (iii) If neither (i) nor (ii) yields spellings for the name, take the spelling(s) from the ME article on the personality.
- Note: The ME is the source for the data; the “expert”, EH, is consulted for the spelling
- (b) Add *mater lectionis* to produce an additional spelling if it appears in the EH article on the personality or in any of the references indicated in the EH for this place name..
 - (c) Remove *mater lectionis* to produce an additional spelling.
- Note: (b) and (c) are in conformity with the WRR spelling rule 4 in [1], page 436. In both (b) and (c) , both spellings are taken.
- (d) Change last letter of spelling from “ה” to “ס” when a name ends with the vowel sound “ah”.
- Note: This is in conformity with the WRR spelling rule in the WRR preprint [2]
- (e) Use Biblical spelling if the name appears in the Hebrew bible.
- Note: This is in conformity with the WRR spelling rule 2 in [1], page 436.
- (f) For each name, we produce two new names by using the prefix “קהל” and “קהלת” (Jewish community [of]).
- Note: These prefixes denote the Jewish community within a city, as opposed to the city itself. This community was a distinct entity, with its own name, and its own spectrum of religious, social and political institutions. Thus, the EH, volume 29 page 183 under the entry “(קהל = קהלה)” says “The community was a city within a city”.

This completes the description of the LP. Note that as in WRR, only names/spellings (of personalities or communities) with length k , $5 \leq k \leq 8$, are used.

An additional experiment was produced by using the additional prefix “קק” in (III) (f). This is a non-pronounceable abbreviation for קהלת קדוש (holy community) and is thus not in conformity with WRR. It was suggested as an additional experiment after the communities experiment was completed.

2. The Trace

1. Trace word 1 indicates where the information is obtained in the ME.. There is one such trace word associated with each personality. Trace word 1, $\langle x_1, \dots, x_{10} \rangle$ is defined as follows.

x_1 gives information on the place of birth:

$x_1 = “e”$: Information is explicit.

$x_1 = “i”$: Information is derived implicitly.

$x_1 = “?”$: Information is not given or indicated to be in doubt.

$x_1 = “u”$: Information said to be unknown.

$x_1 = “x”$: Information given but not specific, e.g., name of a country, or at sea.

$\langle x_2, \dots, x_5 \rangle$ is the column number in the ME where the information is found. If the information is not localized (as in the case where it is implicit) or not given, then this number is the column number of the beginning of the article in the ME.

x_6 gives information on the place of death. Possible values and their meanings are the same as for x_1 .

$\langle x_7, \dots, x_{10} \rangle$ is defined for the place of death in the same way that $\langle x_2, \dots, x_5 \rangle$ is defined.

2. Trace word 2 indicates where the information is obtained in the EH. There is one such trace word associated with each personality. Trace word 2, $\langle x_1, \dots, x_{12} \rangle$ is defined as follows:

x_1 gives information on the place of birth. Values are defined in the same way as for trace word 1 x_1 with the additional value $x_1 = “n”$ which indicates that there is no entry for this personality in the EH.

$\langle x_2, \dots, x_5 \rangle$ is defined in the same way as the corresponding values in trace word 1, except that if $x_1 = “n”$ then $x_i = 0$ for $i \geq 2$

x_6 gives the information on the place of death. Possible values and their meanings are the same as for x_1 .

$\langle x_7, \dots, x_{10} \rangle$ is defined for the place of death in the same way that $\langle x_2, \dots, x_5 \rangle$ is defined.

x_{11} indicates whether the ME and EH agree or are in conflict on the place of birth. Possible values are:

$x_{11} = \text{"a"}$: The ME and EH agree on the place of birth.

$x_{11} = \text{"c"}$: The ME and EH are in conflict on the place of death.

x_{12} indicates whether the ME and EH agree or are in conflict on the place of death. Values and meanings are the same as for x_{11} .

Trace words 1 and 2 correspond to step 1 of the LP.

3. Trace word 3 is defined for each community/place/name/spelling datum and indicates precisely how that datum is obtained using the LP. Trace word 3, $\langle x_1, \dots, x_{14} \rangle$ is defined as follows:

x_1 indicates if this datum is a place of birth or death:

$x_1 = \text{"b"}$: Place of birth.

$x_1 = \text{"d"}$: Place of death.

$x_1 = \text{"c"}$: Place of both birth and death.

x_2 indicates how the name of the place and spelling is obtained (step 2 of the LP)..

$x_2 = \text{"j"}$: Jewish name given in EH article (LP step 2 a).

$x_2 = \text{"c"}$: Jewish city name taken from EH index (LP step 2 a).

$x_2 = \text{"f"}$: Jewish family name (LP step 2 b).

$x_2 = \text{"n"}$: Name and spelling taken from ME; no entry in EH (LP step 2 c; step 3 a iii).

$x_2 = \text{"e"}$: Name taken from ME, spelling taken from EH article (LP step 3 a ii).

$x_2 = \text{"i"}$: Name taken from ME, spelling taken from EH index (LP step 3 a i).

$\langle x_3, \dots, x_6 \rangle$ gives the location of the information for x_2 .

If $x_2 = \text{"j"}$, "n" , or "e" , then $\langle x_3, \dots, x_6 \rangle$ is the column number in ME or EH, as indicated.

If $x_2 = \text{"f"}$, "i" , or "c" then $\langle x_3, \dots, x_6 \rangle$ is the page number in the EH index.

x_7 indicates how the additional spelling rules are applied.

$x_7 = \text{"a"}$: *mater lectionis* added (LP step 3 b).

$x_7 = \text{"r"}$: *mater lectionis* removed LP step 3 c).

$x_7 = \text{"b"}$: Spelling taken from Hebrew Bible (LP step 3 e).

$x_7 = \text{"u"}$: Spelling unaltered except for possible suffix change.

$\langle x_8, \dots, x_{13} \rangle$ indicates the source, in the EH, for adding a *mater lectionis*. If $x_7 \neq \text{"a"}$ then $\langle x_8, \dots, x_{13} \rangle$ is all 0. If $x_7 = \text{"a"}$ then:

$\langle x_8, x_9 \rangle$ is the volume number in the EH where the form with the *mater lectionis* is found.

$\langle x_{10}, \dots, x_{13} \rangle$ is the column number, in the volume indicated by $\langle x_8, x_9 \rangle$, where the form with the *mater lectionis* is found.

$x_{14} = \text{"s"}$ if there was a suffix change of "ה" to "ס" , and is equal to "n" otherwise (LP step 3 d).

For simplicity, if the name/spelling of a community and its derivation via the LP is repeated in the list, we give the full trace word 3 only the first time. For all succeeding appearances, we simply give the first letter of trace word 3 indicating if it is a place of birth or death, and follow that with the number, in parenthesis, of the personality in the list where that place/spelling first appears and the full trace is given.

This completes the description of the trace. The data follows.

3. The Data

	Trace 1 Trace 2	Personality names/appellations from WRR	Communities of birth/death (and trace)
1.	e0032e0044 e0294e0294aa	רבי אברהם, הראב"ד	(bf0351u000000n) נרבונא (bf0351a040367n) נארבונא (di0405u000000s) פושקירא
2.	e0071e0078 e0313e0313aa	רבי אברהם	(ci0402r000000n) פוסטאט (ci0402u000000n) פוסטאט
3.	e0083?0083 e0210?0210aa	רבי אברהם, בן עזרא אבן עזרא, הראב"ע	(bi0224u000000s) מודלא

4.	e0141e0146 e0553e0553aa	רבי אליהו, הבהור, בעל הבהור	נרישמאט (bf0340u000000n) נרישמט (bf0340r000000n) נרישמדט (bf0340r000000n) נרישמאדט (bf0340u000000n) וניציאה (di0193u000000n) ונציא (di0197u000000s) סלין (bi0371u0000000n) וילנא (di0192u000000s) מיין (di0323u000000n) מיין (di0309u000000n) ליפשטט (be0052r000000n) ליפשטאט (be0052u000000n) פרג (di0425u000000n) פראג (di0425a280052n) לאדמר (bj0327u000000n) לדמר (bj0327r000000n) לודמר (bj0327u000000n) לבוב (di0268u000000n) סלא (bi0369u000000n) סאלי (bi0369u000000n) סלי (bi0369r000000n) ירושלם (dc0810b000000n) קולוניא (bf0455u000000s) קולון (bf0455u000000n) טולידו (dj0417u000000n) טוליטולא (dj0417u000000s) טולדו (df0224u000000n) שפירא (bj0294u000000n) אשפירא (bj0294u000000n) שפייער (bj0294u000000n) שפירא (bj0294u000000n) שפיר (bf0526u000000n) רנגסבורג (di0490u000000n) פוזנא (bn0661u000000n) פרג (7)d פראג (7)d פינצוב (bi0412u000000n) אלמונא (di0048u000000s) אה"ו (di0013u000000n) לובלין (bi0272u000000n) קראקא (di0478u000000n) קרקא (di0478r000000n) לובלין (14)b לבוב (8)d לובלין (14)b קראקא (14)d קרקא (14)d
5.	?0151i0159 e0545e0545aa	רבי אליהו, הנאון	
6.	?0315i0318 ?0417e0417aa	רבי גרשון, הגרשני	
7.	e0355i0356 e0052e0052aa	רבי דוד, דוד נגו דוד נאט, צמח דוד	
8.	e0390i0392 e0085e0085aa	רבי דוד, דוד הלוי, בעל המ"ו	
9.	e0525e0530 e0810e0810aa	רבי חיים, בן עמר אבן עמר, אור החיים	
10.	e0608i0612 e0174e0174aa	רבי יהודה	
11.	i0627i0628 i0183i0183aa	רבי יהודה	
12.	e0661e0663 e0213e0213aa	רבי יהודה, רבי לויא המהר"ל, מהר"ל מפרג	
13.	e0690e0696 e0617e0617ca	רבי יונתן, איבשיין בעל התמים	
14.	?0704e0705 e0247e0247aa	רבי יהושע, רבי העשיל	
15.	?0710?0710 e0888e0888aa	רבי יהושע, בעל הסמ"ע	
16.	e0716e0716 e0558e0558aa	רבי יואל, סורקש בעל הב"ח	

17.	e0727i0729 e0721e0721aa	-	ולרשמין (be0721u000000n) קראקא d(14) קראקא d(14)
18.	e0736e0739 ?0515e0515aa	רבי יונה, רבנו יונה	גירונא (bj0276u000000s) גירונא (bj0276u000000s) ירונא (bj0276u000000s) מולידו d(10) מולימולא d(10) מולדו d(10) צפת (dc0446u000000n)
19.	?0799e0802 ?0027e0027aa	רבי יוסף, יוסף קרו, יוסף קארו מהר"י קרו, מהר"י קארו בית יוסף, המחבר	צפת (dc0446u000000n)
20.	e0826e0828 e0941e0941aa	בעל הצל"ח	אפטא (bj0050u000000n) פרג d(7) פראג d(7)
21.	e0826e0828 e0941e0941aa	פני יהושע	קראקא b(14) קראקא b(14) אופנבך (df0024u000000n) אופנבאך (df0024a130907n) זורונג (bn0888u000000n)
22.	e0888?0888 ?0028?0028aa	רבי יעקב, רבנו תם	
23.	e0904e0905 e0768e0768aa	רבי יצחק, אלפסי רב אלפס	קלעה חמאד (bn0904u000000n) קלעה חמד (bn0904r000000n) לוזינא (dj0498u000000s) אקופ (bn0981u000000n) מזיבוה' (dj0245u000000n) זורמס (bf0188u000000n) זרמזא (bj0982u000000n) גרמזא (bj0982u000000n) זורמשא (bj0982u000000n) זירמזא (bj0982u000000n) זירמזשא (bj0982u000000n) אניסחים (di0059u000000n)
24.	e0981e0986 e0489e0489aa	רבי ישראל, בעל שם טוב הבעש"ט	
25.	e1022e1025 e0071e0071aa	רבי מאיר, המהר"ם	
26.	e1067e1068 e0061e0061aa	רבי מרדכי, מרדכי יפה הלבוש, בעל הלבוש	פראג b(7) פרג b(7) פוזן (di0398u000000n)
27.	e1071i1076 e0056i0056aa	רבי משה, איסרלש	קראקא c(14) קראקא c(14)
28.	e1089e1089 e0518e0518ac	לוצמו, לוצאמו הרמח"ל	פאדוא (bf0395u000000n) פדוא (bf0395r000000n) כפר יאסיף (di0263u000000n) כפר יסף (di0263r000000n)
29.	e1109i1111 e0536i0539aa	רבי משה, הרמב"ם	קורדובא (bf0461u000000s) פוסטאט d(2) פוסטט d(2)
30.	x1215i1217 ?0417e0417aa	רבי צבי, חכם צבי	לבוב d(8)
31.	e1241e1242 e0434e0434aa	רבי שבתי, שבתי כהן שבתי הכהן, בעל הש"ך	אמסמיבז (bn1241u000000n) הלישווא (dn1242u000000n)

32.	e1279e1282 e0992e0992aa	רבי שלמה	(cj0911u000000n) מרזייש
33.	?1294e1295 ?0564e0564aa	רבי שלמה, לוריא מחרש"ל, המחרש"ל	לובלין (14)d
34.	e1320i1320 e0644e0644aa	אודלש, מחרש"א המחרש"א	קראקא (14)b קראקא (14)b אוסטראהא (di0022u000000n) אוסטראהא (di0022a020644n)
35.	?0061i0061 e0307i0307aa	רבי אברהם, הראב"י הרב אב"ד, הראב"ד האשכול	נרבונא (1)c נארבונא (1)c
36.	e0063e0063 u0186e0186ca	רבי אברהם, יצחקי זרע אברהם	ירושלם (9)c
37.	?0068i0070 ?0294e0294aa	רבי אברהם, המלאך	פסמוב (di0422u000000n) פאסמוב (di0422a012945n)
38.	x0081x0083 x0305x0305aa	רבי אברהם, אברהם סבע צדור המר	-
39.	e0123i0124 ?0597?0597	רבי אהרן	קרלין (bi0483u000000n) קארלין (bi0483a010597n)
40.	u0181e0183 ?0415e0416aa	מעשי השם, מעשי י/ה/ו/ה	קראקא (14)d קראקא (14)d
41.	e0346e0347 e0074e0074aa	רבי דוד, אופנהיים	וורמס (25)b ורמזא (25)b נרמזא (25)b וורמשא (25)b וירמזא (25)b וירמיישא (25)b פראג (7)d פרג (7)d
42.	e0402i0403 e0077e0077aa	רבי דוד, דוד הנגיד	קדור (ci0452u000000n) קאדור (ci0452a120077n)
43.	e0404e0405 e0140e0140aa	רבי דוד, דוד נימו	וינציאה (4)b ונציא (4)b לונדון (di0275u000000n)
44.	e0486i0488 e0098i0099aa	רבי חיים	חברון (bc0209b000000n) מבריא (dc0223u000000s)
45.	e0493i0495 e0045e0045aa	רבי חיים, בנבנשת	קושטא (bj0555u000000n) קשמנדינא (bj0555u000000n) קושטמנינא (bj0555u000000s) קושטמנינא (bj0555u000000s) אומיר (di0030u000000n)
46.	?0518i0519 n00000000000	רבי חיים, כפומי בעל נם, בעל הנם	קדור (42)d קאדור (42)d
47.	?0535i0536 e0433e0433aa	רבי חיים, חיים שבת מחרח"ש, המחרח"ש	שאלוניקי (cj0960u000000n) תיסאלוניקי (cj0960u000000n) שלוניקי (cj0960r000000n) תיסלונקי (cj0960r000000n)

48.	70579e0579 e0721e0721aa	חות יאיר	d(25) וורמס d(25) ורמזא d(25) נרמזא d(25) וורמשא d(25) וירמזא d(25) וירמישא לייפניק (bf0280u00000n) דובנו (bf0145u00000n) דובנא ((bf0145u00000n)
49.	e0631e0632 e0212e0212ca	רבי יהודה	ירושלם d(9) אלמדיא (bi0051y00000s)
50.	e0677e0679 e0906e0906aa	רבי יהודה, מהר"י עי"אש	ירושלם d(9)
51.	7069970699 e0232e0232aa	רבי יהוסף	רימון ספרד (cj0603u00000n)
52.	e0707e0708 e0247e0247aa	רבי יהושע, מגני שלמה	וילנא b(5) קראקא d(14) קראקא d(14)
53.	e0770e0770 e0046e0046aa	רבי יוסף, יוסף טרני, ממרני מראני, ממראני, מהר"י מ' המהר"י מ', מהר"י מ', המהר"י מ'	צפת b(19) קושטא d(45) קשמנדינא d(45) קושטמינא d(45) קושטמיניא d(45)
54.	e0824e0825 e0449e0449ca	רבי יוסף, תאומים פרי מגדים	סמריץ (be0449u00000n) פרנקפורט (di0434u00000n) פראנקפורט (di0434a090784n)
55.	e0856e0856 e0513e0513aa	רבי יעקב, יעקב בירב	מקדא (bi0325u00000s)
56.	e0859e0862 e0137e0137aa	מהר"י בירב, הריב"ר האנז, בעל הלק"מ	צפת d(19) פאם (bi0396u00000n) פם (bi0421u00000n) קושטא d(45) קשמנדינא d(45) קושטמינא d(45) קושטמיניא d(45)
57.	e0872e0873 e1015e1015aa	רבי יעקב, מולין, יעקב סג"ל מהר"י סג"ל, מהר"י הלוי מהר"י ל', המהר"י ל', יעקב הלוי	מנצא (bj0324u00000n) מאנצא (bj0324a030375n) וורמס d(25) ורמזא d(25) נרמזא d(25) וורמשא d(25) וירמזא d(25) וירמישא d(25)
58.	e0875e0876 e0873e0873aa	עמרין, העיב"ץ, הריעב"ץ הר"י עמרין, הר"י עמרין	אלטונא c(13) אה"י c(13)
59.	i0918i0920 70873e0873aa	רבי יצחק, הורוויץ יצחק הלוי	גלונא (bn0918u00000n) אה"י d(13) המבורג (di0176u00000n) האמבורג (di0176a140733n)

60.	e1058e1059 n00000000000	רבי מנחם, קרוכמל רבי מענדל, צמח צדק	b(14) קראקא b(14) קרקא ניקולמבורג (di0346u000000n)
61.	e1087e1088 e0823e0823aa	רבי משה, זכותא, זכותו, משה זכות משה זכותא, משה זכותו, המול"ן מהר"ם זכות, מהרמ"ז, המהרמ"ז קול הרמ"ז	אמסטרדם (bf0056u000000n) אמסטרדם (bf0056a040113n) אמשטרדם (bj0111r000000n) אמשטרדם (bj0111u000000n) מנטובא (df0319u000000s) מאנטובא (df0319a020718s) קידאן (bi0465u000000n) קידן (bi0465r000000n) ברודי (di0110u000000n)
62.	e1124e1127 e0366e0366aa	רבי משה, מרגלית, פני משה	וניציאה b(4) ונציא b(4) רווינו (df0493u000000n) פראא (bi0435u000000s) פרארא (bi0435a020769s) רגו (df0490u000000n)
63.	e1199e1200 e0614e0614aa	רבי עזריה	צנעא (bi0445u000000n) ירושלם d(9)
64.	e1201e1202 e0092x0092aa	א"ח הע"ר, ישר לבב	זמושין (bf0205u000000n) זמושין (bf0205a040521n) שאלוניקי d(47) תיסאלוניקי d(47) שלוניקי d(47) תיסלוניקי d(47)
65.	e1254i1254 e0385e0385ca	רבי שלום, מזרחי, שרעבי שר שלום, מהרשי"ש, המהרשי"ש	
66.	e1302e1304 e0521e0521aa	רבי שלמה	

4. References

[1] D. Witztum, E. Rips, and Y. Rosenberg, "Equidistant letter Sequences in the Book of Genesis" *Statistical Science*, August 1994, pp. 429-438

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